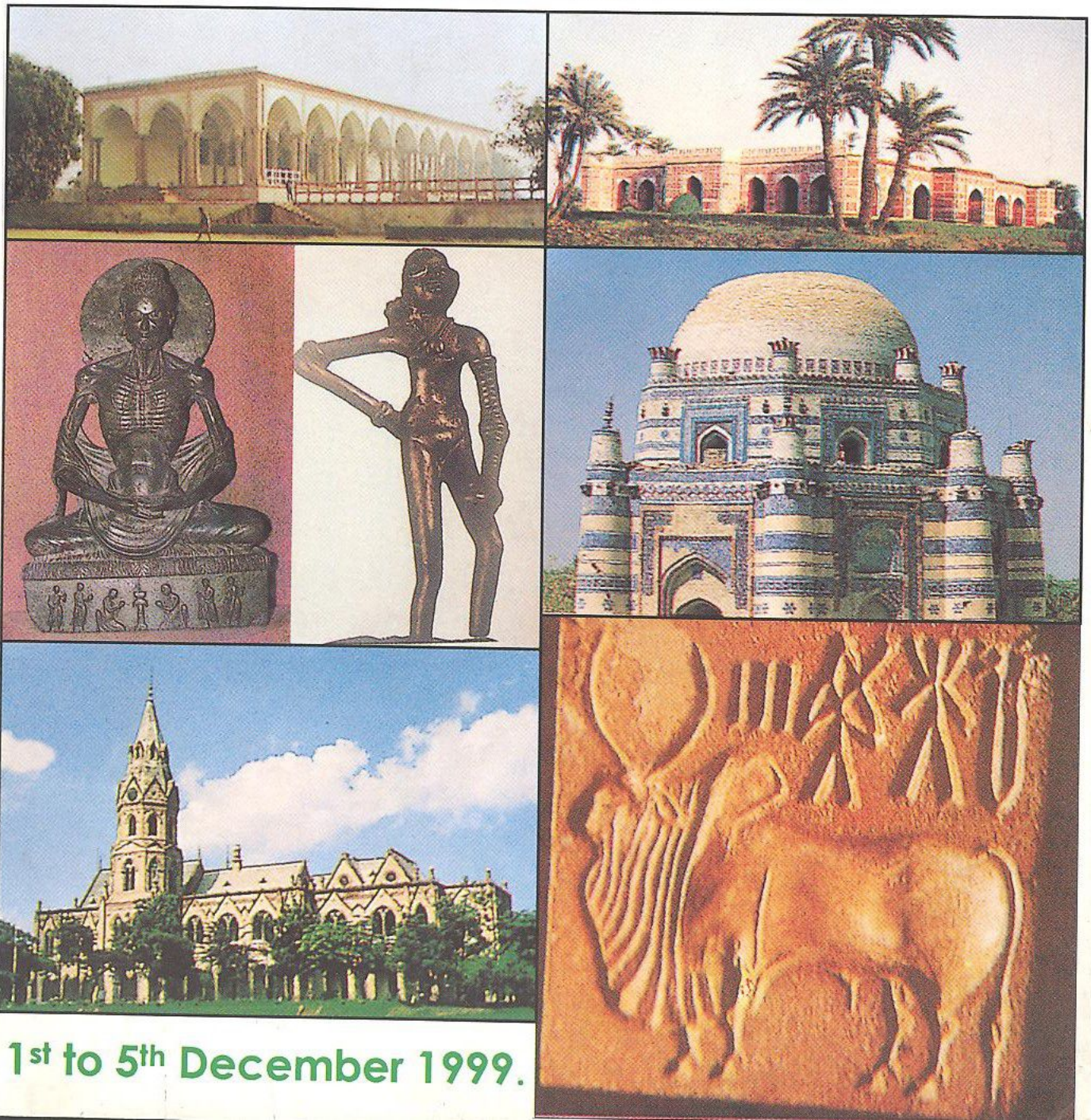
LAHORE '99
PAKISTAN

ASSOCIATION OF THORACIC AND CARDIOVASCULAR SURGEONS OF ASIA

14th BIENNIAL ASIAN CONGRESS ON THORACIC & CARDIOVASCULAR SURGERY

LAHORE - PAKISTAN



1st to 5th December 1999.

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Dr. Colleague

It has been a great pleasure to provide you with a copy of the abstracts of the papers to be presented at the 14th Biennial Asian Congress on Thoracic and Cardiovascular Surgery in the Lahore. Lahore, the heart of Pakistan, is situated on the River Ravi. A populous city, Lahore has since the time of Mughal Emperor, Akbar the Great, been the resort of people of all nations and a center of extensive commerce, art and learning. It is rightly regarded as the cultural, architectural and artistic center of Pakistan.

We have an excellent scientific program covering a wide range of adult and pediatric cardiac surgery and thoracic surgery. The abstracts are of a particularly high standard.

The scientific program is dispersed with lectures from 16 prestigious surgeons from around the world. A visit to the Lahore will provide not only an excellent education and scientific experience but will allow you to explore some of the modern parts of this historic and landmark city.
If time permits tours to the surrounding district will provide the participants with additional exposure to the outdoors, sporting facilities and cuisine.

Brian F. Buxton
President Association of Thoracic & Cardiovascular Surgeons of Asia

14th Biennial Asian Congress on Thoracic & Cardiovascular Surgery

Organizing Committee

Professor M. A. Cheema, Convenor

Professor Jawad Sajid Khan, Chairman Scientific Committee

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PRESIDENT'S MESSGAE

I am pleased to welcome you to the 14th Biennial Asian Congress on Thoracic and Cardiovascular Surgery, being held in the historical city of Lahore, Pakistan. This is the largest gathering of healthcare professionals and others dedicated to the fight against Cardiovascular Diseases in Pakistan. Those attending the sessions will have an opportunity to gain a deeper understanding of Cardiovascular Diseases as well as the detection, treatment and prevention of these diseases.

Despite the steady progress the Cardiovascular Diseases remain by far the most common cause of death in the world. Therefore we need to look towards the future with a renewed dedication to our profession. We should also energize public awareness of the fact that Cardiovascular Diseases can be prevented to a great extent.

You will see that Coronary Artery Disease continues to be a major killer disease even in the younger age group of 40 – 50 years particularly in Pakistan and Asia in general. In my opinion in addition to the known risk factors of Coronary Artery Disease the main cause for this disease occurring more in this age group seems to be the change of lifestyle like the lack of exercise, an unbalanced diet and an increase in stress / tension which has taken place in the last two decades in Pakistan.

As we enter the new millennium the Association of Thoracic and Cardiovascular Surgeons of Asia needs to be more active in its mission to prevent the Coronary Artery Disease from taking epidemic proportions effecting an even younger age group. The Association should also strive to reduce disability and death in-patients who already suffer from the Coronary Artery Diseases by using low-risk and low-cost procedures.

I look forward to welcoming you in Lahore, a fascinating city as you will experience.

Prof. Muhammad Rehman
President
Pakistan Society of Cardiovascular & Thoracic Surgeons
December, 1999

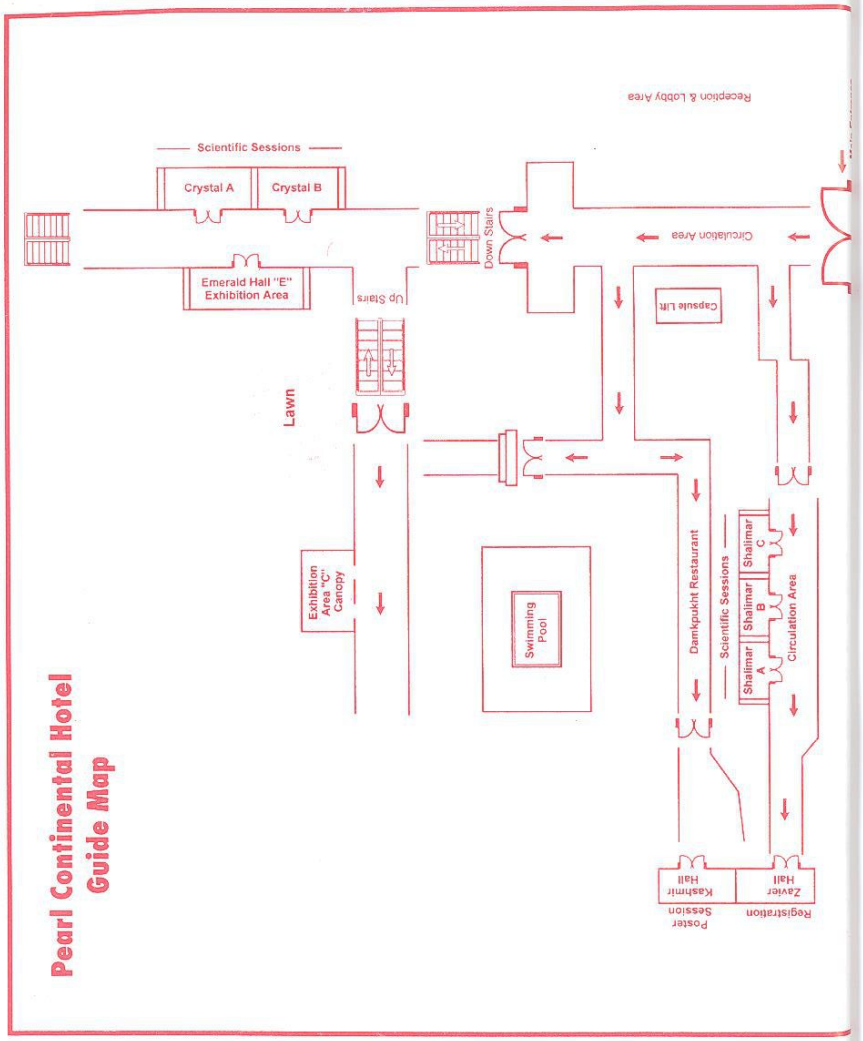
General Information

Date : 01 - 05 December, 1999

Venue : Peral Continental Hotel, Shahrah Quaid - e - Azam, Lahore

Language : English

Name Badges, to be worn at all times. This will allow entry to scientific session, exhibition and receptions.



Old Lahore

One the left bank of the river Ravi is situated the legendary city of Lahore whose oriental charm has allured the tourist and the invader alike since times immemorial. Each period has marked a clear stamp on it: pre-Moghul, Moghul, Sikh, British and post independence, all have been represented through the development in its planning as well as architecture, the Institutions and traditions.

Once it was confined within encircling defence walls and a moat with bridges in front of the huge gateways; multi-storeyed houses with wooden projections, domes, minarets and paper kites constituted its skyline, as they do even today. Inspite of the subsequent expansions, it has nevertheless retained its basic character and hence the gypsies too still shape their pottery the way they did in the days of the Indus Valley civilization. Animal-drawn carts have been supplemented by the automobiles which also amicably slow down through all the hustle and bustle of the bazaars. Old and the new complement each other in even the newly built areas where the balconies and arches, now in new materials, still find favour. It is pretty cold and extremely hot; yet it is spring for most of the year, symbolizing its eternal youth. Its inhabitants fought the climate with trees, gardens, canals, water tanks and a typical indigenous architecture which still has its effectiveness.

The British period bungalows, Railway Station, and the Mayo Hospital buildings offer a very authentic source to the introduction of western architecture in the region when steel was increasingly being used. The educational institutions and churches display academicism of the eclectic colonial architecture. Samanabad and Gulberg however represent a post-independence period with the roots still in the previous *a' la villa Rotonda* style. The government officers' residences too offer a view not much different from what Tony Garnier had anticipated in the Cite Industrielle.

A canal flowing north to south through the new areas and lined with blossoming trees has some of the most luxurious bungalows with large gardens on both the sides; lower down, it passes through the new campus of the Punjab University where the students ostensibly hold books and gaze at the rowing boats and butterflies.

The Mall connecting the city with the Cantonment is the most orderly road in the city and segregates the new and the old areas. Here one finds well-maintained facades of neo-Greco-Roman and neo-Palladian and wildest of the eclectic types. The Cathedral revives the Gothic while the St. Anthony's reminds of the Italian style. More recent contributions are the Masjid-e-Shuhada and the Islamic Summit Memorials. Most top class hotels along with the WAPDA House as designed by Durell Stone, and foreign and Pakistani banks are located on this road. On one side of the road are the posh localities and the other side has the downtown where incidentally all living culture can be seen; it is the Lahore of Latif and Goulding.

The walled city is a monument by itself, having a tightly-knit atmosphere constituted by the multi-storeyed houses built over smaller areas, the monotony of which is frequently broken by large havelis belonging to old families; virtually no trees exist there, the lanes are narrow and sometimes only five feet wide and present a more complicated cul-de-sac and flow into wider street which terminate into open areas with some sort of specialized market. The city is located over mild slopes formed by its own debris shed during the course of centuries. Originally it had twelve gates, many were named after the cities towards which they opened.

Dr. Ajaz Anwar

SCIENTIFIC PROGRAM

DAY 1, DECEMBER 01, 1999. "WEDNESDAY"

Registration	12 Noon - Onwards
Opening Ceremony	1700 hrs - 1830 hrs
Council Meeting (First)	1930 hrs - 2030 hrs
Opening Ceremony Reception	2100 hrs - Onwards

"DAY 2" DECEMBER 02, 1999 "THURSDAY"

Breakfast Session 0730 hrs – 0830 hrs	BS 1(Shalimar A):-	Mitral Valve repair	Prof. Cheema
	BS 2 (Shalimar B):-	Surgical Risk Factors in TAPVD	Mr. C. Lincoln
	BS 3 (Shalimar C):-	Arterial Revascularisation	Dr. A. Calafiore

Plenary Session 0900 hrs – 1030 hrs (45 min each)	Session I Crystal A	Session II Crystal B
	Ischaemic:- Dr. A. Calafiore Surgery on the Beating Heart	Thoracic:- Mr. Jeyasingham Mile Stones in Thoracic Surgery
	Ischaemic:- Mr. Andy Forsyth	Thoracic:- Mr. Maiwand Endo-Bronchial Palliation Particularly on Cryo-surgery

1030 hrs - 1045 hrs COFFEE BREAK

1045 hrs – 1245 hrs "Scientific Programme"

Crystal A	Crystal B	Emerald	Shalimar A	Shalimar B	Shalimar C
Valvular Valve - 1	Ischaemic IHD - 1	Congenital Cong - 1	Thoracic Thor - 1		Vascular Vasc – 1

1245 hrs – 1330 hrs LUNCH

1330 hrs – 1530 hrs "Scientific Programme" Contd.

Crystal A	Crystal B	Emerald	Shalimar A	Shalimar B	Shalimar C
Ischaemic IHD - 2	Valvular Valve - 2	Congenital Cong - 2	Wet Lab M.V. Repair Prof. Fabiani		Wet Lab Homograft Procurement Ms Jill Davis

1530 hrs – 1545 hrs COFFEE BREAK

1545 hrs – 1730 hrs "Scientific Programme" Contd.

Crystal A	Crystal B	Emerald	Shalimar A	Shalimar B	Shalimar C
Failing Heart FH-1	Ischaemic IHD – 6	Valvular Valve - 3	Wet Lab Contd.		Wet Lab Contd.

2030 hrs on ward A TASTE OF PAKISTANI CULTURE

"DAY 3" DECEMBER 03, 1999 "FRIDAY"

Breakfast Session 0730 hrs - 0830 hrs	BS 4(Shalimar A):-	Surgery for Lung Cancer	Mr. Maiwand
	BS 5 (Shalimar B):-	Failing Heart	Dr. R. Batista
	BS 6 (Shalimar C):-	Myocardial Preservation	Prof. Rosenfieldt

Plenary Session 0900 hrs – 1030 hrs (45 min each)	Session I Crystal A	Session II Crystal B
	Congenital :- D. N. Ross Ross Procedure	Valvular:- Dr. Mark O Brian "Tissue Valves for Aortic Valve Surgery: Stentlessness and Tissue Engineering"
	Congenital :- Mr. R. de leval Late Fontan Attrition	Valvular:- Prof. Cheema Mitral Valve Surgery

1030 hrs - 1045 hrs COFFEE BREAK

1045 hrs – 1245 hrs "Scientific Programme"

Crystal A	Crystal B	Emerald	Shalimar A	Shalimar B	Shalimar C
Ischaemic IHD - 3	Valvular Valve - 4	Congenital Cong - 3	Critical Care Crit - 1	CPB CPB - 1	Thoracic Tho - 3

1245 hrs – 1330 hrs LUNCH

1330 hrs – 1530 hrs "Scientific Programme" Contd.

Crystal A	Crystal B	Emerald	Shalimar A	Shalimar B	Shalimar C
Critical Care Crit - 2	Thoracic Tho - 4	Ischaemic IHD - 4	Wet Lab Ross Procedure Mr. Ross Z. Al. Halees		Wet Lab Stent less Valve Mark O Brian

1530 hrs – 15450 hrs COFFEE BREAK

1545 hrs – 1730 hrs "Scientific Programme" Contd.

Crystal A & B	Emerald	Shalimar A	Shalimar B	Shalimar C
Training of a Cardiac surgeon Prof.M.Rehman, B. Buxton, Solomon Victor		Wet Lab Contd.		Wet Lab Contd.

1800 hrs - 1900 hrs GENERAL BODY MEETING

FREE NIGHT

"DAY4" DECEMBER 04, 1999 "SATURDAY"

Breakfast Session 0730 hrs – 0830 hrs	BS 7(Shalimar A):-	Right heart Bypass Operation	Prof. T. Yagihara
	BS 8 (Shalimar B):-	Lung Transplant	Dr. Saleem Aziz
	BS 9 (Shalimar C):-	TMR.	Prof. J.S.Khan / Dr. Cherian

Plenary Session 0900 hrs – 1030 hrs (45 min each)	Session I Crystal A	Session II Crystal B
	Perfusion :- M. Whitehorne Myocardial & Cerebral preservation & Perfusion Technique	Ischaemic:- Mr. C. Ratnatunga
	Critical Care:- Max Ervine Non Cardiac aspects of cardiac ...	Ischaemic:- Prof. M. Rehman

1030rs - 1045 hrs COFFEE BREAK

1045 hrs – 1245 hrs "Scientific Programme"

Crystal A	Crystal B	Emerald	Shalimar A	Shalimar B	Shalimar C
Congenital Con - 4	Ischaemic IHD – 5	Valvular Valve - 5			Thoracic Tho – 2

1245 hrs – 1330 hrs LUNCH (Council Meeting)

1330 hrs – 1530 hrs "Scientific Programme" Contd.

Crystal A & B	Emerald	Shalimar A	Shalimar B	Shalimar C
Symposium : How to write a scientific paper & conduct a research project. Prof. Rosenfeldt	FREE	Wet Lab Perfusion M. Whitehorne		

1530 hrs – 1545 hrs COFFEE BREAK

1545 hrs – 1630 hrs "Scientific Programme" Contd.

Crystal A & B	Emerald	Shalimar A	Shalimar B	Shalimar C
Symposium on Heart trans-plant 1. Dr. C. Ongchariat 2. Prof. Sir. M. Yacoub		Wet Lab Contd.		

1630 hrs - 1730 hrs STATE OF ART LECTURE "Sir. M. Yacoub "
Role of Surgery in Failing Heart

2030 hrs ASIA NIGHT BANQUET / Cardiac Surgery or Comic Opera by Sir. M. Yacoub

"DAY 2" DECEMBER 02, 1999 "THURSDAY"

Breakfast Session 0730 hrs – 0830 hrs	**BS 1**(Shalimar A):- **Mitral Valve Repair** **Prof. M. A. Cheema** **Mr. Donald Ross**	
	BS 2 (Shalimar B):- **Surgical Risk Factors in TAPVD** **Mr. C. Lincoln** **Chair Person : Prof. M. Rehman**	
	BS 3 (Shalimar C):- **Arterial Revascularisation** **Dr. A. Calafiore** **Chair Person : Maj. Gen. M. U. R. Kiani**	
Plenary Session 0900 hrs – 1030 hrs (45 min each)	**Session I Crystal A** **Ischaemic:-** **Surgery on the Beating Heart** **Dr. A. Calafiore** **Chair Person:** **Dr. Shahid Malik**	**Session II Crystal B** **Thoracic:-** **Mile Stones in Thoracic Surgery** **Mr. Jeyasingham** **Chair Person :** **Dr. S. Prinya**
	Failing Heart:- **Dr. R. Batista** **Chair Person:** **Dr. Fayyaz H. Hashmi**	**Thoracic:-** **Endo-Bronchial Palliation Particularly on Cryosurgery** **Mr. M. O. Maiwand** **Chair Person :** **Dr. S. Prinya**

2 Dec, 1999 (1045 hrs - 1245 hrs) **Valvular Heart Disease** **Crystal A**

Chairman : Mr. Donald Ross **Co_chairman : Prof. J. S. Khan**

Moderator : Col. Asif

1045 hrs **HOMOGRAFTS FOR AORTIC VALVE OR ROOT REPLACEMENT IN INFECTIVE ENDOCARDITIS. V-16**

C.Alexiou, S.M.,Langley, S.A. Livesey, J.L.Monro
Department of Cardiac Surgery, The General Hospital, Southampton, U.K.

1105 hrs **PATHOLOGIC CHANGES ON THE IMPLANTED PORCINE AORTIC HOMOGRAFTS. (FRESH, CRYOPRESERVATION, ULTRAVIOLET IRRADIATION). V-29**

YH Park, CS Yoon, YS Hong, DH Maeng, BK Cho, JH Kim, WS Park, YW Hong, JC Park, JE Kim, YS Whang, DW Han, H Seo, SH Cho.
Yonsei Cardiovascular Center, Research Institute, Seoul, Korea.

1125 hrs **REPAIR OF MODERATE AORTIC VALVE LESIONS ASSOCIATED WITH OTHER VALVE PATHOLOGY: A TEN-YEAR FOLLOW-UP. V-22**

Zohair Al Halees MD, Begonia Gometza MD, Ali Al Sanie MD & Carlos MG Duran MD.
King Faisal Specialist Hospital & Research Center, Riyadh, Saudi Arabia.

1145 hrs **MIDTERM RESULTS OF AORTIC ROOT ENLARGEMENT WITH AVR IN PATIENTS WITH NARROW AORTIC ROOT AND AS. V-17**

Kwang Hyun Cho
Department of Thoracic and Cardiovascular Surgery, Inje University Pusan Paik Hospital.

1205 hrs **SURGERY FOR SMALL AORTIC ANNULUS. V-6**

Rashid A., Saleem K., Kiani M.R., Afzal S.A., Al-Halees Z.
Department of Cardiac Surgery, AFIC/NIHD, Rawalpindi.

1225 hrs **INITIAL EXPERIENCE WITH AORTIC HOMOGRAFT. V-37**

Waheed A, Azhar M, Shafi S, Khan A H, Mansoor A, Khan J.S.
Mayo Hospital, Lahore.

2 Dec, 1999 (1045 hrs - 1245 hrs) **Ischeamic Heart Disease** **Crystal B**

Chairman : Dr. A. Calafiore **Co_chairman : Maj. Gen. M. U. R. Kiani**
Moderator : Col. Azhar Rasheed

1045 hrs **BILATERAL INTERNAL MAMMARY ARTERY: IS DIABETES STILL A RISK FACTOR FOR STERNAL COMPLICATIONS?IH-8**

M.A.Iqbal, AO Chukwuemeka, AT Forsyth
Department of Cardiac Surgery, Kings College Hospital, London.

1105 hrs **TEN-YEAR RESULTS OF THE RIGHT INTERNAL THORACIC ARTERY GRAFT: FACTORS INFLUENCING PATENCY. IH-11**

B.Buxton, P. Ruengsakulrach, J.Fuller, A.Rosalion, C. Reid.
Department of Cardiac Surgery, Austin & Repatriation Medical Center Department of Cardiology, Epworth Hospital, Barker Medical Research Institute, Melbourne, Victoria, Australia.

1125 hrs **MYOCARDIAL REVASCULARISATION IN PATIENTS WITH DIABETES MELLITUS. IH-35**

Fayyaz Haider Hashmi MD, Khalid Hameed FRCS, Seemin Noor

1145 hrs **ARRHYTHMIAS AFTER CORONARY ARTERY BYPASS GRAFTING: A MULTIVARIATE ANALYSIS OF PREDICTORS OF MORBIDITY. IH-21**

Anjum Jalal, Haider Zaman, Anil John, C P Forrester-wood.
Punjab Institute of Cardiology, Lahore-Pakistan
Department of Thoracic Surgery, Bristol Royal Infirmary, Bristol, U.K.

1205 hrs **EARLY HOSPITAL DISCHARGE POST CONVENTIONAL 'ON PUMP' COMPLETE MYOCARDIAL REVASCULARISATION. IH-23**

M Dar, H Ahmeidat, Gal Wilkinson, RP Casula.
Department of Cardiothoracic Surgery, Northern General Hospital Sheffield, UK.

1225 hrs **CABG IN LOW E.F (15% TO 30%) AT DR. ZIAUDDIN MEDICAL UNIVERSITY HOSPITAL. IH-28**

Dr. Tariq M Sherani, Dr.S.Sharif A.Shah, Dr. Rehana, Dr. Mansoor, Mr Aqeel.
Dr. Ziauddin Medical University Hospital, Karachi.

2 Dec, 1999 (1045 hrs - 1245 hrs) **Congenital Heart Disease** **Emerald**

Chairman : Mr. C. Lincoln **Co_chairman : Prof. Rehman**
Moderator : Dr. S. Sami

1045 hrs **TETRALOGY OF FALLOT - TOTAL CORRECTION. C-7.**

Maj Inam Ullah, Brig Syed Afzaal, Maj Gen M R Kiani.
AFIC & NIHD, Rawalpindi.

1100 hrs **REVIEW OF THIRTY ADOLESENT AND ADULT PATIENTS UNDERGOING TOTAL CORRECTION OF TETROLOGY OF FALLOTS. C-27.**

Khan Asjad, Zafar H, Munir Sohail, Cheema M. A.
Punjab Institute of Cardioloy, Lahore

1115 hrs **MODIFIED BLALOCK-TAUSSIG SHUNTS (MBTS) AT NATIONAL INSTITUTE OF CARDIOVASCULAR DISEASES (NICVD) KARACHI; 10 YEARS EXPERIENCE. C-26.**

Rabbi F, Rehman M.
Department of Cardiac Surgery, NICVD, Karachi, Pakistan.

1130 hrs **ANOMALOUS LEFT CORONARY ARTERY FROM THE PULMONARY ARTERY (ALCAPA); AN IMPORTANT AND TREATABLE CAUSE OF CONGENITAL ISCHEMIC CARDIOMYOPATHY. C-14.**

MM Amanullah, A. Hasan, and JRL Hamilton.
Department of cardiothoracic surgery freeman hospital. Newcastle, England.

1145 hrs **CURRENT CONCEPTS FOR SURGICAL MANAGEMENT OF VSD, PULMONARY ATRESIA AND MAPCAs. C-6.**

K S Murthy, Shiva, Wilson, Usha K, Maully, Shardha S, Cherian K M.
Institute of Cardiovascular Diseases, Chennai, India.

1200 hrs **MUSCULI PECTINATI IN RIGHT AND LEFT ATRIA. C-21.**

Solomon Victor, Vijaya M Nayak.
The Heart Institute Chennai 600010, India.

1215 hrs **CLINICAL PROFILE AND OUTCOME OF PATIENTS UNDERGOING BLALOCK-TAUSSIG SHUNT - A THIRD WORLD EXPERIENCE. C-10.**

Rana JS, Ahmad KA, Shamim AS, Hassan SB, Ahmad MA.
Department of cardiothoracic surgery. Department of Pediatrics.
The Aga Khan University Hospital, Karachi, Pakistan.

2 Dec, 1999 (1045 hrs - 1245 hrs)	Thoracic Surgery	Shalimar A
Chairman : Mr. Jeyasingham	Co_chairman : Prof. Faheem	
Moderator : Dr. Ajmal		

1045 hrs	**A STUDY OF ARRHYTHMIA FOLLOWING PULMONARY OPERATION IN-PATIENTS WITH LUNG CARCINOMA. T-2.** Tanaka A, Sato T, Watanabe N, Tanaka T, Maekawa K, Matsui T, Hachiro Y. Department of Thoracic Surgery, Sapporo City, General Hospital, Sapporo, Japan.
1105 hrs	**FIVE YEAR EXPERIENCE OF THORACIC TRAUMA IN AN URBAN TERTIARY CARE CENTRE IN SOUTHERN PAKISTAN. T-18.** Izhar K, Zafar H., Sami S.A., Ahmad M. Department of Surgery, The Aga Khan University Hospital, Karachi, Pakistan.
1125 hrs	**THORACIC SURGERY FOR MEDIASTINAL DISEASE. T-13.** Amer Bilal, Shahkar Ahmad Shah, Zahoor Ahmed, Israr Ahmad Department of Cardio-Thoracic Surgery, Postgraduate Medical Institute, Govt. Lady Reading Hospital, Peshawar.
1145 hrs	**ROLE OF THYMECTOMY IN MYASTHENIA GRAVIS. T-22.** M. Asim Khan, Khurram Siddiqui, Sulaiman B. Hasan. Cardio-Thoracic Division, Department of Surgery, The Aga Khan University Hospital, Karachi.
1205 hrs	**INTERVENOUS IMMOUNOGLOBULIN IN THE PREPARA-TION OF THYMECTOMY FOR MYASTHENIA GRAVIS. T-17.** Biing-Shiun Huang MD, PhD, FACS, FCCP, Ko-Pei Kao* MD Chest Surgery, Department of Surgery, *Neuromuscular Section, The Neurological Institute and Department of Neurology, Veterans General Hospital-Taipei; National Yang-Ming University, School of Medicine, Taiwan, R.O.C.
1225 hrs	**CERVICAL MEDIASTINOSCOPY. A. DIAGNOSTIC MODALITY FOR NON-NEOPLASTIC MEDIASTINAL MASSES. T-20.** G. Khan, MS Siddiqui, SB Hasan Cardio-Thoracic Surgery, Department of Surgery, The Aga Khan University Hospital, Karachi.

2 Dec, 1999 (1045 hrs - 1245 hrs)	Vascular Surgery	Shalimar C
Chairman : Prof. Mussadiq Khan	Co_chairman : Dr. Fayyaz Hashmi	
Moderator : Dr. T. Sherani		

1045 hrs	**VASCULAR TRAUMA - EXPERIENCE AT LADY READING HOSPITAL, PESHAWAR. VR-1** Aslam S, Ahmad.T, Rehman K, Waseem N, Majeed A, Ahmed H, Khan R.A., Khan J., Mannan, P. Department of Cardiovascular Surgery, Govt. Lady Reading Hospital (LRH), Peshawar Pakistan.
1100 hrs	**FEMORAL AND POPLITEAL VASCULAR INJURIES : A COMPARISON OF OUT COME. VR-2** Rehman K, Aslam S, Ahmad.T, Waseem N, Majeed A, Ahmed H, Khan A.M., Khan R.A., Khan J., Mannan, P. Department of Cardiovascular Surgery, Govt. Lady Reading Hospital (LRH), Peshawar Pakistan.
1115 hrs	**INFECTIVE ENDOCARDITIS PRESENTING AS A LEAKING SUPERIOR MESENTERIC ARTERY ANEURYSM: A CASE REPORT. VR-3** Agunod PJ, Cheng CC, Rico AC. Division of Cardiovascular Surgery, Philippine Heart Center, Quezon City, Metro Manila, Philippines.
1130 hrs	**TRAUMATIC TRANSACTION OF THORACIC AORTA AND WIDENED MEDIASTINUM. VR-4** Mazhar ur Rehman, M Boulter, I Ahmad, P H Kay. Department of Cardiothoracic Surgery, Yorkshire Heart Center, Leeds General Infirmary, Leeds, U.K.
1145 hrs	**A TRAINING MODEL FOR VASCULAR ANASTOMOSIS : AN EXPERIMENTAL STUDY. VR-5** Cheng CC, Aventura AP, Garcia FA, Agunod PJ. Division of Cardiovascular Surgery, Philippine Heart Center, Quezon City, Metro Manila, Philippines.
1200 hrs	**PERCUTANEOUS SYMPATHOLYSIS FOR THROMBOANGITIS OBLITERANS. VR-8** Raheel Hussain, Khuda Bux Shaikh, Abdul Bari Khan. Department of Cardiac and Vascular Surgery, CHK, Dow Medical College, karachi.
1215 hrs	**LOCAL EXPERIENCE WITH CAROTID ENDARTERECTOMY. VR-9** Prof. M. Mussadiq Khan Rawalpindi Medical College, Rawalpindi

2 Dec, 1999 (1330 hrs - 1530 hrs) **Ischeamic Heart Disease** **Crystal A**

Chairman : Prof. B. Buxton **Co_chairman : Prof. Rehman**

Moderator : Dr. Shahkar A. Shah

1330 hrs

TL 201 SCINTIGRAPHY EVALUATION AFTER MYOCARDIAL REVASCULARISATION USING RADIAL ARTERY. IH-18

Edvin Prifti, Giuseppe Davoli, Massimo Bonacchi, Massimo Macchreini, Fabio Miraldi, Marzia Leacche, Michele Toscano.

1350 hrs

HARVESTING THE RADIAL ARTERY USING DIATHERMY AND GLYCERYL DILATOR SOLUTION TRINTRATE ACHIEVES GOOD CLINICAL OUTCOMES. IH-7

Rosenfeldt FL, Esmore DS, Burton PR, Smith JA, Rabinov M, McMahon J.
Baker Medical Research Cardio-Thoracic Surgical Unit, Alfred Hospital, Melbourn Victoria Australia.

1410 hrs

THE USE OF ULTRASOUND FOR ASSESSING THE RADIAL ARTERY BEFORE CORONARY ARTERY SURGERY. IH-12

P. Ruengsakulrach, M. Brooks, R. Sinclair, DL Hare, B. Buxton.
Department of Cardiac Surgery, Radiology & Pathology, Cardiology. Austin & Repatriation Medical Centre, Victoria, Australia.

1430 hrs

THE RADIAL ARTERY AS A CONDUIT IN CABG: EARLY AND MID TERM ANGIOGRAPHIC RESULTS AND LESSONS LEARNT. IH-20

Bedi Harinder Singh, Suri A, Kalkat MS, Sengar BS, Nayyar A, Bhagat A Chawla R, Sharma VP, Mahajan V.
Tagore Heart Care & Research Center, Jalandhar, Punjab, India.

1450 hrs

THE USE OF RADIAL ARTERY TO ACHIEVE A "TOTAL ARTERIAL LEFT VENTRICULAR REVASCULARISATION". IH-22

M. Dar, H Ahmeidat, G Cooper, GAL Wilkinson, RP Casula.
Department of Cardiothoracic Surgery, Northern General Hospital, Sheffield, UK.

1510 hrs

CORONARY ARTERY BYPASS GRAFTING FOLLOWING CARDIAC ARREST IN THE ANGIO SUIT. IH-39

Akhtar R. P., Hameed K.
Punjab Institute of Cardiology,
Lahore.

1515 hrs

TOTAL ARTERIAL GRAFTING - MYOCARDIAL REVASCULARISATION. IH-36

Dr. Khalid Hameed FRCS, Fayyaz Haider Hashmi MD, Sarah Saleem.

2 Dec, 1999 (1330 hrs - 1530 hrs) **Valvular Heart Disease** **Crystal B**

Chairman : Dr. Mark O. Brain **Co_chairman : Prof. Perviaz Mannan**

Moderator : Dr. K. Rasheed

1330 hrs

MINIMAL INVASIVE OPEN HEART SURGERY. V-33 (Lower Median Sternotomy).

Muhammad Musharaf, Muhammad Rehman
National Institute of Cardio-Vascular Disease, Karaci.

1350 hrs

EARLY EXPERIENCE WITH STENTLESS SORIN VALVE. V-34

Q. Abid., S. Hunter.
Department of Cardio-Thoracic Surgery, South Cleveland Hospital, Marton Road, Middlesborough, England TS4 3 BW.

1410 hrs

MINISTERNOTOMY FOR PATIENTS UNDERGOING CARDIAC SURGERY, THE AFHSR EXPERIENCE. V-13

R. Gallo, I. Khan, E. Saad, A. Nemlander and N. Berndt.
Cardiac Services, Armed Forces Hospital Sothern Region, Khamis Mushayt, Saudi Arabia.

1430 hrs

THE CARBOMEDICS BILEAFLET MECHANICAL VALVE IN A POORLY ANTICOAGULATED YOUNG POPULATION. V-21.

Zohair Al Halees MD, Begonia Gometza MD, Ali Al Sanei MD, Carlos Duran MD.

1) King Faisal Specialist Hospital & Research Centre, Riyadh, Saudi Arabia.
2) International Heart Institute of Montana Foundation, Missoula, Montana, USA.

1450 hrs

A LOCAL PROTOTYPE PULSE-DUPLICATOR MACHINE IN THE PHILIPPINE HEART CENTER: AN EXPERIMENTAL STUDY. V-3.

Cheng C. C., CelinoCG, AventuraAP, CastilloF, Agunod PJ.
Division of Cardiovascular Surgery, Philippines Heart Center Manila, Philippines.

1510 hrs

A STUDY FOR APPROPRIATE SIZE OF AORTIC PROSTHETIC VALVE BY DOBUTAMINE STRESSED ECHOCARDIOGRAPHY. V-9.

Tsukamoto M, Muraki S, Inoue S, Ito T, Komatsu K, Abe T.
Department of Thoracic and Cardiovascular Surgery, Sapporo Medical University School of Medicine, Sapporo, Japan.

2 Dec, 1999 (1330 hrs - 1530 hrs)	Congenital Heart Disease Emerald
Chairman : Dr. Donald Ross	Co_chairman : Brig Afzaal Ahmad
Moderator : Dr. Asjad Khan	

1330 hrs	**THE ROSS OPERATION.** **THE MODIFICATION OF OPERATIVE TECHNIQUE TO MINIMIZE RISK. C-25.** Mr. D. Anderson Guys & St. Thomas's Hospital, Cardiothoracic Department, Guy's & ST Thomas's NHS Trust, St Thomas's Street, London SEI 9RT.
1350 hrs	**THE ROSS PROCEDURE IN CHILDREN UNDER TEN YEARS OF AGE. C-19.** T Butt, M M Amanullah, N Vitale, G Ciotti, J R L Hamilton, M Pozzi, A Hasan. Department of Cardiothoracic Surgery, The Freeman Hospital, Newcastle. UK.
1410 hrs	**TEE GUIDED TRANSVENTRICULAR BALLOON DILATATION OF CONGENITAL CRITICAL AORTIC STENOSIS. C-24.** Hussain A, Al Faraidi Y, Momenah T, Abdulhamed J. Department of Cardiac Anesthesia, Cardiac Surgery and Pediatric Cardiology, Prince Sultan Cardiac Center, Riyadh, Saudi Arabia.
1430 hrs	**EARLY EXPERIENCE OF ROSS PROCEDURE AT AFIC-NIHD. V-27.** Col. Asif Ali Khan, Dr. Naved Ahmad, Brig. Syed Afzaal Ahmad.
1450 hrs	AFIC, Rawalpindi, Pakistan. **VALVOTOMY FOR CRITICAL AORTIC STENOSIS IN INFANCY. C-26.** Sherani, T.M. – Afzal, M. -- Yasin, R. -- Niazi, M. -- Sharif, S. A.
1510 hrs	Department of Cardiac Surgery, Ziauddin Hospital, Karachi. **USE OF THE CARBOMEDICS BILEAFLET VALVE IN CHILDREN WITH CONGENITAL HEART DISEASE: A CLINICAL EVALUATION. C-15.** C. Alexiou, A. McDonald, M.P. Haw J.L. Monro. Department of Cardiac Surgery, The General Hospital, Southampton, UK.

2 Dec, 1999 (1545 hrs - 1730 hrs)	Failing Heart Crystal A
Chairman : Dr. R. J. V. Batista	Co_chairman : Dr. C. Ongcharit
Moderator : Brig. M. B.Y. Bilal	

1545 hrs	**COENZYME Q^{10} IN VITRO NORMALISES IMPAIRED POST-ISCHEMIC CONTRACTILE RECOVERY OF AGED HUMAN MYOCARDIUM. OT-1** Rosenfeldt FL, Pepe S, Ou R, Mariani JA. Baker Medical Research Institute, Melbourne Australia; Nagley P, Monash University, Melbourne, Australia.
1605 hrs	**ADVANTAGE OF CARIPORIDE (HOE642) OVER CITRATE AS A LOW Ca^{++} STRATEGY IN CARDIOPLEGIA. OT-2** Rosenfeldt FL, Fukuhiro Y, Wowk M, Ou R, Pepe S Cardiac Surgical Research Unit, Baker Institute, Melbourne Australia.
1625 hrs	**EXPERIENCE WITH THORACIC ORGAN TRANSPLANTATION. OT-3** Dr. K.M.Cheema, N Madhu Shankar, S.Rajan and Mullasari Ajit S. Institute of Cardiovascular Diseases, Chennai, India.
1645 hrs	**PASSIVE VENTRICULAR CONSTRAINT WITH THE ACORN PROSTHETIC JACKET PREVENTS REMODELING AND MITRAL REGURGITATION IN DOGS WITH HEART FAILURE. OT-5** P.A.Chaudhry, G Paone, V.G.Sharov, T Mishima, J Hawkins, C Alferness, H.N.Sabbah. Henry Ford Hospital, Detroit, Michigan, USA.
1705 hrs	**MECHANICAL CHARACTERISTICS OF ELECTO-HYDRAULIC HEART DRIVE. OT-6** S.R.Topaz*, Demin Shen**, D.N.Jones* and Paul Shen** Kolffs Laboratory, University of Utah, Salt Lake City, Utah USA.

2 Dec, 1999 (1545 hrs - 1730 hrs)	Ischaemic Heart Disease Crystal B
Chairman : Dr. K. M. Cherian Moderator : Dr. Abdul Waheed	Co_chairman : Dr. Rasheed
1545 hrs	**TRANSMYOCARDIAL REVASCULARIZATION (TMR) BY HOLMIUM YAG LASER AT VGH-TAIPEI. IH-32.** Trang-Jenn Yu, Shiau-Ting Lai, Zen-Chung Weng
1605 hrs	**TRANSMYOCARDIAL LASER REVASCULARISATION COMBINED WITH CORONARY ARTERY BYPASS GRAFT : EARLY RESULTS AND MID TERM FOLLOW UP. IH-6.** Dr. K.M. Cherian, N Madhu Sankar, V. M. Kurian, S. Rajan, Mullasari Ajit S. Institute of Cardiovascular Disease, Chennai, India.
1625 hrs	**LASER REVASCULARIZATION IN SELECTED PATIENTS. IH-40.** Khan A H., Khan J.S, Waheed A, Chaudhry R* , Mayo Hospital, Lahore / * Shiekh Zayed Hospital
1645 hrs	**THE CORONARY COLLATERAL CIRCULATION IN PATIENTS WITH ATHEROSCLEROTIC CORONARY ARTERY DISEASE: A PROPOSED CLASSIFICATION. IH-38.** Dr. Parvez Z., Hasan A., Malik A. Department of Cardiac Surgery, Sheikh Zayed Postgraduate Medical Institute, Lahore.
1705 hrs	**RISK ADJUSTED ANALYSIS OF PATIENTS UNDERWENT CABG AT AKHU. IH-29** Dr. M. Asim Khan, Sulaiman B. Hasan, Shahid A Sami, Cardio-Thoracic Division, Department of Surgery, The Aga Khan University Hospital, Karachi.

2 Dec, 1999 (1545 hrs - 1730 hrs)	Valvular Heart Disease Emerald
Chairman : Dr. Solmon Victor Moderator : Dr. Akhtar	Co_chairman : Dr. Mukhtar Ahmad
1545 hrs	**SURGICAL CLOSE MITRAL COMMISSUROTOMY: (A PROCEDURE THAT STILL HOLDS ITS PLACE) V-32** Sohail Khan Bangash, Abid Aslam Awan, M.Rehman NICVD, Karachi.
1605 hrs	**RHEUMATIC MITRAL STENOSIS MANAGED BY CLOSED MITRAL VALVOTOMY (CMV). V-25** Rehman K, Aslam S, Khan, R.A, Khan.J, Mannan.P Department of Cardiovascular Surgery Lady Reading Hospital, Peshawar , Pakistan.
1625 hrs	**CLOSE MITRAL VALVOTOMY IN PREGNANCY A SAFE PROCEDURE. V-1** Abid AA, Rehman M. Department of Cardiac Surgery, National Institute of Cardiovascular Diseases, Karachi, Pakistan
1645 hrs	**TRANS-SEPTAL APPROACH -A SAFE TECHNIQUE FOR THE COMBINED MITRAL AND TRICUSPID VALVE PROCEDRUES. 1994-98. V-12** Shah S.S. A.Awan A. Department of Cardio-Thoracic Surgery, Postgraduate Medical Institute, Lady Reading Hospital, Peshawar.
1705 hrs	**SURGERY FOR ACTIVE CULTURE -POSITIVE INFECTIVE VALVE ENDOCARDITIS: PREDICTORS OF EARLY AND LATE OUTCOME. V-15** C.Alexiou, S.M.,Langley, S.A. Livesey, J.L.Monro Department of Cardiac Surgery, The General Hospital, Southampton, U.K.

"DAY 3" DECEMBER 03, 1999 "FRIDAY"

Breakfast Session 0730 hrs – 0830 hrs	**BS 1**(Shalimar A):- **Surgery for Lung Cancer** **Mr. M. O. Maiwand** **Chair Person : Prof. S. Fahim-ul-Haq**	
	BS 2 (Shalimar B):- **Chair Person :**	
	BS 3 (Shalimar C):- **Myocardial Preservation** **Prof. F. L. Rosenfeldt** **Chair Person : Khalid Hameed**	
Plenary Session 0900 hrs – 1030 hrs (45 min each)	**Session I Crystal A**	**Session II Crystal B**
	Congenital:- **Ross Procedure** **Mr. D. Ross** **Chair Person:** **Dr. Zohair Al Halees** **Prof. Yagihara**	**Valvular:-** **Tissue Valves for Aortic Valve Surgery Stentless & Tissue Engineering** **Dr. M. O. Brain** **Chair Person :** **Dr. M. C. Tong / Mr. Dyde**
	Congenital:- **Late Fontan Attrition** **Mr. R. deLeval** **Chair Person:** **Dr. Zohair Al Halees** **Prof. Yagihara**	**Valvular:-** **Mitral Valve Surgery** **Prof. M. A. Cheema** **Chair Person :** **Dr. M. C. Tong / Mr. Dyde**

3 Dec, 1999 (1045 hrs - 1245 hrs) **Ischeamic Heart Disease** **Crystal A**

Chairman : Mr. C. Ratnatunga **Co_chairman :** Dr. M. C. Tong

Moderator : Dr. Khalid Hameed

1045 hrs	**CORONARY ARTERY REVASCULARISATION WITHOUT BYPASS WITH THE HELP OF OCTOPUS STABILISER. IH-33** Q Abid, S Gaynor, G N Morritt Cardiothoracic Unit, South Cleveland Hospital, Marton - Road, Middlesbrough, TS4 3BW.
1105 hrs	**CORONARY ARTERY BYPASS GRAFTING THROUGH LOWER HALF MEDIAN STERNOTOMY. IH-31** Arifur Rehman Khan, M.Rehman. N.I.C.V.D. Karachi.
1125 hrs	**TRANSOESOPHAGEAL ECHOCARDIOGRAPHY- A USEFUL ADJUNCT IN MINIMAL ACCESS CARDIAC SURGERY. IH-3** K S Rammohan, S C Griffin, S Bennett Department of Cardiothoracic Surgery, Castle Hill Hospital, Castle Road, Cottingham, HU16 5JQ.
1145 hrs	**MULTIVESSEL GLOBAL REVASCULARISATION ON A BEATING HEART USING INNOVATIVE TECHNIQUES FOR STABILISATION & AVOIDANCE OF ISCHEMIA-WITH ANGIOGRAPHIC FOLLOWUP. IH-19** Bedi Harinder Singh, Suri A, Kalkat MS, Sengar BS, Chawla R, Sharma VP, Mahajan V. Tagore Heart Care & Research Center, Jalandhar, Punjab, India.
1205 hrs	**A NON RANDOMISED TRIAL OF 'ON BYPASS' VS 'OFF BYPASS' CORONARY ARTERY REVASCULARISATION. IH-25** RP Casula, M Dar, H Ahmeidat, Gal Wilkinson, F Ciulli. Department of Cardiothoracic Surgery, Northern General Hospital, Sheffield, UK.
1225 hrs	**RESULTS OF CORONARY ARTERY BYPASS GRAFTING USING RAMA'S METHOD OF CORONARY STABILISATION. IH-30** Dr. Akhtar Rama, Dr. A.Munir-Prof. I.Gandjbakhch: Department of Cardiovascular and Thoracic Surgery, La Pitie University Hospital, 47 83 Boulevard de I Hospital, F-75013, Paris.

3 Dec, 1999 (1045 hrs - 1245 hrs)	Valvular Surgery	Crystal B
Chairman : Dr. Mark. O. Brain	Co_chairman : Dr. Solmon Victor	
Moderator : Dr. H. Zaman		

1045 hrs	**LONG-TERM CLINICAL RESULT OF THE PHILIPPINE HEART CENTER BIOPROSTHETIC HEART VALVE. V-23** Cheng CC, Aventura AP, Torres LD, LomibaoFB, Celino CG. AgunodPJ Department of Cardiovascular Surgery, Philippine Heart Center, Manila, Philippines.
1105 hrs	**BEHAVIOR OF THE HANCOCK 11 BIOPROSTHESIS IN PATIENTS AGES 11-40 YEARS. V-20** Zohair Al Halees MD, Begonia Gometza MD, Ali Al Sanie MD & Carlos Duran MD. King Faisal Specialist Hospital & Research Center, Riyadh, Saudi Arabia. International Heart Institute of Montana Foundation, Missoula, Montana, USA.
1125 hrs	**EARLY FOLLOW-UP RESULTS OF A SERIES USING THE TISSUEMED STENTLESS AORTIC VALVE. V-11** K S Rammohan, S C Griffin Department of Cardiothoracic Surgery, Castle Hill Hospital, Castle Road, Cottingham HU 16 5JQ.
1145 hrs	**A STENTLESS, PERICARDIAL MITRAL PROSTHESIS-TECHNIQUE OF IMPLANTATION AND EARLY RESULTS IN 40 PATIENTS. V-5** Martin J Sussman, Shirley Middlemost, Atul patel, M.Farooq. University of Witwatersand, Johannesburg, South Africa.
1205 hrs	**INTRA-OPERATIVE TRANS ESOPHAGEAL ECHOCARDIO-GRAPHIC (TEE) EVALUATION OF VALVULAR HEART DISEASE. V-30** Hussain A, Department of Cardiac Anaesthesia and ICU, Prince Sultan Cardiac Center, Riyadh, Saudi Arabia.
1225 hrs	**SCREENING CARDIOVASCULAR ASSOCIATED GENES BY EXPRESS SEQUENCE TAGS (ESTs). V-24** Liu yuqing, Demin Shen, Elly Sugiaman, Ding jinfeng, C.C.Liew Rajawali Hospital Bandung-Indonesia.

3 Dec, 1999 (1045 hrs - 1245 hrs)	Congenital Heart Disease	Emerald
Chairman : Mr. M. R. deLeval	Co_chairman : Dr. K. M. Cherian	
Moderator : Dr. T. Sherani		

1045 hrs	**THE REBOUND PULMONARY HYPERTENSION AFTER WITHDRAWING INHALED NITRIC OXIDE. C-16.** Hyun Woo Lee, Kook Yang Park. Department of Cardiac Surgery, Gil Heart Center, Inchon, Korea.
1100 hrs	**VENTRICULAR SEPTAL DEFECT - SURGICAL CLOSURE. C-8.** Maj Inam Ullah, Brig Syed Afzaal, Maj Gen M R Kiani. AFIC & NIHD Rawalpindi.
1115 hrs	**ULTRASTRUCTURAL ANALYSIS OF HEALING MECHANISM IN IMPLANTED POLYTETRAFLUROETHYLENE (PTFE) PATCH GRAFTS IN HUMAN HEARTS. C-5.** Shivaprakash K, Prof. Sarasabharati Arumugam. Institute of Cardiovascular Diseases, Chennai, India.
1130 hrs	**AMALGAMATION OF SINUS VENOSUS AND ATRIUM: EVOLUTION AND CLINICAL SIGNIFICANCE. C-20.** Solomon Victor, Vijaya M Nayak.. The Heart, Institute Chennai 600010, India.
1145 hrs	**CLOSURE OF ATRIAL SEPTAL DEFECT WITHOUT CARDIOPULMONARY BYPASS: THE SANDWICH OPERATION. C-11.** Warinsirikul W, Sangchote S, Tanamai S. Institute of Cardiovascular Diseases, Rajavithi Hospital, Bangkok, Thailand.
1200 hrs	**ANTERIOR SANDWICH APPROACH FOR AORTA-PULMONARY WINDOWS AN EVALUATION OF SURGICAL RESULTS. C-3.** Shivaprakasha K, Murthy K S, Puja handa, Usha Krishnan, K M Cherian. Institute of Cardiovascular Diseases, Chennai, India.
1215 hrs	**IMPROVEMENT IN OXYGEN SATURATION FOLLOWING BI-DIRECTIONAL CAVOPULMONARY ANASTAMOSIS FOR TRICUSPID ATRESIA. C-28.** Khan Asjad, Saddiq Masood, Cheema M. A. Punjab Institute of Cardiology, Lahore.

3 Dec, 1999 (1045 hrs - 1245 hrs)	Critical Care	Shalimar A
Chairman : Dr. Max. Ervine	Co_chairman : Dr. Mubashar Zia	
Moderator : Brig. Naseem Riaz		

1045 hrs	**THE THERMODYNAMIC PROFILE OF HEAT UPTAKE IN PATIENTS UNDERGOING HYPOTHERMIC CARDIOPULMONARY BYPASS, DOPEXAMINE AGAINST NITRATE FOR ACTIVE REWARMING. ICU-5** M. Ervine, M. Whitehorne, N. Chitkara, R. Ware Intesive Care Unit, King's College Hospital, London, England
1105 hrs	**EARLY EXTUBATION AFTER CORONARY ARTERY BYPASS GRAFTING DETERMINANTS OF PROLONG VENTILATION. ICU-7** Younas Khatri. National Institute of Cardiovascular Disease, Karachi, Pakistan.
1125 hrs	**PERIOPERATIVE MANAGEMENT OF PATIENTS UNDERGOING OFF-PUMP CORONARY ARTERY BYPASS GRAFTING-ANAESTHETIC CONSIDERATIONS. ICU-8** Yasin R, Perviaz J, Niazi M. Department of Anaesthsia, Surgical Intensive Care Unit, National Institute of Cardiovascular Diseases Karachi, Pakistan.
1145 hrs	**TOTAL INTERVENOUS ANAESTHESIA DURING OPEN HEART SURGERY. ICU-9** Dr. A. Mohsin, Dr. N. Zaidi, Dr. A. Bajwa. Department of Anaesthesia and Intensive Care, Punjab Institute of Cardiology, Lahore.
1205 hrs	**ANATOMICAL VARIATION IN INTERNAL JUGULAR VEIN IN PAKISTANI POPULATION AS SEEN BY SITE RITE II ULTRASOUND MACHINE. ICU-11** Dr. Fazal H. Khan, Hameedullah, Mujeedullah A. Rauf, Rehana S. Kamal. Department of Anaesthesia, The Aga Khan University Hospital, Karachi.
1225 hrs	**ABDOMINAL COMPLICATIONS AFTER OPEN HEART SURGERY: A STUDY OF OUTCOME AND VARIABLES IN 3039 CASES. ICU-4** Z. Tufail, N Patel, J Deane, BM Fabri The Cardiothoracic Centre, Thomas Drive, Liverpool UK.

3 Dec, 1999 (1045 hrs - 1245 hrs)	Cardiopulmonary Bypass	Shalimar B
Chairman : Mr. M. Whitehorne	Co_chairman : Dr. Azhar Bajwa	
Moderator : Col. Azhar Rasheed		

1045 hrs	**DOES NORMOTHERMIA DURING CPB INFLUENCE ENDOTOXIN AND TUMOR NECROSIS FACTOR RELEASE IN ELDERLY. CPB-4** Z Tufail, M Pullan, A Rashid, S Thomas, M Jackson, PG Browning. The Cardiothoracic Center, Thomas Drive, Liverpool, UK.
1100 hrs	**BLOOD CONSERVATION IN CORONARY ARTERY BYPASS SURGERY. CPB-1** ZA Jafri, NH Rizvi The Agha Khan University Karachi.
1115 hrs	**DELETERIOUS EFFECT OF CRYSTALLOID CARDIOPLGIA ON THE MYOCARDIAL MICROCIRCULATION. CPB-5** Chaudhry M.A. Belcher P.R., Day S.P., Nicol D., Wheatley D.J. Department of Cardiac Surgery, University of Glasgow, UK.
1130 hrs	**EXTRACARDIAC TOTAL CAVOPULMONARY CONNECTION: EVOLVING TECHNIQUES OF CARDIOPULMONARY BYPASS. CPB-6** MM Amanullah, A Hasan, JRL Hamilton. Department of Cardiothoracic Surgery. The Freeman Hospital, Newcastle England.
1145 hrs	**MYOCARDIAL PROTECTION. CPB-7** Muhammad Rashid Khan. Department of Cardiac Surgery, Dow Medical College Civil Hospital, Karachi.
1200 hrs	**BUBBLER VS MEMBRANE OXYGENATORS THE PESHAWAR EXPERIENCE. CPB-2** Hidayat Ullah, Aamer Bilal, Shahkar Ahmed Shah, Pervez Mannan. Perfusion Department, Govt. Lady Reading Hospital, Peshawar.
1215 hrs	**PERFUSION STRATEGIES IN INFANTS AND NEWBORNS. CPB-3** N.H.Rizvi The Agha Khan University Hospital, Karachi.

3 Dec, 1999 (1045 hrs - 1245 hrs)	Thoracic Surgery	Shalimar C
Chairman : Dr. K. Jeyasingham	Co_chairman : Dr. Prinya Sakivalak	
Moderator : Brig. S. Muaffar		

1045 hrs	**VIDEO ASSISTED THORACOSCOPIC MAJOR LUNG RESECTION. T-4** Ming-Chih Chou, Jang-Ming Su Division of Thoracic Surgery, Department of Surgery, Chung Shan Medical & Dental College Hospital, Taichung, Taiwan.
1105 hrs	**SURGICAL MANAGEMENT OF PULMONARY TUBERCULOSIS (THE KARACHI EXPERIENCE). T-23** Raheel Hussain, Khuda Bux Shaikh, Abdul Bari Khan. Department of Cardio-Thoracic Surgery, CHK, Dow Medical College, Karachi.
1125 hrs	**SURGICAL MANAGEMENT OF PULMONARY TUBERCULOSIS-AN EXPERIENCE AT LRH PESHAWAR 1990-97. T-5.** Shah S. S. A., Khan Z. Department of Cardio-Thoracic Surgery, Postgraduate Medical Institute, Lady Reading Hospital, Peshawar.
1145 hrs	**SURGICAL TREATMENT OF PULMONARY HYDATID DISEASE – PESHAWAR EXPERIENCE OF 150 CASES. T-3.** Amer Bilal, Shahkar Ahmad Shah, Zahoor Ahmed, Khalid Irshad Department of Cardio-Thoracic Surgery, Postgraduate Medical Institute, Govt. Lady Reading Hospital, Peshawar.
1205 hrs	**EMERGENT TUBE THORACOSTOMY FOR PENETRATING THORACIC TRAUMA. T-15** Amer Bilal, Shahkar Ahmad Shah, Zahoor Ahmad, Mohd. Salim Department of Cardiothoracic Surgery, Postgraduate Medical Institute, Govt. Lady Reading Hospital, Peshawar.
1225 hrs	**THORACIC SURGERY, JUNNAH POST-GRADUATE MEDICAL CENTER. T-26** Dr. Humayoon Sarwat, Prof. Syed Fahim-ul-Haq

3 Dec, 1999 (1330 hrs - 1530 hrs)	Critical Care	Crystal A
Chairman : Dr. Max. Ervine	Co_chairman : Dr. Mubashar Zia	
Moderator : Brig. Afzaal Ahmad		

1330 hrs	**THE THERMODYNAMIC PROFILE OF HEAT REDISTRIBUTION IN PATIENTS HAVING UNDERGONE HYPOTHERMIC CARDIOPULMONARY BYPASS AND SUBSEQUENT ACTIVE REWARMING: DOPEXAMINE AGAINST NITRATE FOR REDUCING THE "AFTERDROP " PHENOMENON. ICU-1** M Ervine, M. Whitehorne, N.Chitkara, R.Ware Intensive Care Unit, King's College Hospital, London, England.
1350 hrs	**INFECTIVE COMPLICATIONS OF RADIAL ARTERY CANNULATION IN OPEN HEART SURERY PATIENTS. ICU-10** Mohsin A., Zaidi N., Bajwa A. Department of Anaesthesia and Intensive Care, Punjab Institute of Cardiology, Lahore.
1410 hrs	**USE OF INHALED NITRIC OXIDE (iNO) IN THE ICU. ICU-6** Dr. Hussain A. Department of Cardiac Anaesthesia & ICU, Prince Sultan Cardiac Center, Riyadh, Saudi Arabia.
1430 hrs	**TIMING OF ENDOTRACHEAL EXTUBATION WITH TWO DIFFERENT ANAESTHETIC AGENTS FOR CORONARY ARTERY BYPASS SURGERY. IH-10** Dr. Rehana S. Kamal, Dr. Farouk Atiq, Dr. Fazal Hameed Khan, Dr. Hamid Iqil Naqvi. The Aga Khan University Hospital, Karachi, Pakistan.
1450 hrs	**HEMODYNAMIC RESPONSE IN CORONARY REVASCULARIZATION PATIENTS – COMPARISON OF TWO IV ANAESTHETIC AGENTS. IH-9** Dr. Farouk Atiq, Dr. Hamid Iqil Naqvi, Dr. Rehana S. Kamal, Dr. Fazal Hameed Khan. The Aga Khan University Hospital, Karachi, Pakistan.

3 Dec, 1999 (1330 hrs - 1530 hrs)	Thoracic Surgery	Crystal B
Chairman : Mr. M. O. Maiwand	Co_chairman : Dr. Hamid Hasan	
Moderator : Dr. K. Rasheed		

1330 hrs	**SURGERY FOR TRACHEAL MALIGNANCY. T-9** Ismid DI Busroh, Department of Thoracic Surgery, Persahabatan Hospital, Jakarta, Indonesia.
1350 hrs	**TRACHEOBRONCHOPLASTY FOR MALIGNANT AND BENIGN CONDITIONS: A RETROSPECTIVE STUDY OF 45 CASES. T-21** Anjum Jalal FRCS, K. Jeyasingham FRCS Frenchay Hospital, Bristol, UK.
1410 hrs	**NON-SMALL CELL LUNG CANCER (NSCLC) DISEASE SPECTRUM AND ROLE OF SURGERY. T-19.** Khan MR, Hasan SB, Sami S. Department of Surgery, Cardiothoracic Devision, The Aga Khan University Hospital, Karachi, Pakistan.
1430 hrs	**COMPARISON OF SPECTRUM OF DISEASE REQUIRING LUNG RESECTION "CASTLE HILL VS LADY READING HOSPITAL". T-14.** Amer Bilal, M.E.Cowen, Shahkar Ahmad Shah, Zahoor Ahmad. Department of Cardiothoracic Surgery, Postgraduate Medical Institute, Govt. Lady Reading Hospital, Peshawar, Castle Hill Hospital, Hull.
1450 hrs	**A REVIEW OF 70 CASES OF HYDATID LUNG DISEASE OPERATED GHULAB DEVI CHEST HOSPITAL.. T-28.** Shabbir Raza., S. A. Bhatti, Jawad Sajid Khan
1510 hrs	**OUTCOME OF 71 PATIENTS WITH PENETRATING CHEST TRAUMA PRESENTING IN EMERGENCY OF MAYO HOSPITAL, LAHORE. T-29.** Dr. Nasir Iqbal, Moeed Iqbal, Mirza Muhammad Anwar, Jaider Zaman

3 Dec, 1999 (1330 hrs - 1530 hrs)	Ischeamic Heart Disease	Emerald
Chairman : Prof. Rosenfeldt	Co_chairman :Prof. Rehman	
Moderator : Dr. Mukhtar Ahmad		

1330 hrs	**CHANGING TRENDS IN CORONARY ARTERY BYPASS SURGERY. IH-1** M.Ahmed, R.A. Badar, S.Khalil
1350 hrs	**A COMPARISON OF OPERATIVE MORTALITY IN ASIANS AND NON-ASIANS UNDERGOING CORONARY ARTERY BYPASS GRAFTING. IH-5** Dr. Zindrou, B Shine, JP Bagger, P Smith KM Taylor and CP Ratnatunga
1410 hrs	**PRE OPERATIVE RISK FACTOR EVALUATION BY EURO SCORING SYSTEMS, HOSPITAL MORTALITY AND SURVIVAL, EXPERIENCE OF CABG LAST 10 YEARS. IH-14** Bilal MBY, Azeem M The Department of Cardiac Surgery, AFIC/NIHD, Rawalpindi.
1430 hrs	**CORONARY ARTERY BYPASS GRAFTING VS CORONARY ANGIOPLASTY VS MEDICAL THERAPY IN THE ELDERLY. IH-13** Agunod PJ, Tria R, Cheng CC Philippine Heart Center, Metro Manila, Philippines
1450 hrs	**MID-TERM OUTCOME OF SURGICAL CORONARY OSTIAL PLASTY OUR EXPERIENCE. IH-17** Edvin Prifti, Massimo , Massimo Bonacchi, Andrea Salica, Marco Totaro, Fabio Miraldi Cosimo Comito, Giuseppe Mazzesi, Michele Toscano.
1510 hrs	**INTRA AORTIC BALLOON PUMP SUPPORT IN CORONARY ARTERY SURGERY : EXPERIENCE AT AFIC / NIHD. IH-2** Kamal Saleem, Masud ur Rehman Kiani, Syed Afzal Ahmed, Bilal Bin Yosuf, Azhar Rashid, Asif Ali Khan, Inam Ullah Khan, AFIC, Rawalpindi.

"DAY 4" DECEMBER 04, 1999 "SATURDAY"		
Breakfast Session 0730 hrs – 0830 hrs	**BS 1**(Shalimar A):- **Right Heart Bypass Operation** **Prof. T. Yagihara** **Chair Person : Mr. C. Lincoln**	
	BS 2 (Shalimar B):- **Lung Transplant** **Dr. Saleem Aziz** **Chair Person : Mr. M. O. Maiwand**	
	BS 3 (Shalimar C):- **TMR** **Prof. J. S. Khan** **Dr. K. M. Cherian**	
Plenary Session 0900 hrs – 1030 hrs (45 min each)	**Session I Crystal A**	**Session II Crystal B**
	Perfusion:- Myocardial & Cerebral Preservation & Perfusion Technique **Mr. M. Whitehorne** **Chair Person:** **Mr. Dyde/Brig. Naseem**	**Ischaemic:-** **Cardiac Reperfusion : Potential Metabolic Strategies** **Mr. Chandi Ratnatunga** **Chair Person :** **Mr.AForsyth/Dr.RPAkhtar**
	Critical Care:- **Non Cardiac aspects of cardiac intensive care...** **Dr. Max. Ervine** **Chair Person:** **Mr. Dyde/Brig. Naseem**	**Ischaemic:-** **Prof. M. Rehman** **Chair Person :** **Mr.AForsyth/Dr.RPAkhtar**

4 Dec, 1999 (1045 hrs - 1245 hrs)	Congenital Heart Disease Crystal A
Chairman : Prof. Yagihara	Co_chairman : Dr. D. Anderson
Moderator : Brig. Afzaal Ahmad	
1045 hrs	**SURGICAL MANAGEMENT OF COARCTATION OF AORTA WITH PATCH AORTOPLASTY. C-1.** Dr. Jamal Abdul Nasir, Dr. Muhammad Rehman, Dr. Mukhtar. NICVD, Karachi. Pakistan.
1100 hrs	**REVIEW OF THIRTY PATIENTS UNDER GOING P A BANDING FOR VENTRICULAR SEPTAL DEFECTS WITH PULMONARY HYPERTENSION, CLINICAL INDICATORS OF ADEQUATE BANDING. C-2.** Dr. Asjad Khan, Dr. S M Javed, Dr. Masood Sadiq, Dr. M.Amin and Prof. M.A. Cheemia.
1115 hrs	**BIDIRECTIONAL GLENN SHUNT. C-9.** Maj Inam Ullah, Brig Syed Afzaal Ahmad, Maj Gen Masud Ur Rehman Kiani, AFIC/NIHD Rawalpindi, Pakistan.
1130 hrs	**NOVEL TECHNIQUES OF BGS WITHOUT CARDIOPULMONARY BYPASS. C-13.** K S Murthy, Robert Coelho, Shivaprakasha K, Anil Punnoose, Wilson Thomas, k M Cherian. Institute of Cardiovascular Diseases, Chennai, India.
1145 hrs	**MINIMALLY INVASIVE OPERATION FOR PDA CLOSURE. C-17.** SB Hassan, MM Amanullah, D Husssain. Cardiothoracic Surgery, AKUH, Karachi.
1200 hrs	**RESULTS OF NEW VIDEO-ASSISTED THORACOSCOPIC SURGICAL (V.A.T.S.) TECHNIQUE. FOR PDA CLOSURE. REPORT OF 100 CASES. C-23.** Nezafati M H, Rafiei A Mirzai A. Department of cardiovascular surgery Ghaem Hospital Mashad, Iran.
1215 hrs	**LIMITED POSTERIOR THORACOTOMY FOR OPEN HEART SURGERY IN THE CURRENT ERA. C-4.** Shivaprakasha K, Murthy K S, Wilson T, Cherian K M. Institute of Cardiovascular Diseases, Chennai, India.

4 Dec, 1999 (1045 hrs - 1245 hrs)	Ischeamic Heart Disease Crystal B
Chairman : Brain Buxton	Co_chairman : Dr. M. C. Tong
Moderator : Brig. M. B. Y. Bilal	
1045 hrs	**A LOW COST, LOW STRESS METHOD FOR MINIMAL ACCESS CORONARY SURGERY. IH-15** K.S. Rammohan, S C Griffin, S S Shah, S Bennett. Department of Cardiothoracic Surgery, Castle Hill Hospital, Castle Road, Cottingham, HU16 5JQ.
1100 hrs	**CABG WITH LEFT VENTRICULAR ANEURYSM AT DR. ZIAUDDIN MEDICAL UNIVERSITY HOSPITAL. IH-27** Dr. Tariq M. Sherani, Dr. S. Sharif A Shah, Dr. Rehana, Dr. Mansoor, Mr. Aqeel. Dr. Ziauddin Medical University Hospital, Karachi.
1115 hrs	**A SUCCESSFUL SURGICAL REPAIR OF AN IMPENDING RUPTURE OF L.V. ANEURYSM, COMBINED WITH SEPTAL PERFORATION (VSD) AND RUPTURE OF PAPILLARY MUSCLE (MILD MITRAL REGURGITATION) AFTER ACUTE MYOCARDIAL INFARCTION. IH-24.** Paul Tahalele. Agung Prasmono, Puruhito, Bambang Wahyu Prayitno, Puger Rahardjo, J. Adiptanoto, Budi S. Pikir, Pranawa. Thoracic Cardiovascular Surgical Unit, Department of Aneasthesiology, Department of Cardiology, Department of Internal Medicines. Dr. Soetomo Teaching Hospital, Airlangga University Medical Faculty, Surabaya, Indoniesia.
1130 hrs	**BEATING HEART SURGERY WITH THE OCTOPUS II STABILIZER, LA PITIE EXPERIENCE. IH-34.** Azhar Munir,. A. J. Pavie, L.Lima, A. Rama, N. Bonnet, P. Leprice, I. Gandjbakhch. La Pitie Hospital, Paris, France.
1145 hrs	**RISK ADJUSTED ANALYSIS OF PATIENTS UNDERWENT CABG AT AKUH.. IH-29** Drs. M. Asim Khan, Sulaiman B. Hasan, Shahid A Sami. Cardiothoracic Division, Department of Surgery. The Aga Khan University & Hospital, Karachi
1200 hrs	**PRE-OPERATIVE PREDICTION OF POST CORONARY ARTERY BYPASS GRAFTING ATRIAL FIBRILLATION. IH-4** Mr. S Hasan, Mr. T Sunder, Mr. C T Lewis South West Cardiothoracic Center, Derriford Hospital, Plymouth.
1215 hrs	**MYOCARDIAL REVASCULARIZATION WITHOUT CP BYPASS. IH-37** Fayyaz Haider Hashmi MD, Khalid Hameed FRCS, Maliha Zia

4 Dec, 1999 (1045 hrs - 1245 hrs)	Valvular Surgery Emerald
Chairman : Mr. D. Ross	Co_chairman : Maj. Gen. Akram
Moderator : Dr. Mukhtar Ahmad	
1045 hrs	**DURABILITY OF MITRAL VALVE REPAIR WITH HOME-MADE ANNULOPLASTY RINGS. V-14** Warinsirikul W, Mokarapong P, Sangchote S, Chaiyodsilp S, Tanamai S. Institute of Cardiovascular Diseases, Rajvithi Hospital, Bangkok, Thailand.
1105 hrs	**MITRAL VALVE REPAIR FOR PURE MITRAL REGURGITATION AND MIXED MITRAL VALVE DISEASE. V-18** Zahidullah M., Zaman H, Cheema MA.
1125 hrs	**LEFT ATRIAL REDUCTION AND PULMONARY VEIN ISOLATION FOR CHRONIC ATRIAL FIBRILLATION IN PATIENTS WITH MITRAL VALVE DISEASE.. V-19** Dr. K.M. Cherian, N Madhu Sankar, V.M. Kurian, S. Rajan, Ali Faizal, Institute of Cardiovascular Diseases, Chennai, India.
1145 hrs	**CARDIAC SURGERY UNDER NORMOTHERMIC INFLOW OCCLUSION. V-31.** Ghaffar A, Rehman M. Department of Cardiac Surgery, National Institute of Cardiovascular Diseases, Karachi.
1205 hrs	**18 YEARS EXPERIENCE WITH REDO MITRAL VALVE SURGERY. V-8.** Kole S.D., Agnihotri Y.C, Dubey Anuradha, Swamidas S., Saksena D.S., S. Hallad.
1225 hrs	**REOPERATIVE SURGERY FOR VALVULAR DYSFUNTION OF THE PHILIPPINE HEART CENTER (PHC) BIOPROSTHESIS. V-4.** Cheng CC, Aventura AP, Rico AC. Division of Cardiovascular Surgery Philippine Heart Center Manila, Philippines.

4 Dec, 1999 (1045 hrs - 1245 hrs)	Free Paper	Shalimar A
Chairman : Dr. Solmon Victor	Co_chairman : Dr. T. Sherani	
Moderator : Dr. Abdul Waheed		

1045 hrs	**SURGICAL TREATMENT OF CONSTRICTIVE PERICARDITIS AN ANALYSIS OF OUTCOME. FH-1.** Haider Zaman, Abdul Waheed, Ammar Hameed Khan, Jawad Sajid Khan, Punjab Institute of Cardiology, Lahore.
1100 hrs	**HOSPITAL PERFORMANCE IN ITS FIRST DECADE, PUNJAB INSTITUITE OF CARDIOLOGY 1989 – 1999. FH-4.** Yunus A, Khan A H , Akhtar R P, Zaman H, Hameed K, Ahmad M, Khan J S, Cheema M. A. Punjab Institute of Cradiology, Lahore.
1115 hrs	**HEART TO HEART GROUP (C.Q.I. CIRCLE). FH-3.** Surriya Younas Mish (R.N.) Department of Cardiac Surgery, The Aga Khan University Hospital, Karachi, Pakistan.
1130 hrs	**CAN WE CHANGE TRENDS IN RHEUMATIC HEART DISEASE IN PAKISTAN ? V-36** Malik SM. Department of Cardiac Surgery, Social Security Hospital, Lahore / Jinnah Hospital, Lahore
1145 hrs	**PRIMARY CARDIAC NEOPLASMS: SURGICAL TREATMENT AND REVIEW OF RESULTS AT PIC / MAYO HOSPITAL, LAHORE. FH-2.** Haider Zaman, Abdul Waheed, Ammar Hameed Khan, Jawad Sajid Khan, Punjab Institute of Cardiology, Lahore.
1200 hrs	**CARDIAC TUMOURS.** Nadeem Ahmad, Muhammad Rehman National Institute of CardioVascular Disease, Karachi
1215 hrs	**COMPARITIVE ANALYSIS OF RECOVERY OF CARDIOPULMONARY BYPASS RESIDUAL BLOOD. CPB-8** Nadia. Mewawalla. The Aga Khan University Hospital, Karachi

4 Dec, 1999 (1045 hrs - 1245 hrs)	Thoracic Surgery	Shalimar C
Chairman : Mr. M. O. Maiwand	Co_chairman : Prof. Rathore	
Moderator : Prof. Perviaz Manan		

1045 hrs	**MINITRACHEOSTOMY AND THORACIC EPIDURAL ANALGESIA IN PATIENTS REQUIRING OESOPHAGECTOMY BENEFICIAL. T-25.** Q. Abid, K. Ureyethu, D Counsell. R. Khan Victoria Hospital, Whinney Heys Road, Blackpool, FY 3 8 NR.
1105 hrs	**ESOPHAGECTOMY FOR CARCINOMA OF THE ESOPHAGUS AND CARDIA. T-16.** Nabi M.S., Shah S. A. Department of Cardiothoracic Surgery, Postgraduate Medical Institute, Lady Reading Hospital, Peshawar, Pakistan.
1125 hrs	**TRANS-THORACIC HELLER'S MYOTOMY FOR ACHALASIA CARDIA - AN EXPERIENCE AT LADY READING HOSPITAL, PESHAWAR. T-7.** Shah S. S. A., Zahid Ullah Department of Cardio-Thoracic Surgery, Postgraduate Medical Institute, Lady Reading Hospital, Peshawar, Pakistan.
1145 hrs	**RETRO-STERNAL COLONIC INTERPOSITIONING FOR BYPASSING OESOPHAGUS-A SAFE OPTION IN SERIOUSLY ILL, DYSPHAGIC PATIENTS (1988-1998). T-6.** Shah S. S. A. Department of Cardio-Thoracic Surgery, Postgraduate Medical Institute, Lady Reading Hospital, Peshawar.
1205 hrs	**SURGICAL TREATMENT OF T-E FISTULA BEFORE WEANING MECHANICAL VENTILATOR-A CASE REPORT. T-8.** Tai-chow Chiang, Jen-Lon Cheng Division of Thoracic Surgery, Department of Surgery, Cardinal Tien Hospital, Taipei Taiwan, ROC.
1225 hrs	**DAY CARE THORACIC SURGERY. T-24.** Raheel Hussain, Khuda Bux Shaikh, Abdul Bari Khan, Department of Cardiothoracic Surgery, CHK, Dow Medical College, Karachi.

ABSTRACTS

HOMOGRAFTS FOR AORTIC VALVE OR ROOT REPLACEMENT IN INFECTIVE ENDOCARDITIS

C. ALEXIOU, S.M. LANGLEY, S.A. LIVESEY, J.L. MONRO

Department of Cardiac Surgery, The General Hospital, Southampton, UK

Objective: To assess operative mortality, re-infection, re-operation and survival rates following aortic valve or root infection for infective endocarditis.

Patients: Between Jan 1973 and Jan 1997, 19 patients (16 male, 3 female, mean age 54,1 years, range 21-75 years) underwent insertion of an aortic homograft for aortic valve or root infection. Native endocarditis was present in 16 and prosthetic endocarditis in 3. The offending pathogen was identified in 16 patients (Streptococci in 8 and Staphylococci in 8). Indications for surgery were cardiac failure (4), valve dysfunction (8), vegetations (5), root abscess (8), renal failure (4), embolism (2) and persistent sepsis (2). Follow up was complete for all patients (mean 6.2 years, range 3 months-23.8 years, total 119.3 patients years).

Results: There have been no operative deaths. Nine patients sustained peri-operative complications. There were no documented thromboembolic events or re-infection. Five developed aortic regurgitation with 3 of them requiring a re-operation. Freedom from re-operation at 10 and 20 years was 82.2% and 64.9%. There have been 5 late deaths, 3 of them cardiac. Actuarial survival for all patients at 10 and 20 years was 72.3% and 48.2%.

Conclusions: Although the numbers of patients involved are small, these data provide some evidence that aortic valve or root replacement for endocarditis can be accomplished with low mortality. Resistance with homograft from infection is excellent. Freedom from re-operation and survival are satisfactory.

PATHOLOGIC CHANGES ON THE IMPLANTED PORCINE AORTIC HOMOGRAFTS . (FRESH, CRYOPRESERVATION, ULTRAVIOLET IRRADIATION)

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Yonsei Cardiovascular Center, Research Institute, Seoul, Korea

Aims: Immunologic reaction is one of the major factors to deteriorate heterograft valve. Glutaraldehyde treatment decreases immunologic reaction,which is evoked by endothelial cell antigenic marker and increases calcification because of dead cells. For the longevity of heterograft valve, many attempts are done focused on anticalcification. Fibroblast has function of maintaining extracellular matrix. To achieve both purposes, porcine valves were treated by ultraviolet irradiation for eliminating the endothelial cells and cross-linking and cryopreservation for fibroblast survival. We implanted groups of treated valves into porcine abdominal aorta and observed different transplantation reaction by each method.

Methods: Aortic valves of adult pigs (90-110kg) were implanted into the infrarenal-abdominal aorta of the 3months old pigs (60kg). Because of size discrepancy, the aortic valve was trimmed as a bicuspid valve. No treatment (fresh valve) in 4, Cryopreservation in 8, 24hrs Ultraviolet irradiation in 2, and 2hrs Ultraviolet irradiation with cryopreservation in 2, were used as preservation techniques before implantation. These valves were explanted at one month, 2 months, and 3 months after implantation. The morphologic changes of explanted valves were observed by light microscope.

Results and Conclusions: Fresh valved conduit: Degeneration is not much at early phase, however, 3 months after, degeneration is accelerated significantly. Cryopreserved conduit: The shape of valve leaflets is preserved well and degeneration is negligible. Ultraviolet irradiated conduit with cryopreservation: The degree of the degeneration is more than that of cryopreserved conduit, however, the shape of valve leaflets is preserved well and the degree of cross-linkage of extracellular matrix was acceptable as that by 24 hours of ultraviolet irradiation. Ultraviolet irradiated conduit for 24 hours: The degree of degeneration and calcification is more than that by 2 hours irradiation with cryopreservation. All aortic wall has irregular scattered calcification. In conclusion, we think that cryopreservation method is the best for long term preservation of homograft valves. The method of ultraviolet irradiation for 2 hours with cryopreservation shows the possibility of long term! preservation method of heterograft

Repair of Moderate Aortic Valve Lesions Associated with Other Valve Pathology: A Ten-Year Follow-Up.

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King Faisal Specialist Hospital & Research Centre[1], Riyadh, Saudi Arabia
The International Heart Institute of Montana Foundation[2], Missoula, Montana, USA

Background: The presence of a moderate aortic valve (AV) lesion associated with other pathologies that require surgery represents a problem since both ignoring or replacing the valve seems unsatisfactory. AV repair could be an attractive alternative if shown to perform satisfactorily.

Methods: In an attempt to evaluate this possibility, all consecutive AV patients (pts) operated between July 1988 and July 1998 were reviewed. Out of 1,561 AV pts, 222 underwent repair (14%), and 78 of them (study group) had moderate lesions associated to mitral (68), tricuspid (34), or coronary (4) disease. Mean age was 28 years (yrs), range 2 – 66, 79% were rheumatic, 68% in sinus rhythm and 78% in NYHA class III-IV.

Results: There were 7 hospital deaths (9%) and 2 pts were lost to follow-up (97% complete). Late mortality was 11% and 9 yrs actuarial survival was 87% ± 4.7 (excluding hospital mortality). Only 2 pts were anticoagulated and 3 (4%) embolic events (actuarial freedom 93% ± 4.06). 18 pts required reoperation without mortality. The aortic repair was not touched in 5 and in the remaining 13 replaced for severe stenosis (4) or regurgitation (9). All reoperated pts had rheumatic etiology and had severe mitral (after 10 repairs and 7 replacements) and/or tricuspid (6) dysfunction. Actuarial freedom from aortic dysfunction at 7 yrs was 66.89% ± 8.64.

Conclusion: Repair of associated moderate aortic valve lesions is worth considering, even in a predominately young rheumatic population.

Midterm Results of Aortic Root Enlagement with AVR in Patients with Narrow Aortic Root and AS

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* Department of Thoracic and Cardiovasculsr Surgery, Inje University Pusan Paik Hospital

-Abstract-

Background. For AVR using conventional prosthetic valves in adult patients with a narrow aortic root, aortic root enlargement is necessary to reduce postoperative pressure gradient across the aortic valve(△P). An evaluation of early and mid-tem results of aortic root enlargement with AVR and echocardiographic follow up of △P and left ventricular function was performed.

Method. From Aug. 1991 to Feb. 1998, eighteen patients aged 17 to 59 years (mean, 38±12 years) underwent Manouguian procedure with AVR. Aortic annular circumstance was enlarged 10.0 mm to 18.0 mm (mean, 12.6±6.3 mm). Eight patients (44.0%) had NYHA class III status before operation, and seven cases of them underwent concomitant MVR. Valve pathology was ASr in 6 cases, AS in 4 cases and ASr + MSr in 8 cases. Replaced valve size was 21 mm in 8 cases, 23 mm in 10 cases, and used valve was St. Jude Medical in 10 cases and Carbomedics in 8 cases.

Results. Follow-up duration was 6 to 57 months(mean, 26±18 months), and total follow-up was 3,444 patient-month. There were one hospital death and one late death, therefore, actuarial survival rate was 85.7% at 56 months. Peak △P was decreased significantly at postoperative mid-term period as 16± 5 mmHg, compared with the preoperative one (42±5 mmHg) ($p<0.01$). LVMI(gm/㎡) was also diminished as 35.8%(114.92±35.95 gm/㎡) at postoperative mid-term period, compared with preoperative one (179±56 gm/㎡) ($p<0.05$).

Conclusion. The Manouguian procedure in patients with small aortic root during AVR is acceptable because of its facility and sufficient annular enlargement for one or two more larger size valve.

SURGERY FOR SMALL AORTIC ANNULUS

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Dept of Cardiac Surgery, Armed Forces Institute of Cardiology & National Institute of Heart Diseases, Rawalpindi

Aim

Small aortic annulus where optimal prosthesis is not implantable requires various techniques and modifications which is not so common. We present our experience in seven patients.

Methods

From Jan 95 to June 99, 394 aortic valve procedures were done. In 07 (1.8%) aortic annulus was 17 mm or less. Five patients underwent KONNO-RASTAN, one had MANOUGUIAN and one had ROSS-SWITCH PROCEDURE.

Results

KONNO-RASTAN procedure resulted in very significant increase in annulus while 10 mm increase was possible with MANOUGUIAN technique. Only two patients out of five are alive at 46 and 38 months who had KONNO-RASTAN. Patients who underwent Manouguian Procedure and Ross-switch are fine after 22 months and one and a half month respectively.

Conclusion

1. KONNO-RASTAN very small annulus and left outflow tract can be enlarged adequately, but procedure is extensive with higher complication rate.

2. MANOUGUIAN TECHNIQUE is easier to perform but only limited annular enlargement is possible.

3. ROSS-SWITCH with or without modification is the choice, for which learning of technique and homograft laboratory are essential.

INITIAL EXPERIENCE WITH AORTIC HOMOGRAFTS

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Mayo Hospital, Lahore

Thirty patients with aortic valve disease were operated and antibiotic- preserved Homograft aortic valve was inserted using a free hand technique.
These are followed up for one and one-half to four years. There were two hospital deaths and four late deaths, only one of which was valve related Two-year survival was 77%. One patient required re-operation for severe AR and three patients had important aortic regurgitation (AR). AR occurred in-patients with markedly dilated or distorted proximal aorta. Post operatively twenty of the surviving patients improved in their NYHA class and four stayed in their pre-operative NYHA class. Their ventricular dimensions and Ejection Fraction also showed progressive improvement. Aortic homograft valve replacement is a good alternative to prosthetic valve in view of the absence of anticoagulation, thromboembolism, resistance to endocarditis and sudden death from valve failure. With better harvesting, preservation and patient selection, results can be further improved.

BILATERAL INTERNAL MAMMARY ARTERY: IS DIABETES STILL A RISK FACTOR FOR STERNAL COMPLICATIONS?

M.A.IQBAL, AO CHUKWUEMEKA, AT FORSYTH
Dept. of Cardiac Surgery, Kings College Hospital, London.

BACKGROUND: The use of both internal mammary arteries (IMA) for coronary artery bypass grafting(CABG) in diabetic patients has been associated with a higher incidence of sternal wound complications.

METHOD: Data was collected prospectively on the PATS database for all the patients undergoing cardiac surgery between April 1992 and November 1997. The data was analysed with reference to the incidence of diabetes and sternal complications.

RESULTS: 3075 patients underwent isolated CABG with one or both IMAs. Of these 2476 were males (74%) and 599 female (26%), with a mean age of 62 years (28-89 yrs.). Bilateral IMA grafting (BIMA group) was performed in 2301 patients (75%) and 25% had a single IMA graft (SIMA group). The two groups did not differ significantly in age, Parsonnet score or mortality (SIMA: 3.4%, BIMA: 4.6% p=0.15) twelve percent (n=375) of patients were diabetic (74% male). In diabetics, BIMA were used in 254 patients (68%) and SIMA was used in 121 (32%). Sternal wound complications occurred in 88 (2.9%) patients (19 diabetic, 69 non-diabetic). We found no significant difference in sternal wound complications between the BIMA and SIMA groups (2.5% vs. 3.9%; p>0.05). The incidence of sternal wound complications in diabetic patients was significantly greater than in non-diabetics (5.1% vs. 2.6%; p=0.01). in the BIMA group 12 of the 254 diabetic patients (4.7%) had sternal wound complication compared to 7 (5.8%) of the 121 diabetics in the SIMA. This difference between BIMA and SIMA was not significant (p=0.63) no differences were seen among the diabetic patients who had sternal wound complications in the BIMA group with reference to sex (7/254-2.8% male and 5/254-2.0% female). Among the non-diabetic patients, sternal complications occurred in 46 (2.2%) of 2046 in the BIMA group and 23 (3.5%) of the 652 in the SIMA group (p>0.05).

CONCLUSION: The use of both internal mammary arteries for CABG in diabetic patients is associated with an acceptable incidence of sternal wound complications and is similar to that in non-diabetic patients who have a SIMA graft.

TEN-YEAR RESULTS OF THE RIGHT INTERNAL THORACIC ARTERY GRAFT: FACTORS INFLUENCING PATENCY.

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Dept of Cardiac Surgery, Austin & Repatriation Medical Centre[1], Dept of Cardiology, Epworth Hospital[2], Barker Medical Research Institute[3], Melbourne, Victoria, Australia

Objective: The pedicled left internal thoracic artery (LITA) when grafted to the left anterior descending (LAD) is generally accepted as the conduit of choice. There are a few data about the patency of free grafts or other ITA/ coronary artery graft configurations. This study analyses the association between intraoperative graft and coronary artery variables and the late patency of ITA grafts.
Methods: 893 patients with 1279 ITAs (LITA 885, RITA 394) who had CABG between 1984 and 1998, underwent re-angiography for evidence of myocardial ischemia. The ITA, target artery, the diameter of the ITA and coronary artery and presence of a proximal anastomosis with the aorta were recorded at the initial procedure. The follow-up was 67.98±39.8 (mean±SD) months (range 0.1-171.6) with a total follow-up of 5058.9 patient years. The relationship between intra-operative variables and graft patency was assessed using the Cox Proportional Hazard Model.
Results: Highest ITA failure rates were associated with grafting a native coronary artery with a stenosis of less than 60% RR 2.5(95% CI, 2.0-3.0) $P<0.01$, and the use of free grafts RR 1.8 (95% CI, 1.3-2.3) $P=0.04$. When the RITA was analysed separately, grafting the right coronary artery was an additional risk factor RR 2.3 (95% CI, 1.7-2.9) $P=0.02$
Conclusion: Preference should be given to grafting arteries with a high grade stenosis or occlusion using pedicled rather than free ITA grafts and grafting left side arteries. Pedicled right ITA grafts to the left system either passing anterior to the aorta or through the transverse sinus were not associated with a poor outcome.

MYOCARDIAL REVASCULARIZATION IN PATIENTS WITH DIABETES MELLITUS

FAYYAZ HAIDER HASHMI MD, KHALID HAMEED FRCS, SEEMIN NOOR

A retrospective review of diabetic patients undergoing primary or Redo-CABG between May 1997 and September 1999 is presented and results are compared to non-diabetic patients undergoing the same in that period. A total of 714 patients underwent CABG of which 252 or 35% were diabetics (D). 248 had primary and 4 had redo-CABG. Male to female ratio was 7:1 in diabetics(D) and 13:1 in non-diabetics(ND). EF was 50% or greater in 66% D Vs 73% in ND, EF 35 - 49% in 17% in D Vs 8% in ND and EF 15 - 35% in 11% in D and 18% in ND patients. Average no of grafts were 3.3 in D and 3 in ND. 80% of diabetics received at least one IMA Vs 97% in the ND groups. 9% had Bil IMAs Vs 15% in ND. Radial artery use was equal at 13% each in both groups. Inotropic (Dobutamine) use was 56% and 52% respectively, Adrenaline was required in 9% Vs 3% and IAB needed in 5 (2%) Vs 1(0.6%).

Complications: Superficial wound infection was the most common complication, 19% in D Vs 7% in ND group. There were 5(2%) sternal wound dehiscence in SD and 1 (.25) in NG group. Only one patient in Diabetic group with Bil IMA developed sternal dehiscence. Peri-operative new Q wave was present in 8(3%) in D vs. 5(1%) IN ND GROUP. Mortality rate was 7 (2.7%) in D Vs 8 (1.5%) in ND group. Causes of death were Cardiogenic shock in 3, Recurrent arrhythmia's in 1 patient with EF 15%, Renal failure in 1, CO2 necrosis and CP arrest leading to MOF in 1 and Hyperkalemic arrest in 1 patient. No patient died of infection, be it superficial or deep in D group while one patient in ND group died of mediastinus and sternal wound dehiscence. Rest were secondary to Low CO State in 5 and Coagulopathy and recurrent V Tech in one each. All deaths occurred in males in diabetics while there were 3/8 deaths in females in ND group.

Conclusion: Complete Myocardial Revascularization can be accomplished with safety in Diabetics with acceptably low mortality albeit slightly higher incidence of infection and peri-operative MI as compared to non-diabetic patients.

Arrhythmias after coronary artery bypass grafting :
A multivariate analysis of predictors of morbidity.

Anjum Jalal , (1) Haider Zaman (2).
(1) The Cardiothoracic Centre, Liverpool, U.K.
(2) Punjab Institute of Cardiology, Lahore, Pakistan.

Aim : To evaluate the influence of various factors In producing postoperative arrhythmias after open heart surgery by using the techniques of multivariate analysis.
Patients & Methods: One hunderd consective patients of mean age 53.91(±9.81) who under went coronary artery surgery were studied. Median number of coronary artery grafts was three, and 84% had left internal mammary artery.The average (±standard deviation) of ejection fraction, bypass time, cross clamp time and total operating were 54% (±12.24), 116(±48.33), 58 (±28.09), 230 (±89.07), minutes respectively. Frequency distributions and summary statistics were calculated for 12 variables namely: age, urgency of operation, post-operative discontinuation of beta- and/or Ca-channel blockers, total no. of grafts, bypass time, cross-clamp time, total operating time, ejection fraction, use of LIMA , use of RIMA, endarterectomy and method of myocardial preservation. Logistic regression analysis of all these variables was performed to define the role of individual variables in the production of arrhythmias in this group. Co-officient of correlation (R) was calculated for each variable. Hosmer and Lemeshow test was used to asses the Goodness-of-Fit. Univariate analysis and χ^2 test was also done to compare the differences in the effect of these parameters.
Results: Only three variables namely ejection fraction, no. of grafts and bypass time had significant correlation with the presence of postoperative arrhythmias. Ejection fraction and number of grafts had negative correlation (R being -0.01951 and -0.1182 respectively) whereas bypass time had positive correlation (R= 0.0653).
Conclusion: In this model only low ejection fraction, less number of grafts, and increased bypass time appear to be the contributary factors for post-operative arrhythmias. Contrary to the common impression older age, distcontinuation of calcium channel blocker and/or betablockers has no role in generation of postoperative arrhythmias.The logistic regression equation based on this model has a high predictive value for the post-operative arrhythmias.

EARLY HOSPITAL DISCHARGE POST CONVENTIONAL 'ON PUMP' COMPLETE MYOCARDIAL REVASCULARISATION

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Department of Cardiothoracic Surgery, Northern General Hospital, Sheffield, UK.

Background. 'Off pump' coronary artery bypass grafting (CABG) has been associated with a decreased postoperative morbidity and length of hospital stay. We designed a 'fast-recovery' protocol with the intent to achieving an early post operative hospital discharge after conventional 'on pump' CABG.

Methods. The data of 112 consecutive patients (mean age 60 ± 8 years) who underwent isolated CABG during a 6-month period were retrospectively reviewed. A 'fast -recovery' protocol was designed with emphasis on surgical, anaesthetic and physiotherapeutic techniques, post-operative pharmacological atrial fibrillation prophylaxis and minimal use of diuretics. Ninety-eight percent of the patients were operated on an elective basis, mean Parsonnet score was 7± 4, the average number of grafts per patient was 3. Extensive use of arterial grafts (2 or more) was achieved in 56% of the patients equal or below 60 years of age in the attempt to offer to them a 'total left ventricular myocardial revascularisation'. All operations were performed on normothermic cardiopulmonary by-pass with intermittent aortic cross-clamping and ventricular fibrillation.

Results. The mean cardiopulmonary bypass time and the mean total cross-clamp time were 61.7 minutes (STD= ± 23.4) and 10.7 minutes (STD= ± 7.5) respectively. Mean extubation time post surgery was 6.9 hours (STD= ± 4.7). The 30-day mortality rate for the entire group was 0%. The average length of hospital stay was 4.8 ± 1 days. The incidence of atrial fibrillation was 5.4 % in the entire series. Readmission rate within six weeks post discharge was 3.6%, 3 patients were readmitted because of suspected deep vein thromboses and one because of atrial flutter. 32% of the patient were discharged home by the 3rd or 4th post-operative day and all 112 patients were reviewed electively in outpatient clinic at 6 weeks post surgery.

Conclusions. A 'fast-recovery' protocol can be applied to patients undergoing conventional surgical complete myocardial revascularisation regardless of the presence of non cardiac co-morbid conditions. A '3-day discharge home' policy is feasible in many patients and it favourably compares to the reduced postoperative length of stay reported in the 'off bypass' CABG series.

CABG IN LOW E . F (15% to 30%) AT DR ZIAUDDIN MEDICAL UNIVERSITY HOSPITAL

DR TARIQ M. SHERANI, DR S. SHARIF A. SHAH, DR REHANA, DR MANSOOR, MR AQEEL

AIM :

The aim of this study is two fold

i that patients with severe L.V.Dysfunction have slightly highier mortality but are not inoperable .

ii Long term theses patientslead an active pain free life

METHOD : :

Study of 300 cases of severe L.V .dysfunction for CABG during the period of 1991 to 1999 . Inclusssion criteria was E.F of 25% or less. 170 were of E.F 20% to 25%,110 patients were of E.F 20%, 20 pt.s had E.F of 15% .In three pt.s severe mitral regurgitation of + 4, was repaired with carpentin ring annuloplasty. IABP was used in 78 pt.s . 5patients were put on left ventricular assist device for 2 hr.s to 12 hr.s

250 patients underwent conventional CPB and 50 patients had grafts off pump . Average no. of grafts were 3.3 .

RESULT: ::

:n hospital Mortality was 9% and Morbidity of 1%, where 2 patients had CVA and one ARF. All the patients on L.V.Assist device did not make it through . 209 patients post operatively had improved E.F on tissue Echo , 70 patients has no change in E.F but they were angina free

CONCLUSION::

Total revascularization with use of IABP and good myocardial Preservation on low E.F patients gives excellent long-term results .

Tetralogy of Fallot - Total Correction

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Aim This paper presents the analysis of the retrospective study of the patients of Tetralogy of Fallot having total correction.

Method This retrospective study was carried out in the thoracic and cardiovascular surgical dept of AFIC & NIHD Rawalpindi Pakistan for total correction of the patients of tetralogy of Fallot between Jul 1989 to Jun 1999. It involved a series of 405 patients aged ranging from 2 to 35 years. There were 227 males and 128 females patients. Bt Shunt OPeration was done in 40 patients Manocuspal Patch was used in 57 patients.

Results 27 patients died in the early post operative period and 9 patients during the follow up period. 7 patients at complete heart block. 4 patients had reoperation for patch dehescence. When this study was completed 71% patients were in class 1 or 2

Conclusion In the early middle and long term follow up the results obtained with monocusp patch is satisfying. Nevertheless further long term assessment is needed.

REVIEW OF THIRTY ADOLESCENT AND ADULT PATIENTS UNDERGOING TOTAL CORRECTION OF FALLOTS TETRALOGY

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Background : Late patient presentation and diagnosis remains a problem for developing countries and therefore we continue to come across patients with Fallots Tetralogy in adolescent and adult age group.

Aim : To review results in older tetralogy patients and problems faced in management.

Method : This is a retrospective study of thirty patients of over 12 years of age operated between Jan. 98 to Oct. 99 at the Punjab Institute of Cardiology for fallots Tetralogy : Age range was from 12 to 37 years , weight 25 to 60 Kg, 22 males and 8 female, 7 patients had previous surgery 2 RBT shunts 6 LBT shunts : all patients had preoperative echocardiogram and cardiac catheterization standard median sternotomy, cooled to 24° C, autologous pericardium treated with glutraldehyde was used for RVOT reconstruction, 8 patients had transannular patch, 14 patch to MPA extending to bifurcation, 2 extending to LPA and in 6 no patch was used , VSD closed through Right Atrium by an incision parallel to AV grove. Dobutamine was used as the main inotrope.Patients were ventilated for 6-14 hours in intensive care.

Results : 1 Reexploration for bleeding, this patients had Hb 22, 1 patient had delayed chest closure, 1 table death could not come off bypass and 1 late death from infective endocarditis.

Conclusion :

- Operating time is more in patients who have had previous shunts.
- Approach to shunt trough extrapericardium is satisfactory.
- Transatrial approach with incision parrellel to AV grove gives good exposure.
- Polycythemic patients have more bleeding, use of plasma and platelets helps.
- There is marked improvement in patients in term of O_2 saturation and exercise tolerance following surgery.

MODIFIED BLALOCK-TAUSSIG SHUNTS (MBTS) AT NATIONAL INSTITUTE OF CARDIOVASCULAR DISEASES (NICVD) KARACHI;10-YEARS EXPERIENCE.

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Because of economic limitations MBTS is being performed as a palliative procedure at NICVD very frequently in infants and children. 940 MBTS were performed over a period of 10 years(1989-1998).The patients records were retrospectively analysed and the results of the surgery are presented.

The procedure performed in our institute is anastomosis between subclavian artery and ipsilateral branch of pulmonary artery using Goretex conduit.906 shunts(96.4%)were performed on the right side while 34 shunts (3.6%) were on the left side.
The age of our patient population was 1 day to 12 years with a mean of 2.9 years(Median :17 months).510 patients(54.3%)were male and 430 (45.7%) were female.641 patients (68%)had Tetralogy of Fallot and the remain-ing 299 (32%) had various complex heart diseases.
The commonest complication encountered in our series was excessive bleeding requiring re-exploration.The overall mortality was 8%. For patients with TOF it was 6% and for those with other complex heart diseases it was 11%. Determinants of high mortality include emergency operation during spell, malnutrition,delayed referral and complexity of the disease.

ANOMALOUS LEFT CORONARY ARTERY FROM THE PULMONARY ARTERY (ALCAPA); AN IMPORTANT AND TREATABLE CAUSE OF CONGENITAL ISCHEMIC CARDIOMYOPATHY.

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INTRODUCTION: Identification of an ALCAPA demands urgent surgical attention. Myocardial infarction and ongoing ischemia are a direct consequence with subsequent left ventricular and papillary dysfunction with mitral regurgitation. The objective of this presentation is to share our experience of treating anomalous left coronary artery arising from the main pulmonary artery in children presenting with cardiac failure secondary to ischemic cardiomyopathy between 1993 to 1999 at the Freeman Hospital.

METHODS: Retrospective review of the case records of all patients who underwent surgery for ALCAPA over the last 5 years. The variables studied were clinical presentations, diagnostic techniques, operations, & postoperative course.

RESULTS: 7 children, 4 males and 3 females had ALCAPA. The first patient had a Takeuchi's procedure while the subsequent 6 patients underwent reimplantation of LCA onto the Aorta. The age ranged from 3-15 months, while an asymptomatic boy was 5 years. The indications for surgery were poor left ventricular functions with moderate mitral regurgitation in 5, and two were incidentally found to have ALCAPA. The method of CPB changed from circulatory arrest to conventional CPB with hypothermia. All the patients required post-operative inatropes, three required IABP and three had delayed closure of sternum. Post-operative complications were mainly infections. There was a single mortality in the patient who had a Takeuchi's procedure, all the others went home with follow up echocardiograms showing improving left ventricular functions and diminishing mitral regurgitation.

CONCLUSION: Children with ALCAPA do well post-operatively even though they may present with ischemic cardiomyopathy. Echocardiography provides adequate information for the diagnosis of ALCAPA.

CURRENT CONCEPTS FOR SURGICAL MANAGEMENT OF VSD, PULMONARY ATRESIA AND MAPCAs

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AIM : This complex subset remains one of the most challenging groups to manage surgically. We report our experience with the evolving surgical management for this anomaly.

METHOD : From 1993 to March 1999, 46 patients were surgically treated in our Institute. The age ranged from 6 months to 24 years (Median 3 years). There were 132 MAPCAs, ranged from 1-5 with mean 3. They were divided into 3 groups according to the type of approach. In the earlier period, 14 patients were treated with multistage procedures through thoracotomies and final correction via sternotomy (group I) (Iyer & Mee ATS'91). In the recent period 28 patients through median sternotomy (group II) (Reddy & Hanley JTCVS –95, Murthy & Cherian ATS'99) and 4 patients via Clamshell approach (because of previous intervention (group III) had complete unifocalisation ± final repair

RESULTS: In group I, 14 patients had 21 procedures (1.5 procedures/patient) out of which 3 patients (21 had final correction). There were two death (14%). In group II, 28 patients and RV to PA homograft conduit in 8 (28%) patients and central shunt in 4 (148 patients). There were 3 deaths (10%). In group III, two patients had complete repair.

CONCLUSION : With median sternotomy and clamshell approaches all patients had single stage complete unifocalisation. They also reduce the number of operations, hospitalisation and costs compared to multi stage thoracotomy procedures. With this approaches more number of patients will have final correction. To conclude single stage complete unifocalisation is a logistic alternative to multistage procedures.

MUSCULI PECTINATI IN RIGHT AND LEFT ATRIA.

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Musculi pectinati exist in both right and left atria with identical design. and purpose. The atrial appendages embrace the great arteries. Behind the transverse sinus the anterior surfaces of both the atria slope forwards on either side as the medial surfaces of the bodies and the atrial appendages upto a sharp acute margin. Lateral to this acute margin, the convex outer surfaces of the appendages merge witthe outer surfaces of the body of the corresponding atrium. Which reach upto the atrioventricular grooves inferiorly on both sides and merge with anterolateral walls of the cavae on the right side.

The musculi pectinati are designed to empty the appendage and the body. There is a transvere muscle band straddling both the atria along their anterosuperior margin. On either side this band splits into two. The right outer band skirts the superior vena caval orifice anteriorly and descends down upto the inferior caval orifice, bends around onto the inferior surface of the atrium and reaches and extends parallel to the atrioventricular groove, upto the crux of the heart. **Three multipennate arrangements** of the musculi pectinati are seen in each atrium. One in relation to the taenia major, an offshoot of the outer band near its origin which courses along the acute margin of the atrium. From the taenia major musculi pectinati extend onto the inner and outer surfaces of the appendages in a multipennate fashion.. The other two multipennate arrangements are in relation to the inner band. One is seen on the inner surface of the body and the appendage based on the inner band cranial to the atrioventricular annulus. The second multipennate arrangement is present spread over the body of the atrium based on the outer band near the acute margin. Multipennate arrangements serve to reduce the area of the atrial wall and help in emptying.

Strap like arrangement of musculi pectinati connect the inner and outer bands lateral to the mutipennate arrangement coursing upwards from the para annular segment of the outer band near the acute margin. These bands serve to pull the atrioventricular annulus upwards and outwards towards the outer band during atrial systole . This movement aids atrioventricular transfer of blood with least effort like pushing in legs when the pants are pulled up.

Identical multipennate and strap arrangements are seen in the left atrium, if the left atrial wall is examined by transillumination, except that there are no cavae, Eustachian or Thebesian valves to relate to.

These findings are illustrated based on a study of 25 normal human autopsy hearts collected at random. Atriotomies should be designed to minimise damage to the arrangement of musculi pectinati. An interpectinate incision across the body of the atrium medial to the multipennate arrangement coursing up from the paraannular band would disturb the musculi pectinati least. Atriotomies in the smooth sinus venareal parts of the atria would avoid disturbance of musculi.

CLINICAL PROFILE AND OUTCOME OF PATIENTS UNDERGOING BLALOCK-TAUSSIG SHUNT – A THIRD WORLD EXPERIENCE

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Aim To determine the risk factors for and clinical outcome of patients receiving the Blalock-Taussig shunt in a tertiary care hospital in the third world.

Method A retrospective study of 70 Blalock-Taussig shunt procedures in 63 patients, performed over an 8-year period.

Results Most of the procedures (54.0%) were done on children less than four months of age. Thirty-four (54%) patients had Tetralogy of Fallot with a wide spectrum of lesions in the remainder. The classical Blalock-Tuassig shunt was performed in 6 (9.5%) patients and the modified Blalock-Taussig shunt was used in the remainder. Only two (4%) deaths occurred directly due to shunt failure, which developed in a total of ten patients. In those who were followed up there was a 5% incidence of clinical congestive cardiac failure and 22.5% continued to fail to thrive. Of the 16 total deaths, six had serious co-morbid conditions pre-operatively.

Conclusions The Blalock-Taussig shunt is a relatively safe palliative procedure, requiring lesser resources and expertise, making it a suitable option in the Third World.

A STUDY OF ARRHYTHMIA FOLLOWING PULMONARY OPERATION IN PATIENTS WITH LUNG CARCINOMA

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A total of 238 patients undergoing resection of lung cancer were studied for the occurrence of postoperative arrhythmia. Transient arrhythmia was observed in 43 of them (18.1%). Ninety-one percent of 43 patients developed atrial fibrillation (Af), even though no arrhythmia was noted on ECG in any patient preoperatively. Cardiac dysrhythmia occured 5.2±3.8 days afer operation and lasted for 1.3±0.9 days (mean±SD). There was a significant difference ($p<0.05$) in the incidence of postoperative arrhythmia between the male group (39/188=21%) and the female group (4/50=8%), however the cause of a difference is unknown. The incidence was higher in patients undergoing pneumonectomy than in those undergoing lobectomy. Patients, who suffered from postoperative arrhythmia, has significantly low values on pulmonary function test ($FEV_{1.0\%}$=68.7%) preoperatively. The increased cardiac load after the reduction of the pulmonary vascular bed was regarded as the most important facor of arrhythmia.

Prophylactic administration of digoxin was performed in another 61 male patients after resection of lung cancer. And it was found to be effective in decreasing the incidence of postoperative atrial fibrillation (5/61=8%).

FIVE YEAR EXPERIENCE OF THORACIC TRAUMA IN AN URBAN TERTIARY CARE CENTRE IN SOUTHERN PAKISTAN.

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OBJECTIVE: To analyze the spectrum and outcome of adult patients admitted with thoracic trauma at a university hospital during a five-year period.

METHODS: The patients were identified using the hospital information system that codes patients according to ICD-9-CM system. A retrospective chart review of identified patients was than carried out and all adult patients who presented within twenty-four hours of injury and admitted in the hospital were included. The collected data was analyzed on the SPSS statistical software.

RESULTS: One hundred and ninety four patients were admitted to the AKUH within twenty four hours of thoracic trauma between July1993 and June 1999.The predominant age group was 26-40 years, range 14-86 years. There were 164 males and 30 females. There were 135(69.5%) blunt and 59(30.5%) penetrating injuries. The majority of blunt thoracic trauma were road traffic accidents 107(79.2%) and falls 20(15%) while eight patients (4.1%) had other causes of injuries. The causes of penetrating thoracic trauma were gun shot injury 56(95%) and stab wounds 3 (5.0%).
The majority of patients 120(62%) had associated injuries. The overall thoracic morbidity rate was 29%(56 patients) and the mortality rate was 6.7%(13 patients). Atelactasis was the most common complication in 31 patients (30%). Fractures comprised the largest single group of thoracic injuries in our series .Of these, rib fractures predominated (149) with nearly half of these involving three or more ribs.
In our series 127 patients had an associated pneumothorax, hemothorax or a combination of the two .Of the 34 patients with pneumothoraces 22 had simple pneumothoraces, 10 had tension pneumothoraces and one had a bilateral pneumothorax. Of the hemothorax group (112 patients) 40 had unilateral hemothoraces and 10 had bilateral hemothoraces. The remaining (62 patients) had hemopneumothorax with 57 out of this having a unilateral hemopneumothorax and 5 with a bilateral hemopneumothorax. The number of patients with flail chests was 17(8.7%) and out of these 11 patients had also sustained pulmonary contusion. Other thoracic injuries included lung parenchmal laceration in 5 patients, thoracic vertebral injury with or without injury to the cord in 21 patients, tracheobronchial injuries in 2 patients and myocardial contusion in 4 patients. The most common modality of treatment was tube thoracostomy, done in 101(52%) patients while only 9(4.6%) patients were treated with thoracotomy. There were 4 mortalities in this latter group. Two mortalities were directly related to thoracic trauma. We did not encounter patients with great vessel injuries, this could be a consequence of delayed presentation to our hospital as 124 patients (64%) were transferred patients and we lack prehospital care.

CONCLUSION: Most of thoracic injuries were treated conservatively with good outcome Our good results could be a consequence of natural selection due to delayed presentation to our hospital.

"THORACIC SURGERY FOR MEDIASTINAL DISEASE"

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Aim: To highlight the role of thoracic surgeon in 146 cases of mediastinal pathology

Method: 146 cases of mediastinal pathology were operated upon in Cardiothoracic Unit. Ages ranged from 5 years to 67 years with a mean age of 36.3 years and M:F 90:56. 99 had diagnostic anterior mediastinotomies (R42 L57) while 47 had therapeutic procedures which were as (i) anterolateral thoracotomies 17 (ii) median stenotomies 22 (iii) cervical collar incision 5 (iv) cervical collar and partial / full stenotomy 3. All patients had chest x-ray, but only 42 had CT thorax.

Results: Out of 146 cases 99 had diagnostic anterior mediastinotomy with a R:L 42:47; of these histologies were tuberculous lymph node enlargement 42, sarcoidosis 19, lymphomas 33, carcinomas 5. 47 had therapeutic procedures which were (i) anterolateral thoracotomies 17 R:L 11:6 with 3 anterior mediastinotomies being converted to anterior thoracotomy (R:L 1:2) (ii) median sternotomies 22 (iii) cervical collar for retrostonal goitres 5 (iv) cervical collar and sternotomy 3 (2 partial, 1 full). Histology breakup for diagnostic procedures was goitres 8, thymomas 29, thymic cysts 3, dermoid cysts 4, pleuropericardial cysts 1, malignant thymomas 2, of which 1 proved to be inoperable. Morbidity was airleak 7/146 cases, wound infection 9/146, haemorrhage 2/146. Mortality was 7/146.

Conclusion: Mediastinal pathology is best dealt with after establishing a tissue diagnosis; the thoracic surgeon is the main tool for both diagnostic and curative procedures.

ROLE OF THYMECTOMY IN MYASTHENIA GRAVIS

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Aims:
To assess the changes in clinical status of patients with generalized MG treated with thymectomy, and to identify prognostic variables associated with good outcome.

Materials and methods:
Retrospective review of records of all patients, who underwent thymectomy for MG, at The Aga Khan University and Hospital, between 1988 -1998.

Results:
40 patients (19 males and 21 females) with generalized myasthenia gravis were treated with trans-sternal thymectomy. Mean age was 33 (range 14-60). They were staged pre-operatively using Osserman classification. 70% of the patients were classified as 2B. Mean follow-up was 11 months (range 1-48 months). 10% of the patients had total remission and 67.5% had decreased drug requirement than pre-op. Patient < 40 years, and females have better prognosis. Duration of symptoms affect outcome of surgery Four patient required post-op ventilation. There was no mortality in the current series.

Conclusion:
Thymectomy significantly influences the clinical course in patients with MG. Thymectomy can be safely performed with minimal morbidity and almost no mortality. Early thymectomy should be offered to all patients with clinical diagnosis of MG.

INTRAVENOUS IMMOUNOGLOBULIN IN THE PREPARA-TION OF THYMECTOMY FOR MYASTHENIA GRAVIS

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ABSTRACT

Reports on the effectiveness of high-dose intravenous immunoglobulin in treating myasthenia gravis usually were in patients who had been thymectomized and /or under immunosuppressive medications. Its usefulness in pre-thymectomy preparation for lowering the surgical mortality and morbidity has never been established. We used immunoglobulin at the daily dosage of 0.4 gm/kg for five days in 6 consecutive patients with Osserman classification type IIB. None received concomitant immunosuppressive agents before, during or after the treatment. Five of them (83%) had the myasthenic symptoms remitted for a peroid long enough to permit an uneventful thymectomy, done 9 to 13 days (mean ± SD,11.20 ± 1.79) after completion of the injections. We suggest that high-dose intravenous immunoglobulin might be a worthwhile alternative to plasma exchange in the presurgical preparation for most cases of myasthenia gravis.

CERVICAL MEDIASTINOSCOPY. A DIAGNOSTIC MODALITY FOR NON-NEOPLASTIC MEDIASTINAL MASSES.

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AIM:
To evaluate

- Role of cervical mediastinoscopy in the diagnosis of superior mediastinal masses of non-neoplastic origin.
- Its effect on the overall management of the patient.
- Morbidity and mortality of the procedure
- Its feasibility as a day care procedure

METHOD:
Retrospective review of all mediastinoscopies done for non-neoplastic lesions between Jan`89-June`98.

RESULTS:
A total of 48 mediastinoscopies were performed for non-neoplastic diseases over the last 10 years period. Of 48 mediastinoscopies 35 were done in patients who were asymptomatic while 13 were symptomatic. The commonest symptoms were fever, cough and chest pain. Tuberculosis was the most common disease 50% followed by sarcoidosis (41%). In 4 patients a diagnosis of non-specific disease was made out of which 2 patients had positive bacterial culture and one patient showed extensive idiopathic fibrosis and one showed benign reactive changes. There was only one complication (Lt. Vocal cord palsy) and no mortality. The mediastinoscopy had a positive effect in management of 87.5%of the patients. In 36 patients no pre-op diagnosis was available and after this procedure they were offered appropriate treatment. 6 patients were getting inappropriate treatment before mediastinoscopy and their treatment got corrected after mediastinoscopy. Thus 42/48 patients benefited from this procedure. In majority of patients (33/42) this operation was done either as a day care procedure or they stayed overnight.

CONCLUSION:
Mediastinoscopy is an effective diagnostic modality in patients with superior mediastinal masses of non neoplastic origin and can be performed safely as a day care procedure.

VASCULAR TRAUMA- EXPERIENCE AT LADY READING HOSPITAL, PESHAWAR

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Aim: To evaluate vascular trauma management mainly on clinical assessment, at a less equipped set up and compare the outcome in early and late arrivals.

Method: A prospective study of vascular trauma patients at Lady Reading Hospital, Peshawar. The nature, site, early and late presentation and outcome of surgery in vascular injuries presented to our department between Jan 1995 to Dec 1998 were assessed. Out of these cases, only few stable neck injuries had pre-operative angiography. There were 354 vascular injuries in 344 patients (mean age 29, range 5-60). Mechanism and nature of injuries were assessed. Early presentation (group A: 112 cases <8hours) were compared with late presentation (group B: 232 cases > 8 hours). The in hospital mortality, complications, associated injuries and outcome were assessed.

Results: Male accounted for 90% of patients. The majority of injuries (81:35%) were caused by bullets, followed by stab injuries (6.49%), blunt, trauma (8.75%) and latrogenic (3.38%). 61.29% were arterial, 10.16% were venous, 23.72% were mixed, 4.80% had intact vessels. Upper limb injuries were 31.63%, lower limb (60.16%), remaining were neck or abdominal injuries. Associated injuries included fractures (16.38%), nerve injuries (25.42%), chest injuries (5.93%), Abdominal injuries (9.03%), and cervical spine or head injuries (1.41%). About 70% presented with hemorrhage and 80% with pulse deficit. Injuries treated with end to end anastomosis (44%), vein graft (21.46%), prosthetic graft (6.49%), lateral suture (16.66%), ligation (5.36%), thrombectomy (4.51%) and primary amputation (2.25%), Group "A" had higher mortality than group "B" (16% vs 5%) with amputation rate of (7.86% vs 10.48%) and infection rate of (32% vs 14.65%).

Conclusion: The higher mortality in those arriving within 8 hours of injury reflects, their more severe injuries. Early recognition and prompt referral to vascular surgery cantre may save life and limbs in vascular trauma patients.

FEMORAL AND POPLITEAL VASCULAR INJURIES: A COMPARISON OF OUT COME.

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Aim: To compare the outcome in femoral versus popliteal vascular injuries.

Method: The nature, site, early and late presentation and outcome of surgery with femoral (fem) and popliteal (pop) vascular injuries between Jan 1995 to December 1998 were reviewed. None of the patient had pre operative angiography. There were 141 fem. And 47 popliteal injuries in 189 patients. Early presentation <8 hours (fem 41 vs pop 16) compared with late presentation >8 hours (fem 100 vs pop 31). The in hospital mortality, complications, associated injuries and outcome were assessed.

Results: Majority of injuries caused by bullets (fem 87%, vs pop 91%). Only arterial involvement in (fem 40%, vs pop 51%) venous (fem 6.3% vs pop 6.3%) and mixed (fem 41% vs pop 44%). Most common presentation was pulse deficit (fem 64% vs pop 71%). Early presentation had high mortility (fem 14.63%, vs pop 2.12%) as compared to late presentation (fem 5% vs pop Nil). Infection rate almost the same (fem 34% vs pop 32%). Amputation rate (fem 9.92% vs pop 25.53%). Even in early presentation popliteal had amputation rate of 18.75% vs 0.70% in femoral.
In late presentation amputation rate in popliteal was 29% vs 9.21% in femoral injuries.

Conclusion: Popliteal vascular injuries needs early recognition and quick intervention; to save limbs.

INFECTIVE ENDOCARDITIS PRESENTING AS A LEAKING SUPERIOR MESENTERIC ARTERY ANEURYSM: A CASE REPORT

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Aneurysms of the splanchnic arterial circulation represent an uncommon vascular disease, and superior mesenteric aneurysm account for only 5.5 % of them. We report one such case in a young adult male with previous ischemic stroke who presented with fever and severe abdominal pain. Abdominal ultrasound revealed the lesion, confirmed by spiral CT scan showing a 11.1 x 8.8 x 6.8 cm. aneurysm These aneurysms are usually infectious in etiology, although other causes include arteriosclerosis, trauma, Ehler-Danlos syndrome and other connective tissue diseases. Work-up revealed a concomitant infective endocarditis. Emergency exploratory laparotomy and ligation of the aneurysm was performed. Antibiotic treatment for infective endocarditis was given. Even though a superior mesenteric artery aneurysm is rare, it has to be suspected in any patient with a history of bacterial endocarditis, sepsis, and abdominal pain. If left untreated, these invariably rupture, thus prompt diagnosis is required.

TRAUMATIC TRANSECTION OF THORACIC AORTA AND WIDENED MEDIASTINUM

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Aims & Objectives:
Traumatic transection of the thoracic aorta is a rare but life threatening injury which occurs following deceleration of the patient. Traumatic transection of the thoracic aorta is also a devastating condition , normally identified by a widened mediastinum on chest X-ray. We present the Incidence and Outcome of 11 such patients presenting over a five year period to a University Teaching Hospital.

Methods:
Between 1st January 1993 and 31st December 1997, 47 patients presenting to the Accident and Emergency Department of Leeds General Infirmary were found to have a widened mediastinum on initial Advanced Trauma Life Support (ATLS) radiological survey. Six patients died of multiple injuries within the Accident and Emergency Department. Transection of aorta was confirmed at post mortem. The mean Trauma Revised Injury Severity Score (TRISS) probability of survival of these patients was 0.011 (range 0.0002-0.0349).
The 41 surviving patients underwent aortography to determine the integrity of the descending thoracic aorta. Five (12%) patients were found to have and aortic transection (mean TRISS probability of survival= 0.476). The five patients were male and all had been victims of road traffic accidents. Four patients were passengers (three car , one motorcycle) and one was a pedestrian. Each had multiple bony fractures. In addition two had sustained head injuries . In each case the transected aorta was repaired using an Inter position Graft.

Results:
In the three patients without head injuries , mean Glasgow Coma Score (GCS)=10.7, the circulation was supported with Femoro Femoral bypass. The two patients who had sustained head injuries (mean GCS = 5) were repaired without the aid of a bypass circuit (clamp times 20 and 26 minutes). One of these patients (TRISS probability of survival = 0.0428) died of cerebral complications after successful graft insertion. The remaining four made prolonged recoveries determined by their associated injuries.

Conclusion:
Aortic transection is common in patients who are identified to have a widened mediastinum on chest X-ray in the primary survey . It carries a high mortality, even in patients who reach hospital alive, with 55% of patients dying during attempts at resuscitation. With prompt surgical intervention survival in this severely injured group of patients is possible. In addition successful surgical repair is associated with a significant mortality (20%) and morbidity due to associated injuries.

A TRAINING MODEL FOR VASCULAR ANASTOMOSIS: AN EXPERIMENTAL STUDY

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A training model for vascular anastomosis was developed in our center with the purpose of training residents in cardiovascular surgery to do fine vascular techniques before trying on actual patients.
Aim: The aim is to determine if the training model can help trainees reduce the time consumed in doing one vascular anastomosis.
Methods: The model is made up of plexiform plastic materials as the main board, and as the anastomotic platform. Two bent stainless poles hold the donor veins, while the recipient vein is clipped into the platform. Three categories of surgeons were tested: cardiovascular surgery consultants and clinical research fellows (Category 1), senior and junior fellows (Category 2), general surgery residents (Category 3).
Results: A significant reduction in the anastomotic time from the baseline figure was observed as early as on the second attempt in Category I (p=. 03). 3rd attempt on Category 2 subjects (.023) and 6th attempt on Category 3 subjects (p=. 025).
Conclusion: Our study showed that the training model was able to significantly improve the speed in doing vascular anastomosis in surgeons belonging to all categories. We recommend surgeons involved in vascular surgery to spend time practicing on the training model before performing it on live patients.

Percutaneous Sympatholysis for Thromboangitis Obliterans

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Thromboangitis Obliterans is one of the common causes of distal limb ischaemia. In established cases where rest pain is a crippling symptom, sympathetic inhibition is very effective in instantaneous and prolonged pain relief. For bilateral disease peripheral arteriolar dilators have been tried with varied degrees of success. But for unilateral affection sympathetic disconnection is a valid option.

We perform percutaneous lumber sympatholysis by injecting Aqueous Phenol under image intensification or otherwise. Fifteen such procedures have been performed so far with highly encouraging results. Age range of this group was between 32 to 75 years. All of them were males. Seven had associated diabetes. Para perisis occurred in one patient. Three patients did not get any significant pain relief. In conclusion, it is a simple and safe procedure particularly in the elderly and diabetics. However due caution is needed because of the injection of a strong sclerosant in the vicinity of great vessels and spinal column.

LOCAL EXPERIENCE WITH CAROTID ENDARTERECTOMY

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Aim of the presentation is to discuss the experience of carotid endarterectomy.

Means of diagnosis relied heavily on Carotid Duplex scans, with carotid arteriograms being done rarely, only when the clinical picture and Carotid Duplex scans did not clearly answer all the questions. Comparison of early years (7 patients) when operation was done under local anaesthesia without routine shunt, with later years (69 patients) when routine shunting and general anaesthesia was used, is shown in the study. Moreover in later years patch angioplasty was used very liberally along with carotid endarterectomy.

No neurological deficit or mortality was seen in later years (consecutive 69 patients).
Conclusion being that Carotid Endarterectomy is a safe and effective treatment for Extracranial cerebro-vascular disease involving Carotid bifurcation.

TL 201 SCINTIGRAPHY EVALUATION AFTER MYOCARDIAL REVASCULARIZATION USING RADIAL ARTERY

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AIMS: Internal mammary artery for coronary artery bypass grafting (CABG) grant better results than vein grafts. More arterial conduits have been proposed and used in the last ten year; radial artery is currently used despite of its spasming attitude. This work points out our result using redial artery to define the role of such conduit. Also it define the role of TI 201 stress test scintigraphy as a mid term evaluation procedure after myocardial revascularization

METHOD: Between September 1994 and March 1997, 104 patients underwent myocardial revascularization, receiving at least 2 arterial conduits (Co)such as left internal mammary artery(LIMA),(104 Co) right internal mammary artery (RIMA), (9 Co), Gastroepiploic artery (GEA),(34 Co),inferior epigastic artery(IEA),(2Co)and radial artery (RA), (40 Co) plus 30 saphenous vein graft or more arterial conduits. Evaluations were performed on radionuclide segment images obtained through TI-201 stress test scintigraphy within three month and at one year after surgical procedures.

RESULTS: Mortality was 2/104 and myocardial infarction (MI)occurred in 3 patients, one of them had immediate surgical revision for radial artery spasm. After three months 102 CABG patients were asymptomatic but in two the TI201 stress test scintigraphy showed regional ipoperfusion on obtuse marginal branch revascularized with radial artery.

CONCLUSION: Segmental TI-201scintigraphy is a fair test to detect inducible ischemia post-CABG. Redial artery show results in the mid term inferior to LIMA and RIMA and GEA. Until prevention of acute spasm is not effective, radial artery should be considering an alternative conduit to vein.

HARVESTING THE RADIAL ARTERY USING DIATHERMY AND GLYCERYL TRI-NITRATE DILATOR SOLUTION ACHIEVES GOOD CLINICAL OUTCOMES

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Background Recent success in using the radial artery (RA) as a coronary artery bypass graft conduit has been attributed to the use of topical papaverine and avoidance of cautery during harvesting, together with long term postoperative calcium antagonist therapy. We describe a simplified technique that uses cautery and a topical glyceryl tri-nitrate – verapamil dilator solution without postoperative calcium antagonists.

Aim To compare the results of the simplified technique of RA preparation with those of saphenous vein (SV) grafting.

Method The first 100 consecutive patients who received radial artery grafts (RA group) procured using this technique, together with internal mammary artery (IMA) and SV, were compared with a group of 100 patients receiving IMA and venous conduits alone (SV group) operated on immediately prior to the introduction of the RA bypass graft at our institution. Follow-up was by telephone interview.

Results There were no pre-operative differences between the two groups other than the SV group being slightly older, (median age, SV, 61.0 yr versus RA, 59.5 yr p = 0.03). This technique reduced graft procurement time to approximately 20 minutes. There was one operative death in each group. There was no difference in peri-operative myocardial infarction rate or length of stay in the intensive care unit. Median follow-up times were : RA, 16 months, and SV, 25 months. Survival was : RA 97%, SV 94% and the median NYHA class in the two groups was the same (RA 1.0, SV 1.0, p=0.23). In the RA group there were four arm wound infections. Two patients suffered minor residual motor impairment in the hand and 14 patients complained of minor cutaneous anaesthesia.

Conclusions These early results are similar for RA and SV and suggest that the continued use of this simplified method of preparing the RA graft is justified pending investigation of graft patency.

THE USE OF ULTRASOUND FOR ASSESSING THE RADIAL ARTERY BEFORE CORONARY ARTERY SURGERY

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Background: The radial artery (RA) is associated with a high incidence of pre-existing intimal hyperplasia, medial calcification and atherosclerosis. One of the major concerns then when using the RA is that these pathologies might affect the mid and long term patency of grafts. This study investigates the efficacy of ultrasound (U/S) in assessing intimal disease in the RA.
Methods: Prior to CABG, RAs from 73 patients were examined by U/S with a 10 MHz transducer. Intima-media thickness and calcification was recorded. Ten patients showing severe RA calcification by U/S and 9 had no specimens available were excluded, as well as 14 for clinical reasons. In the remaining 40 patients (35 males, 5 females; mean age 65.5±10.5 years), both ends of the RA were sampled for histopathology and morphometry. U/S results were compared with histopathology and morphometry.
Results: Calcification was detected by U/S in 5% (2/40) of distal and 2.5% (1/40) of proximal RAs (table). Calcification was detected by histopathology in 17.9% (7/39) of distal and 20.5% (8/39) of proximal RAs. Intima-media thickness measured by U/S did not correlate significantly with the percentage of luminal narrowing (100×intimal area/internal elastic lamina area) or intimal thickness index (intimal area/medial area) determined by morphometry in either the distal or proximal RA (Spearman's rho values between -0.12 and 0.27).
Conclusion: U/S had high specificity but low sensitivity for identifying RA calcification. It was not useful for assessing the severity of intimal disease in the RA.

Arterial calcification - U/S versus histopathology

U/S detection of calcification	Distal RA (%)	Proximal RA (%)
Sensitivity	28.6	12.5
Specificity	100	100
Positive predictive value	100	100
Negative predictive value	86.5	81.6
Diagnostic Accuracy	87.2	82.1

THE RADIAL ARTERY AS A CONDUIT IN CABG : EARLY AND MID TERM ANGIOGRAPHIC RESULTS AND LESSONS LEARNT

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400 patients underwent CABG with the radial artery as one of the conduits. Of these we have followed up 380 patients with clinical examination, serial ECG, 2D echo and TMT in all as a routine and a postoperative angiogram in 38 patients.

The age range was 35 - 78 years (mean 55.4 yrs). The other arterial conduits used were LIMA in 375, RIMA in 100, RGEA in 25 and RIEA in 3. The radial artery was used as a sequential graft in 22 patients. Its proximal end was anastomosed directly to the aorta in 375 and as a Y (to the LIMA) in 25. 2 patients had hypoperfusion in the radial artery area detected on the OT table and needed an additional SVG.

1 patient developed a peri-op MI in the region of the radial artery garft and needed IABP postoperatively. 2 patients died of causes unrelated to the radial artery.95% of the patients are in Class I, TMT was negative in 68% and mildly positive in 10% (in the rest TMT could not be carried out for various reasons). 11 patients had some paresthesia on the thumb side - this was early on in the experience and has reduced markedly since we have started to specifically safeguard the superficial branch of the radial nerve and the lateral cutaneous nerve of the forearm. No patient had any weakness of the hand . We use plethysmography with the pulse oxymetry probe to make sure that the ulnar artery is well developed.

On angiography all but 2 of 38 patients had patent radial artery grafts. In one thecause was probably competetive flow as the radial artery was anastomosed to the distal RCA which had only 50% narrowing in the mid RCA. Of some concern was the high incidence of spasm noted in the radial artery conduit - more so in the arteries anastomosed directly to the aorta . This was inspite of a very meticulous no-touch no-cautery technique , use of topical papaverine and dilzem and the routine use of Dilzem postoperatively.

We recommend the use of the radial artery as a reliable conduit and will be sharing some of the technical details and pitfalls that we have come across.

THE USE OF THE RADIAL ARTERY TO ACHIEVE A 'TOTAL ARTERIAL LEFT VENTRICULAR REVASCULARISATION'

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BACKGROUND: Since 1992 several groups have reported encouraging short-term results with the use of the radial artery (RA) for myocardial revascularisatrion. The RA was introduced in our unit in 1996 but only since December 1998 it has been used on a routine basis in patients below 60 years of age in an attempt to offer to these younger subset of patients a 'total arterial left ventricular myocardial revascularisation'.
METHODS: We retrospectively collected data of 35 consecutive patients in which a RA was used to by-pass a left sided coronary lesion (obtuse marginal branch of circumflex artery or ramus intermedius) in combination with the Left Internal Mammary Artery to Left Anterior Descending anastomosis. The radial artery was harvested with use of electrocautery and immediately immersed in a solution of Glycerinetrinitrate, Verapamil and heparinised blood. All patient were given Diltiazem orally once extubated and for at least 6 months thereafter. All procedures were performed using a normothermic cardiopulmonary bypass with intermittent aortic cross-clamping and ventricular fibrillation.
RESULTS: There was no hospital death. No postoperative myocardial infarctions or ischemic ECG changes were recorded. Mean intubation time and ICU stay were 6 hours (STD = ± 4) and 22 hours (STD= ±7) respectively. All patients were discharge home by the 5th postoperative day. All patients were angina-free when seen in outpatient clinic at the first follow up visit, six weeks post surgery.
CONCLUSION: Our initial experience encouraged us to use the radial artery as the arterial conduit of choice in combination with the left internal mammary artery to left anterior descending artery to revascularise the left ventricle in patients below 60 years of age. This can be achieved regardless of the presence of non-cardiac co-morbid conditions, which would limit the use of bilateral mammary arteries grafting.

CORONARY ARTERY BYPASS GRAFTING FOLLOWING CARDIAC ARREST IN THE ANGIO SUIT.

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Objective: To find out the results and factors influencing the outcome of emergency coronary artery surgery following cardiac arrest during coronary angiography.

Design: A retrospective study of all case requiring emergency coronary artery surgery following cardiac arrest during coronary artery bypass surgery with failure of standard cardiopulmonary resuscitation.

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Main outcome measures: Incidence, effective CPR, and early transfer to operation theatre with coordinated team effort.

Results: Thirteen patients developed refractory cardiac arrest during coronary arteriography requiring coronary artery surgery from January 1994 to December 1997.There were nine males and four females with age ranging from 43 to 67 years. Eight patients had unstable angina and the surgical team was informed in five patients prior to the beginning of their angiography. CPR was started in the angio suite and the duration of CPR prior to surgery was from 30 to 120 minutes. Seven required intra aortic balloon support. The maximum ICU stay was 9 days. There were eight survivors. In all the patients who survived there was minimal delay in putting them on cardiopulmonary bypass. The patients who survived had CPR for less than 45 minutes. There was no major morbidity. The exercise tolerance test performed at one year was negative. There was no neurological deficit.

Conclusion: Coordinated team effort and communication between both teams is necessary, minimal time be wasted before the patient is shifted to the OR and put on extracorporal circulation. Effective cardio-cerebral pulmonary resuscitation (CCPR) be instituted after cardiac arrest.

Keywords: Coronary angiography, cardiac arrest, emergency coronary artery bypass grafting.

TOTAL ARTERIAL GRAFTING - MYOCARDIAL REVASCULARIZATION

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Surgery for ischaemic heart disease is on the increase in Lahore. From January 1997 to December 1998 five hundred and fifty patients underwent Coronary Artery Bypass Grafting at National Hospital Lahore. Of this 130 patients had total arterial revascularization. Bilateral IMA was used in 130 patients, bilateral IMA and radial artery in 95 patients, bilateral IMA and RGEA in 3 and LIMA and RGEA in 1 patients. The age range was from 32-70 years with a male predominance 120 males and 10 females.

The operation was carried out using routine cannulation and cardiopulmonary bypass at normothermia. antegrade blood cardioplegia was used in all cases. The number of grafts per patient 3.5 (2 –6) and the mean cross clamp and CPB time was 58 and 85 minutes.
The mean post operative blood loss was 400ml and transfusion required was 0·5 units. Ventilatory support was for 6-12 hrs and ICU stay was 36 hrs. Five patients showed an elevated CPK-MB .

RIMA was used on RCA ,LAD, OM1. LIMA was used on the LAD & OM. Radial artery was used on the PDA & OM where as the RGEA was used on the PDA.

Early post operative morbidity included re exploration for bleeding in 5 patients. One patient developed mediastinitis, superficial wound infection was seen in 6 patients. There were no complications related to harvesting the radial artery.

There was no mortality and ETT was positive in 3 of the 60 patients tested. Reangiography was not performed.

MINIMAL INVASIVE OPEN HEART SURGERY

(Lower median sternotomy)

Muhammad Musharaf , Muhammad Rehman *(N . I . C . V . D)*

During the period of April 1998 to July 1999 , we operated on a total of 40 patients by minimal invasive procedure . This included 22 ASD closure , 8 CABG and 10 MVR .

An incision 8 cms. to 10 cms. from xiphoid upwards employed and asymmetrical lower median sternotomy upto sec. i.c.s deviated from midline on the right side . All operations were done on CPB with help of conventional cannulation techniques and instruments.

For CABG , patients were selected with 2 VD i.e LAD and RCA . For MVR patients who had predominant MR with large LA , good size aorta and mixed lesion MS / MR were selected . And for ASD closure , secondum and sinus venosus defects were considered . As general rule, we excluded patients less than 12 years of age .

All patients except one of ASD closure survived and only one required conversion to full sternotomy . One patient required re-exploration for excessive bleeding .There was no sternal dehescence and wound infection .

The patient had less requirements of analgesia post operatively and ICU / HOSPITAL stay was shorter . Cosmetics results were excellent with no keloid and sternal deformity .

Minimal invasive surgery can be carried out within selected patients with less morbidity than conventional sternotomy .

TEXT: EARLY EXPERIENCE WITH STENTLESS SORIN VALVE

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BACKGROUND : Currently numerous valves are available both Mechanical and Tissue varieties. However because of sewing ring their effective orifice area is compromised leaving a residual gradient. In patient with small root it may be clinically unacceptable gradient especially valve less than 21 size. We report our experience with stentless Sorin valve which have no sewing ring and have excellent haemodynamic performance.

Method : Between July 1998-sep 1999 thirty six patients underwent aortic valve replacement using sorin stentless valve.Mean age of the patients were 73+/- 12 years with male to female ratio of 1.4:1.Different sizes of valves were used with smaller size being 21. >Mean Bypass time was 96+/- 45 minutes with mean ischaemic time of 78+/- 35 minutes. Fifteen patient had combine bypass grafting while one patient had mitral valve repair as well. One patient have Down syndrome while one was on regular dialysis.

Results : There was no hospital death.One patient require reopening for bleeding. The source of bleeding was wire hole with associated coaqulopathy. ITU stay varies between< 24 hours to 5 days with mean stay of 36 hours. Majority of patients were discharged home within eight days of operation.

Conclusion : Our result suggest that stentless sorin valve have an excellent early result. No mortality in this relatively high risk group could be due to their superior haemodynamic performance with practically no gradient across the valve. Long term result of this valve need to be seen however early results are very encouraging.

MINISTERNOTOMY FOR PATIENTS UNDERGOING CARDIAC SURGERY, THE AFHSR EXPERIENCE

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The benefit of ministernotomy approach for patients undergoing valve surgery, when compared with the conventional sternotomy, remains controversial. Between 15 March 1998 and 15 March 1999, 132 cardiac surgical procedures were performed at our Institution. Among those, 22 patients (pts.) underwent aortic or mitral valve or atrial septal defect closure (ASDC) surgery with a ministernotomy approach. 10 pts. underwent mitral valve surgery (4 repairs, 4 bioprostheses HK II and 2 mechanical valves CarboMedics). 10 pts. underwent aortic valve replacement (4 bioprosthesis HK II and 6 mechanical valves CarboMedics) and 2 pts. underwent ASDC. The average age was 30.6 years (range 15 -60). Sex, 10 females and 12 males. Functional Class (NYHA) III (range II-IV) and 75 % of the pts. were in Sinus Rhythm (SR). Among the mitral valve group there were 2 pts. with diagnosis mixed disease (stenosis / insufficiency) and 8 pts. with mitral valve regurgitation. In the aortic valve group there were 4 aortic valve stenosis and 6 with aortic valve regurgitation the remaining 2 pts. had diagnosis of atrial septal defect.

We analyzed different variables as follows:

Extubation time	9,5 hrs	(2-20 hrs)
Usage of Blood/Blood products	2.6 units	(0-10)
Chest drainage	525 mls.	(90-1460)
Left lower lobe collapse	7/12 pts.	
Pain score	5	(2-9)
Intensive care unit stay	21.4 hours	(18-28)
Hospital stay	6.3 days	(3-21)

Conclusion. Other than the cosmetic effect we did not find any difference between ministernotomy approach and the conventional sternotomy. This report is too small for definite conclusion. Therefore, larger number of pts. and a control study should be carry on.

The Carbomedics Bileaflet Mechanical Valve in a Poorly Anticoagulated Young Population

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Background: To evaluate the performance of the Carbomedics mechanical valvular prosthesis in our young poorly anticoagulated population.

Methods: Between August 1988 to July 1997, 685 patients (pts) underwent valve replacement with 825 Carbomedics bileaflet mechanical prosthesis. To avoid sternuous factors 211 pts with repairs, tricuspid or different prosthesis replacement or discharged without anticoagulation were excluded. Hence 474 pts with 567 Carbomedics prosthesis were analyzed. Mean age was 31.2 ± 17 years (yrs) (range 1-83, median 31) and 65% were male. Etiology was rheumatic (67%), degenerative (11%), congenital (11%) and infective (7%). 56% were in NYHA functional class III-IV and 80% in sinus rhythm. Replacements were mitral (MVR) 230, aortic (AVR) 151 and double (MAVR) 93. 31% of pts had previous cardiac surgery.

RESULTS: Hospital and late mortality were 4.8% and 7% respectively with 28 pts (6%) lost to follow up (FU). FU was 2 – 10.5 yrs with a mean of 3.5 yrs and total of 1565 pt yrs. At last follow up 76% were in sinus rhythm, 92% anticoagulated with only 55% within therapeutic range (INR 2.5-3.5), 10% above and 35% below. Among pts with thrombembolic events only 33% were on target. There were 11 embolic events (MVR 6/230, AVR 2/151, MAVR 3/93) or .70% pt yr. Prosthetic thrombosis occurred in 8 pts (MVR2, MAVR 2) .51% pt yr. 7 reoperated and one treated with thrombolysis, all survived. At the time, 5 pts were in sinus rhythm and 5 with INR outside range. 26 reoperations were required in 25 pts. (5%) 6 early and 20 late with 4 deaths. The causes were thrombosis (7), endocarditis (5), paravalular leak (7) and miscellaneous (7). At 10.5 yrs, actuarial freedom from embolism as 98% ± .85, valve thrombosis 96% ± 2, endocarditis 95% ± 2, reoperation 82% ± 4 and all events 83 ± 3. At last fu 96% were in NYHA class I – II and the actuarial survival at 10.5 yrs excluding hospital mortality was 78 ± 5.7.

Conclusion: Despite suboptimal anticoagulation the Carbomedics valve prostheses performed well in our young mostly rheumatic population.

A local prototype pulse-duplicator machine in the Philippine Heart Center: an experimental study

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A local prototype pulse-duplicator machine was developed at our center with the purpose of testing locally assembled bioprosthetic valves prior to processing and implantation into human subjects.
METHODS: The valve tester was developed from a single roller pump within a housing that propels priming fluid continuously in a pulsatile flow. The tubings were connected into a plastic cylindrical chamber where the valves were mounted. The cylinder was connected to an afterload tubing which drains the fluid into a reservoir which brings back the fluid to the pump. At a fixed pulsatile rate, the afterload pressures were increased at increments to a range of 0-300 mmHg. The tested valves can be directly observed during each cycle for any anatomic or functional defect.
RESULTS: Seven biologic valves were individually subjected into the valve tester. At the end of each experiment, anatomic and mechanical defects detected were torn leaflets, loose cusps, asynchronous or poor leaflet motions, or a combination of the above. These valves were considered not suitable for implantation after subjecting them into high pressures.
CONCLUSION: Our local prototype pulse-duplicator machine could serve as an inexpensive valve tester by direct visualization of the valves to screen our locally fabricated bioprosthesis prior to clinical use.

Keywords: Pulse duplicator
Bioprosthetic valve

A STUDY FOR APPROPRIATE SIZE OF AORTIC PROSTHETIC VALVE BY DOBUTAMINE STRESSED ECHOCARDIOGRAPHY

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Background and Aim: It has been controversial to use small-sized prosthetic valves for patients whose aortic annulus is smaller for his/her body size. We examined the hemodynamic function of bileaflet mechanical valves in the aortic position according to their sizes using dobutamine stressed echocardiography (DSE) and studied the relationship between prosthetic valve-area index (VAI) and valvular pressure gradient (APG).

Methods: Eighty-two patients were enrolled in this study. The prosthetic valves were 49 St. Jude Medical valves, 27 Carbomedics valves and 6 Sorin Bicarbon valves. The sizes of the valves were; one 19 mm, twenty-three 21 mm, twenty-one 23 mm, twenty 25 mm, twelve 27 mm, and five 29 mm valves. Doppler echocardiography was performed at rest as baseline data, and at dobutamine-stressed stages on 5 and 10 **μg/kg/min.** Aortic prosthetic valve gradient (APG) was calculated with the full Bellnouli's equation and VAI was gained as a quotient of geometric valve area by body surface area.

Results: APG increased on dobutamine-stress and exceeded 50 mmHg in the patient of 19 mm valve, in 70% of patients of 21 mm valves, in 43 % of patients of 23 mm group, and none of 25, 27 and 29 mm valves. These patients of higher APG on dobutamine-stress represent the potential of "valve prosthesis-patient mismatch". There are significant negative correlations between APG and VAI for each dobutamine-stressing stage and regressive lines were; $Y= -16.9X+ 51.2$ ($R^2=0.43$, $p < 0.0001$), $Y= -24.0X + 74.3$ ($R^2=0.32$, $p<0.0001$), and $Y= -33.5X+102.5$ ($R^2=0.45$, $p<0.001$) for at rest, dobutamine 5 **μg/kg/min** and 10 **μg/kg/min**, respectively. From the line of dobutamine 10 **μg/kg/min**, we gained 1.57 cm^2/m^2 as a "**critical VAI**" where APG is likely to exceed 50 mmHg on dobutamine-stress.

Conclusions: From relationship between APG and VAI, we gained 1.57 cm^2/m^2 as a "critical VAI" which is useful to predict the potential "mismatch" patients preoperatively, and to select a prosthetic valve or surgical procedure.

THE ROSS OPERATION
Modifications of Operative Technique to Minimise Risk

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47 patients (33 male, 14 female) underwent the Ross operation by a single surgeon between 1991 and 1999. Ages range from 6 months to 67 years. 26 patients were less then 20 years old of whom 13 were less then 10 years. Aortic stenosis (28 patients) was the most common indication for surgery. 12 patients has mainly aortic incompetence. 7 patients had mixed valve disease. Previous procedures include open aortic valvotomy, balloon valvuloplasty, coarctation repair, subaortic reaction and bioprosthetic aortic valve replacement.
Coincident procedures at operation include coarctation repair and Konno operation. All patents had a pulmonary homogratf inserted between the right ventricle and pulmonary bifurcation.
There were no operative or late deaths.
Three patients have required reoperation, one to replace the pulmonary autograft after peravalvular leak, one to repair an autograft cus tear, one to replace the pulmonary homograft becasuse of endocarditis.
Two adult pateints await reoperation due to pulmonary autograft insufficiency.
No patient under 40 years has had failure of the pulmonary autograft. There have been no thrombo embolic events.

The specific problems of the Ross operation are demange to the first septal artery, autograft failure and perioperative bleeding from the site of pulmonary valve excision. This report describes modifications of operative technique, which minimizes these risks making the operation the ideal choice for aortic valve replacement in patients under 40 years.

THE ROSS PROCEDURE IN CHILDREN UNDER TEN YEARS OF AGE

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BACKGROUND: The potential advantages of the Ross procedure in children under 10 years of age have yet to be validated. There are still concerns regarding progressive dilatation in both the pulmonary autograft and allograft.

AIM: We present our experience in this age population.

METHODS: Retrospective analysis of aortic root replacement in children under 10 years of age performed in two pediatric surgical centers.

RESULTS: The Ross procedure has been undertaken in 11 children (M:F, 9:2; age 3 months to 10 years, median 84 months) for aortic valve disease from January 1996 to January 1999.
There were no operative deaths. Mean hospital stay was 12 ± 4 days. Mean follow up was 14.5 ± 8 months. The event free survival (death, re-operation, endocarditis, and arrhythmias) was 100%. Nine children are in NYHA class I and two in NYHA class II.
The autograft and allograft were evaluated by serial echocardiograms. There was no increase in size of the autograft, and absence of progressive dilatation. Aortic regurgitation was trivial in 4 children and mild in 7. No growth of the autograft was noted. This was consistent with little somatic growth. Allograft peak gradiants remained low during follow-up.

CONCLUSION: Although pulmonary-autograft procedure is more complex than aortic valve replacement, it can be safely applied in children. Early follow-up indicates satisfactory performances of the autograft. If dilatation will not occur, pulmonary root autograft may be an attractive substitute for diseased aortic valves in children.

TEE GUIDED TRANSVENTRICULAR BALLOON DILATATION OF CONGENITAL CRITICAL AORTIC STENOSIS

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Congenital critical aortic stenosis (AS) in the neonate is a formidable therapeutic challenge. In the recent years with the advances in interventional cardiology it has been treated in the cardiac catheterization laboratory by percutaneous retrograde balloon dilatation. Failure of this procedure due to technical difficulties or hemodynamic instability necessitates surgical intervention. Antegrade balloon dilatation via left ventriculotomy without the use of cardiopulmonary bypass (CPB) can achieve good results. The use of intraoperative transesophageal echocardiography (TEE) facilitates this procedure . 5 patients have undergone such a procedure in our institution successfully with a gradient reduction of > 50 % in all of them ($p < 0.001$) . One patient (20%) died in hospital several days after the procedure due to septicemia

Conclusion : Transventricular balloon dilatation of congenital critical AS without CPB, and aided by TEE offers an alternative to failed retrograde percutaneous balloon dilatation, and to more complex congenital procedures.

EARLY EXPERIENCE OF ROSS PROCEDURE AT AFIC-NIHD

COL. ASIF ALI KHAN, DR. NAVEED, BRIG SYED AFZAL AHMAD.

Five patients had Ross Switch Operation at AFIC-NIHD between 1977 - 1999. As this procedure has been started recently at our Institute, we are presenting its results. It is important to note that there is a problem of getting Homografts at our institution and we have used alternative conduits.

All the 5 patients were male. One patient had aortic stenosis, 3 had aortic regurgitation and I had mixed stenosis and regurgitation of aortic valve. Sizing of pulmonary and aortic annulus was done pre-operatively by echocardiography. Pulmonary valves were removed on beating heart in 2 patients while in the other 3 it was harvested after delivering cardioplegia in a stand still heart. One patient had pulmonary Homograft at the pulmonary position, one had aortic Homograft while the remaining 3 had Polystan's pulmonary conduit.

All patients had smooth recovery. Transesoaphageal echocardiography was done routinely postoperatively in all patients and competency of aortic and pulmonary valves were assured. All patients are alive till now and have almost no gradient across the valve.

VALVOTOMY FOR CRITICAL AORTIC STENOSIS IN INFANCY

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Objectives: Aortic valvotomy for critical stenosis in infancy has had a high mortality. To determine the factors that influence survival, we reviewed the cases of 12 infants who underwent aortic valvotomy in the first 6 months of life for aortic stenosis from 1992 to 1998.

Results: CPB was used in all patients. Operative mortality was 33.3% (4/12), all the deaths occurring from low cardiac output. Analysis of preoperative factors affecting survival versus non-survival revealed that low E. F. (46% + 17% in survivors versus 30% + 2% in non-survivors) high LVED pr. (16 + 7 mm Hg in survivors versus 30 + 14 mm Hg in non-survivors) and presence of endocardial fibroelastosis (25% in survivors versus 100% in nonsurvivors) all are predictive of a poor outcome. Factors that did not appear to influence survival included peak systolic gradient (79 + 30 mm Hg in survivors versus 60 + 15 mm Hg in nonsurvivors) and left diastolic end-diastolic volume. Follow up in 9 patients upto 18 months showed increase of E. F. from 45% to 70%.

Conclusion: Infants with critical aortic stenosis benefit from valvotomy even with impaired left ventricular function. Postoperatively there has been recovery of ventricular function to normal and growth in ventricular volume.

USE OF THE CARBOMEDICS BILEAFLET VALVE IN CHILDREN WITH CONGENITAL HEART DISEASE: A CLINICAL EVALUATION

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Objective: To evaluate the early and late outcome following implantation of the CarboMedics (CM) bileaflet mechanical valve in children with congenital heart disease.

Patients: Forty-four children (33 male, 11 female, mean age 9.2 years, range 2 months – 16 years) undergoing valve replacement with a CM prosthesis between 1991 and 1999 were reviewed. Position of replaced valves was the aortic (AVR) in 26, mitral (MVR) in 14, aortic and mitral in 2, pulmonary in 1 and tricuspid in 1 patient. Mean size of the implanted valves was 23.1 mm. All patients received life-long anticoagulation treatment with Warfarin. Mean follow-up was 3.8 years, range 0 to 8.2 years, total 165.1 patient years.

Results: Operative mortality was 2.3% (one patient having AVR+MVR). Valve related events were thromboembolism in 1 (0.6% per patient year, pt/yr) and endocarditis in 1 patient (0.6% pt/yr). There were no episodes of structural failure, valve thrombosis and/or major haemorrhage. Actuarial freedom from any prosthesis related event at 8 years was 93.5% (1.2% pt/yr). A valvular re-operation was required in 4 patients. Actuarial 8 year freedom from re-operation was 79.4% (95% for AVR and 62.6% for MVR). There were 3 late deaths. Kaplan-Meier 1, 5 and 8 year survival, inclusive of operative mortality, was 97.7%, 91.5% and 83.2% (91.4% and 90% at 8 years for isolated AVR and MVR respectively).

Conclusions: Use of the CarboMedics bileaflet mechanical valve in children with congenital heart disease is associated with low incidence of valve related early and/or late events. Anticoagulation treatment with warfarin in these young patients is well tolerated.

COENZYME Q_{10} *IN VITRO* NORMALISES IMPAIRED POST-ISCHEMIC CONTRACTILE RECOVERY OF AGED HUMAN MYOCARDIUM

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Background
Recovery after cardiac surgery in the elderly is impaired.
Aim To test whether the reduced capacity of senescent human myocardium to recover pre-ischaemic contractile function, compared to younger tissue, is improved by pretreating young and old human atrial pectinate trabeculae obtained at surgery with the lipophilic antioxidant and mitochondrial respiratory chain redox coupler, coenzyme Q_{10}(CoQ_{10}).
Method Right atrial trabeculae free of right heart failure, after 30 min treatment with either CoQ_{10}(400μM) or vehicle control, were paced at 1Hz in 95%O_2 Ringer's solution (37°C), and then subjected to 60min simulated ischaemia (humidified N_2 perfusate-free). Post-ischaemic recovery of developed force (DF) after 30min was expressed as % pre-stress values. Extracted muscle CoQ_{10} content was measured by HPLC.
Results Post-ischaemic trabeculae from the ≥70yo group (76.4±0.8yo) displayed less contractile recovery compared to <70yo group (57.6±1.7yo), but this difference was abolished by CoQ_{10}. CoQ_{10} content was lower in the ≥70yo group vs <70yo. CoQ_{10} treatment elevated CoQ_{10} content 2-fold in <70yo and 6-fold in ≥70yo :

(n)	% Recovery of DF		CoQ_{10} content (μg/mg/protein)	
Age	**<70yo**	**≥70yo**	**<70yo**	**≥70yo**
Control	63.4±3.4(30)	53.0± 2.9(21)	13.8± 1.7(6)	3.9± 0.7(6) ‡
CoQ_{10}	71.5±3.3(29)	74.6± 3.5(19)*	29.2± 1.5(6)*	27.7± 2.9(6)*

(Table : p<0.05, * vs control, ‡ vs <70yo)

Conclusion
We conclude : 1) CoQ_{10} pre-treatment *in vitro* overcomes the reduced capacity of aged trabeculae to recover contractile function after ischaemia compared to younger tissue, by raising both CoQ_{10} content and the extent of DF recovery. 2) CoQ_{10} content is decreased in aged atrial trabeculae and thus may contribute to the reduced recovery of contractile function in aged myocardium observed after cardiac surgery.

ADVANTAGE OF CARIPORIDE (HOE642) OVER CITRATE AS A LOW Ca^{++} STRATEGY IN CARDIOPLEGIA

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Background
Post-ischaemic intracellular Ca^{++} overload impairs myocardial recovery after cardioplegia (CP). Ca^{++} overload may be countered by direct reduction of extracellular Ca^{++}, citrate chelation of Ca^{++} in CP or indirectly by Na^+/H^+ exchanger inhibition (Na^+/H^+I). The recent Guardian trial of Na^+/H^+ with Cariporide (Car) found that it afforded protection against ischaemia/reperfusion injury in cardiac surgery but this was not compared to other Ca^{++} control strategies.
Aim
To compare Mg^{++} -based cardioplegic solutions designed to minimize Ca^{++} overload and improve post-ischaemic cardiac function : 1) Standard-CP (1.2mM Ca^{++}); 2) Low Ca^{++} CP (0.25mM Ca^{++}); 3) Citrate-CP (21mM citrate, titrated for 0.25mM free Ca^{++}); 4) Car-CP (1μM HOE642+1.2mM Ca^{++}).
Method Isolated working rat hearts (n=10 per group), perfused with oxygenated Krebs-Henseleit buffer, were subjected to 60 min cardioplegic arrest at 37°C. As low Ca^{++} cannot be directly achieved in blood, we utilized normocalcaemic crystalloid CP solutions based on K-H buffer to model blood CP. Final ionised Mg^{++} (16 mM), pH and osmolarity were equivalent for all CP solutions.
Results Baseline aortic flow (AF) did not differ between groups (mean AF=67.5±7ml/min). Low Ca^{++} CP, compared to standard CP (1.2 vs 0.25 mM Ca^{++}), showed improved recovery of post-ischaemic AF: 47.6±1.7 va 58.3±2.5% ($p<0.01$). Citrate-CP markedly impaired post-ischaemic AF: without vs with citrate, 58.3±2.5 vs 22.4±6.2% ($p<0.01$). In contrast, post-ischaemic AF was improved by Car-CP: without vs with Car, 47.6±1.7 vs 62.4±1.7% ($p<0.01$).

Conclusions 1. Low Ca^{++} CP improves post-ischaemic recovery of cardiac function. 2. Citrate Ca^{++} chelation in the presence of high Mg^{++} CP is not cardioprotective in the rat. 3. Cariporide CP is superior to citrate as a low-Ca^{++} strategy and merits clinical trial as an additive to blood CP.

EXPERIENCE WITH THORACIC ORGAN TRANSPLANTATION

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Cardiopulmonary transplantation has evolved as standard form of therapy in patients with end stage cardiopulmonary disorders. After enactment of laws related to brain death and organ donation in India, the first cardiac transplantation was performed in Sept 1994 at the Institute of Cardiovascular Diseases, Madras. From Sept 1994 to till date, 8 patients underwent thoracic organ transplantation. 6 patients underwent cardiac transplantation One patient underwent bilateral sequential lung transplantation along with closure of ventricular septal defect. Another patient underwent heart lung transplantation for primary pulmonary hypertension with severe right ventricular dysfunction. The age ranged from 14 years to 56 years. 4 of them had dilated cardiomyopathy and 2 had ischaemic cardiomyopathy. One of them had undergone partial left ventriculectomy – Batista procedure 6 months prior to Surgery as bridge to transplant. Out of 6 patients 3 are alive and doing well.

The patient who underwent heart lung transplant died on 35th postoperative day due to infection. Standard triple drug therapy is used for immunosuppression and endomyocardial biopsy is used for monitoring rejection. Organ donation awareness is very low in developing countries. Thus apart from social economic problems, it is very difficult to get organs for transplantation. With improvement in postoperative care and immunosuppressive therapy, thoracic organ transplantation can be performed with acceptable morbidity and mortality.

PASSIVE VENTRICULAR CONSTRAINT WITH THE ACORN PROSTHETIC JACKET PREVENTS REMODELING AND MITRAL REGURGITATION IN DOGS WITH HEART FAILURE

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Aims: The purpose of this study was to determine if passive mechanical constraint of the cardiac ventricles with a surgically placed prosthetic jacket prevents progressive left ventricular (LV) remodeling and attenuates functional mitral regurgitation (MR) in dogs with moderate heart failure (HF).

Methods: HF (LV ejection fraction 30-40%) was produced in 12 dogs by multiple sequential intracoronary microembolizations. Six dogs underwent mid-sternotomy and pericardiotomy followed by placement of the prosthetic jacket (a preformed-knitted polyester mesh, Acorn Cardiovascular, Inc.) snugly around the ventricles and anchored at the AV groove. Six untreated HF dogs served as controls (CON). LV end-diastolic (EDV) and end-systolic (ESV) volumes and the presence and severity of MR were determined angiographically before (PRE) and 3 months after (POST) treatment. Cardiomyocyte cross-sectional area (CCSA), a measure of myocyte hypertrophy, was assessed histomorphometrically.

Results: The change in EDV between PRE and POST increased in CON dogs while it decreased in dogs treated with the prosthetic jacket (15 ± 5 vs. -7 ± 1 ml, p=0.002). Directionally similar changes were observed in ESV (17 ± 5 vs. -9 ± 1 ml, p=0.001) among the two groups. In CON dogs, 4 of 6 had 1+ to 2+ MR that persisted and/or increased after 3 months of follow-up. In contrast, 4 of 6 surgically treated dogs had 1+ to 2+ MR that was completely abolished after 3 months. In dogs treated with the prosthetic jacket, the average CCSA area was smaller than in CON (791 ± 51 vs. 987 ± 37 μm^2, p=0.011).

Conclusions: Passive ventricular constraint with the Acorn prosthetic jacket prevents progressive LV remodeling and abolishes functional MR in dogs with moderate HF.

Mechanical Characteristics of Electro-Hydraulic Heart Drive

S.R. Topaz*, Demin Shen**, D.N. Jones*, and Paul Shen**

Successful clinical application of pneumatically driven artificial hearts has indicated the need for pulsatile devices that can provide larger cardiac outputs, and the increasing importance of patients mobility. An Electro-Hydraulic Artificial Heart designed and constructed in the Kolff Laboratory incorporates a single moving part turbine drive system to achieve these goals. Blood does not contact the turbine, instead it pumps saline solution in alternating directions to actuate a pair of ventricles with flexible diaphragms that maintain blood/saline separation. Saline also lubricates the One-piece turbine/ motor assembly, and cools the rotating and stationary portions of the brushless DC motor that powers the device.
This paper presents performance data and dimensions of the turbine drive device.

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TRANSMYOCARDIAL REVASCULARIZATION (TMR)BY HOLMIUM YAG LASER AT VGH-TAIPEI

Tarng-Jenn Yu, Shiau-Ting Lai, Zen-Chung Weng

For decades, medically refractory coronary artery disease were managed by CABG or PTCA. Basically they resolved the problem by working on coronary vascular bed network either by bypassing or enlarging the diseased segment. However both PTCA and CABG have the major dawbacks of restenosis. As matter of fact, there are many patients with diffuse coronary artery disease beyond the reach of CABG or PTCA. Can TMR, a new therapeutic modality creating non-coronary network, offer a last resort for end-stage coronary disease patient? Methods and Results: A pulsed holmium-YAG laser (Eclipse TMR, Sunnyvale, CA.) with 1 mm optic fiber was used to drill holes through myocardium as TMR device. Before clinical application, TMR were performed on 10 Mongol dogs. All dogs survived and were then sacrificed at 2nd, 60th and 90th post-op days. Morphological and histological studies showed that the laser channels were obliterated by necrotic myocytes on 2nd day group (N＝2), replaced by granulation tissue composed of collagen fiber with marked neoangeogenesis on 60th days group (N＝4). Granulation tissue with dilated sinusoid net work and scattered bigger size new vessels were found on 90th days group (N＝4). With these encouraging result, clinical trial was attempted since June 18, 1997. Till December 31,1997, 40 patients (M:F＝35:5, Age 46-81, Average 70.7 yrs) received TMR treatment. In group A (TMR only), 20 patients received TMR as a sole therapy, an average of 48 holes were created (range ! >18-77). In group B (TMR＋CABG), TMR was used as an adjunct therapy to CABG for complete revascularization. Pre and Post-operative evaluation including positron emission tomography (PET), SPECT, Magnetic Resonance Imaging (MRI), and careful CCS Angina Classification. For end stage CAD patients, not a single was refused for TMR surgery.

Result: In Group A, there were 2 early death (＜30 days), mortality rate 2/20＝10%, and 1 late death, (mortality rate 1/20＝5%). The CCS improvement were 1.67 at 3 months. PET, SPECT, and MRI confirmed definite improvement or disappearance of subendocardial ischemia. In group B, there is no early or late death (mortality 0 %), the CCS improvement were more than 2 shortly after operation. The results are very encouraging. Better CCS angina class improvement are expected in group A patients. The over all mortality is (3/40) 7.5 %.

Conclusions: These results suggest that TMR improved angina status, relative endocardial perfusion, and cardiac function in end stage CAD patient. The TMR＋CABG combinations help in achieving complete myocardial revascularization area where conventional CABG deemed to be failure soon.

TRANSMYOCARDIAL LASER REVASCULARISATION COMBINED WITH CORONARY ARTERY BYPASS GRAFT : EARLY RESULTS AND MID TERM FOLLOW UP

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Transmyocardial Laser revascularisation with or without coronary artery bypass grafting is rapidly emerging as an alternative or adjunct modality of therapy in patients with diffuse coronary artery disease. In this report, we have analysed the early results of transmyocardial laser revascularisation (TMLR) and coronary artery bypass grafting (CABG) in patients with small vessel disease.

From October 1995 to June 1999, 106 patients underwent CABG and TMLR in our Institution. Fifty six in this series needed endarterectomy of atleast one vessel. 20 patients underwent multiple endarterectomy. Their age ranged from 36 years to 71 years (mean 53.8 years). There were 97 males and 9 females. The mean number of grafts inserted was 2.66 ± 0.6 grafts per patient and a mean number of 11.4 ± 3.2 channels were created per patient. Twenty four patients needed endarterectomy of the left anterior descending artery.

The hospital mortality was 11.3%. On follow up, 81.2% patients were free of angina and functional class on assessment has improved, with 16.4% patients in class II and 3.2% in class III. Patients who underwent CABG-E with TMLR showed significant improvement in relief of angina, quality of life and exercise tolerance. Univariate analysis revealed that inhospital mortality was significantly higher in patients with multiple endarterectomy compared to those who underwent single vessel endarterectomy.

Coronary artery bypass grafting combined with Transmyocardial Laser Revascularisation is effective in achieving complete myocardial revascularisation particularly in patients with diffuse coronary artery disease.

Laser Revascularization in selected patients

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A new technique of revascularising ischaemic myocardium by laser created channels across myocadrium was used to treat selected patients of ischaemic heart disease. Fifty patients were operated between February1994 and June 1997. These included 45 males and 5 females (mean age 59, range37-73 years), of which 16 were diabetic and 30 were hypertensive. Forty-three patients had previous myocardial infarction, 5 PTCA and 3 CABG. Average EF was 40% +/- 10% (20-65%). Left anterolateral thoracotomy through 5th intercostal space was used to gain exposure and transmyocardial Laser was used to create an average of 25+/- channels in an average time of 28+/- 5 minutes with total operative time of less than 2 hours. Hospital mortality was 10% and major complications included arrythmias 40%, Left ventricular failure in 23%, and bleeding in 2%. Average hospital stay was 7 days. Improvement in angina class was significant and progressive at discharge, 3months , 6 months , 1 year and two years. Laser revascularistion is a promising form of treatment in selected group of otherwise unfit, high risk patients with diffuse disease uncontrolled on medical treatment including re-angina within 5 years of CABG and inoperable re-do cases.

THE CORONARY COLLATERAL CIRCULATION IN PATIENTS WITH ATHEROSCLEROTIC CORONARY ARTERY DISEASE: A PROPOSED CLASSIFICATION

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The angiographic assessment of coronary collateral circulation is imprecise. For better interpretation and comparison of collected angiographic data a classification is proposed. During the period from August 1996 to January 1999, 205 patients with angina pectoris needed further investigations. These patients underwent selective coronary arteriography at Gulab Devi Hospital, Lahore and the angiograms were analyzed at Shaikh Zayed Postgraduate Medical Institute, Lahore. The coronary collaterals were classified depending upon the filling of the specified segment of diseased artery with contrast material as follows; Grade 1=0, No visible filling of a major coronary artery or its specified segment. Grade 2=+, Filling of the lower one third of the diseased artery with contrast material. Grade 3=++, Filling the middle third of the diseased artery and the presence of contrast material to some extent in the intracoronary anastomosis. Grade 4=+++, Complete filling of the diseased artery and a visible thick network of coronary collaterals. We consider this simple classification based on anatomical landmarks has advantages over previous classifications, having more subjective description of coronary collateral circulation.

RISK ADJUSTED ANALYSIS OF PATIENTS UNDERWENT CABG AT AKUH.

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Aim:
To asses morbidity and mortality risks in patients underwent coronary artery bypass grafting, as per Cleveland Clinic risks score and European system for cardiac operative risk evaluation (EuroSCORE).

Materials and methods:
Retrospective review of records of all patients, who underwent coronary artery bypass grafting, at The Aga Khan University and Hospital, between 1995 -1999. Data was collected using National Cardiac Surgery Database. Using SPSS software, risk factors were correlated with Cleveland risk score and EuroSCORE , to distinguish low, medium and high risk groups.

Results:
586 patients (486 males and 100 females) underwent coronary artery bypass grafting. Mean age was 55 years (range 20 to 80 years). Significant risk factors identified were age, female gender, comorbid condition like COPD, serum creatinine > 2 mg %, emergency surgery, low ejection fraction, previous MI, previous open heart surgery, unstable angina, intractable congestive heart failure and left main trunk narrowed >90% . Overall mortality rate was 2.19%. Patients were stratified as low, medium and high risk groups and the respective mortality observed was 0.94%, 2.25% and 13.79%. Also increased morbidity was demonstrated with increasing risk scores.

Conclusion:
The clinical scoring system i.e. Cleveland risks score and EuroSCORE, are useful for pre-operative estimate of morbidity and mortality risks. Outcome of our patients closely matches with estimated risks mentioned in Cleveland risks score and EuroSCORE.

SURGICAL CLOSE MITRAL COMMISSUROTOMY: (A PROCEDURE THAT STILL HOLDS ITS PLACE)

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NICVD

Between January, 1997 to December, 1997-200 cases of closed mitral commissurotomy were performed at NICVD, Karachi, Male to Female ratio was 1:1.5. Mean age was 20 years. 97% of cases were in NYHA Functional Class III. Mean Mitral valve gradient was 29/20 mmHg. Mean; mitral valve area was 0.7 cm. Mean pulmonary artery systolic pressure was 82 mmHg. 87% were in sinus rhythm. Echocardiographically 70%had scored less than 8 & 30%more than 8.24% had moderate TR. Mitral valve dilated with tubbs dilater upto 3.5 cm^2. Average blood loss was 250 ml. Echocardiography at one week follow up showed mitral valve are of 1.8±0.2 cm, mean mitral valve gradient of 12/7 mmHg and pulmonary artery systolic pressure of 50 mmHg. Moderate residual TR was present in 20% of cases. At six months clinical follow up 90% of patients were in NYHA Class I, 05% were NYHA class II-III. Perioperative mortality was 0.6% Two patients had failed procedure. One had emergency MVR.

Conclusion: Close mitral commissurotomy is effective, safe & cost effective procedure. In countries where incidence of RHD is high and balloon valvuloplasty facilities limited, it is the procedure of first choice.

RHEUMATIC MITRAL STENOSIS MANAGED BY CLOSED MITRAL VALVOTOMY (CMV)

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Aim: Review of closed Mitral Valvotomies, a treatment of choice for Rheumatic Mitral stenosis in developing country.

Method: A prospective study of closed Mitral Valvotomies, done from Jan 1994 to December 1998, at LRH. Total of 293 cases of pure MS, MS with mild MR, MS with mild AR, were admitted and operated for CMV. Male to female ratio was 1:1.8, age range from 10-53 years with mean age of 21.5 years. Transthoracic echo was done in all cases, while transesophageal echo was done in 39% of cases. Pre op. Mean MVA was 0.8 cm^2, pre op gradient was 28/19 and mean RV pressure was 79mmHg. 92 % patents were in NYHA III. 34% patients had severe TR and 66% patients had mild to moderate TR. 77% patients were in sinus rhythm Mitral valve dilated upto 3.5 cm^2.

Results: Post op. Echo done 02 weeks after operation. Post op. Mean MVA was 1.9 cm^2, mean gradient was 13/8, mean RV pressure was 48mmHg. There was mild to moderate TR in 30% cases. After 4-6 months 84% patients were in NYHA I, 12% in class II and 4% in class III. Peri operative mortality was 2.7%, one patient with severe MR operated for MVR. Procedure was abandoned in 02 cases due to calcification & clot in LA.

Conclusion: In countries with high incidence of RHD with limited facilities for open heart surgery & balloon valvotomy, due to financial constraints. CMV is a treatment of choice as it is safe and economical.

CLOSE MITRAL VALVOTOMY IN PREGNANCY A SAFE PROCEDURE

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To assess the safety and efficacy of close mitral valvotomy CMV in pregnancy.

Between 1988 and 1998, 33 pregnant women with a mean age of 23 years had close mitral valvotomy during their first trimester (3 cases), second trimester (26 cases) or their trimester (4 cases). Surgery was indicated due to failure of medical treatment. 02 (6%) were in NYHA Functional Class IV. 31 (94%) were in functional class III. Mitral valve was assessed echocardiographically. Mean mitral valve area was 1.1 cm^2. Mean gradient across mitral valve was 19 mmhg. Mean pulmonary artery systolic pressure was 60 mmhg. Through left anterolateral thoracotomy mitral valve was dilated with tubbs dilator. Average blood loss was 250 ml. Average intensive care unit stay was 18 hours. Pereoperatively there was no maternal or fetal complication. Pregnancy follow up was possible in only 18 (55%) patients which was uneventful. All were in functional class II.

Conclusion : CMV is an effective and safe procedure in pregnancy. Patients have immediate symptomatic relief. It avoids radiation hazards associated with baloon valvotomy.

TRANS-SEPTAL APPROACH -A SAFE TEACNIQUE FOR THE COMBINED MITRAL AND TRICUSPID VALVE PROCEDURES. 1994-98

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Between 1994-98, twenty six cases under went procedures on both mitral and tricuspid valves through the trans septal approach.

A retrospective analysis was made to determine the indication, operative difficulties, complications and mortality.

No significant morbidity or mortality was encountered in this group. The cross clamp and by pass time was short and acceptable.

In conclusion trans septal approach provides good exposure to mitral valve and saves time when concomitant tricuspid procedure is required.

SURGERY FOR ACTIVE CULTURE - POSITIVE INFECTIVE VALVE ENDOCARDITIS: PREDICTORS OF EARLY AND LATE OUTCOME

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Objective: To describe a single unit experience in the surgical treatment of active culture-positive infective valve endocarditis and identify predictors of early and late outcome.

Patients: One hundred and eighteen consecutive patients (80 males and 38 females, mean age 49.9 years) with positive blood culture up to 3 weeks before surgery (or positive valve culture) and macroscopic evidence of lesions typical for endocarditis, undergoing surgery between 1973 and 1996 were evaluated. The aortic was infected in 53 (48.9%), the mitral in 46 (39%), both aortic and mitral in 12 (10.1%), the tricuspid in 4 (3.9%) and the pulmonary valve in 3 (2.5%). Native valve endocarditis (NVE) was present in 83 (70.3%) and prosthetic valve endocarditis (PVE) in 35 (29.7%). Mean follow up was 5.8 years (range 0-25 years).

Results: Operative mortality was 7.6% (9 patients). Endocarditis recurred in 8 (6.7%). A re-operation was required in 12 (10.2%). There were 24 late deaths. Actuarial freedom from recurrent endocarditis, re-operation and death at 10 years were 85.9, 87.2% and 73.1%. On Cox logistic regression models the following were independent adverse predictors: pulmonary oedema (p=0.007) and impaired LV function (p=0.02) for operative mortality; PVE (p=0.01) for recurrent infection; myocardial invasion by the infection (p=0.01) and re-operation (p=0.02) for late cardiac death; coagulase negative Staphylococcus (p=0.02) and annular abscess (p=0.04) for survival.

Conclusions: Surgery for culture-positive active infective valve endocarditis can be accomplished with acceptable mortality, providing satisfactory freedom from re-infection, re-operation and survival. In this series patients` haemodynamic status at surgery was the major determinant of operative mortality. PVE, coagulase negative Staphylococcus and annular or myocardial infectious invasion were the critical determinants of the late outcome.

CORONARY ARTERY REVASCULARISATION WITHOUT BYPASS WITH THE HELP OF OCTOPUS STABILISER.

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BACKGROUND: Coronary Artery Revascularisation (CAR) without cardio-pulmonary bypass (CPB) has got potential advantages. Continuous movement of the heart makes it technically more difficult to achieve accurate anasthomosis. Myocardial stabillisation will be beneficial to do an accurate anastomoses. We report our experience with octopus stabiliser for off bypass CAR.

METHOD : Between December 1997 to September 1998 twelve patients underwent CAR with this technique through median sternotomy. The mean age of the patients was 62 years (range = 49- 79 years) with a 3: 1 male to female ratio. Ten of the patients were elective while two patients were in-house urgent. Four patients had single graft, five patients had two and three patients had three grafts.

RESULTS : Eleven of these patients were out of the Intensive Care Unit in less than 24 hours and one stayed for 36 hours. There was no mortality. There were no neurogical complications. One patient had AF due to hypokalemia and one patients had a UTI. The average hospital stay was 4.9 days (range = 4-9 days). Eleven out of the twelve patients were angina free and on no anti-anginal medications at a mean follow-up of 4.2 months (range = 6 weeks to 9 months). One patients had recurrent angina and repeat coronary angiography revealed patent LIMA to the LAD anastomoses. However the vein graft to the distal RCA was completely occluded.

CONCLUSION : Our experience suggests that in a selected group of patients the CAR can be satisfactorily performed without CPB with the help of the octopus stabiliser. The patients have shorter ITU and hospital stay minimal morbidity. This procedure is cost effective.

CORONARY ARTERY BYPASS GRAFTING THROUGH LOWER HALF MEDIAN STERNOTOMY.

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Cardiac operations are being performed through alternatives other than standard median sternotomy. In April 1998, we devised a modification of lower half T-sternotomy, initially evolved at LSD Hospital, Salt Lake City, USA. Thepresent study presents our initial hospital results at National Institute of Cardio-vascular Diseases, Karachi.

This technique, in comparison to the standard sternotomy, can be performed easily with no need for special instrument. Patients can be quickly mobalised. The scar has statistically significantbetter patient satisfaction. Lastly, our modification has overcome some of the limitations of original T-sternotomy.

TRANSOESOPHAGEAL ECHOCARDIOGRAPHY- A USEFUL ADJUNCT IN MINIMAL ACCESS CARDIAC SURGERY

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AIMS To describe the use of TOE as the primary imaging modality used in our institution's minimal access cardiac surgery programme.

METHODS

We have, in our unit, performed to date, 29 MIDCABs and 19 minimal access aortic valve replacements through a transverse sternotomy in the 3rd intercostal space. All the patients follow a standard anaesthetic protocol.

Following induction of general anaesthesia and intubation(double lumen tubes for the MIDCAB and single lumen for the aortic valves), an omniplane HP probe is introduced into the patient's oesophagus. A deep transgastric view (midpapillary short axis)allows assessment of three important haemodynamic features :

1. Global left and right ventricular function
2. Estimation of left ventricular filling
3. Determination of Segmental Wall Movement Abnormalities

The probe is then moved to study the intracardiac anatomy in multiple planes.

During the MIDCAB surgery, the TOE is used to assess pre-bypass left ventricular function, check accurate positioning of femoral venous cannula,confirm complete drainage of right heart. The accurate positioning of left ventricular vent,measurement of left ventricular volume and distention during fibrillation,confirmation of adequate de-airing and assessment of left ventricular function and filling during weaning are guided by the TOE.

In aortic valve replacement, TOE is used to confirm valvular pathology,aortic root diameter,quantiafy aortic regurgitation, accurate positioning of femoral venous cannula and assess completion of de-airing. The normal prosthetic valve function is checked with the TOE

CONCLUSION In conclusion we have found that intra-operative TOE during both minimal access AVR and MIDCAB has helped in surgical technique and has proved a safe and effective guiding tool.

MULTIVESSEL GLOBAL REVASCULARISATION ON A BEATING HEART USING INNOVATIVE TECHNIQUES FOR STABILISATION & AVOIDANCE OF ISCHEMIA- WITH ANGIOGRAPHIC FOLLOWUP.

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Absolute pre-requisites for beating heart surgery are a dry field so that sutures are placed precisely under vision , and avoidance of ischemia during the time the coronary artery is occluded. One of the reasons for morbidity and mortality in beating heart surgery is the fact that vessels in the lateral and inferior wall are ignored We present indigenous techniques which have enabled us to perform multivessel CABG in 100 patients with excellent clinical and postoperative angiographic results.

PERICARDIAL STABILISATION TECHNIQUE:Based on our experience that a beating heart procedure is easier in a re-operation as the target area is stabilised by adhesions, we have devised a way of stabilising a small area of myocardium by using the surrounding pericardium to anchor it.

RETROGRADE CORONARY SINUS PERFUSION TECHNIQUE:Oxygenated blood is delivered beyond coronary stenosis by means of a cannula in the coronary sinus. This allows unhurried precise anastomosis with no 'racing against the clock'

TRACTION SUTURE TECHNIQUE TO RETRACT THE HEART :A special 'no-touch' technique which does away with the assistants hand retracting the heart has been developed.

We have used these technique in 100 patients with severe triple vessel disease. The average number of grafts was 3.6 (range 3-5). Angiographic study was performed in 35 patients as a routine with 98% patency. All patients are clinically well and asymptomatic. We recommend our technique as a routine for multivessel CABG without compromising the quality of the anastomosis.

A NON RANDOMISED TRIAL OF 'ON BYPASS' vs 'OFF BYPASS' CORONARY ARTERY REVASCULARISATION

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BACKGROUND: Several groups have reported a decreased postoperative morbidity and length of hospital stay in 'off pump' coronary artery bypass grafting (CABG). We report on our initial 'off by-pass' CABG series and these compare with the unselected consecutive patients operated upon the same time period in our institution
METHODS: We retrospectively collected data of 100 consecutive patients who underwent CABG with cardiopulmonary bypass (Group A=55 patients) or without cardiopulmonary by-pass (Group B=45 patients) during a 4-months period. In the patients in Group A normothermic cardiopulmonary bypass was used with intermittent aortic cross-clamping and ventricular fibrillation. In Group B a CTS Access System (Cardiothoracic Systems, Cupertino, Ca, USA) was used to allow adequate exposure and stabilisation of the coronary arteries. Mean age of the patients in group A was 55 years while 63 years in Group B. Four patients in Group B had experienced a cerebral vascular accident in the 12 months preceding the heart operation and 3 patients had asymptomatic severe bilateral carotid artery disease. The average number of grafts was 3±1 in Group A vs. 2.5±0.8 in Group B in which branches of the Circumflex artery were revascularised in 21 patients (42%). In 50 % of the patients in Group A and in 5% in Group B at least two arterial grafts were used.
RESULTS: There was no hospital death. Post operative myocardial infarctions or ischemic ECG changes were not recorded in either of the two groups. Mean intubation time and ICU stay were similar in Group A and in Group B. Mean hospital stay was 5 days in Group A while it was 5.7 days in the 'off by-pass' group. The incidence of post-operative atrial fibrillation was 5.4% in Group A while 15% in Group B.
CONCLUSION: Our initial experience failed to show an advantage in the early post-operative period in the patients operated 'off by-pass' compared to the ones 'on by-pass'. The 'non randomised' allocation of patients with more non cardiac co-morbid conditions towards the 'off by-pass' treatment group may explain these early findings.

RESULTS OF CORONARY ARTERY BYPASS GRAFTING USING RAMA'S METHOD OF CORONARY STABLIZATION.

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This study summarises the results of off-pump coronary bypass grafting (CABG) using RAMA'S method of coronary stabilization,
Between March 1997 and November 1998, 78 patients underwent off-pump CABG: coronary stabilization was achieved by four stiches passed in the myocardium and knotted on a parch of Dacron. Patients with acute myocardial infarction, coronary angioplasty failure, cardiogenic shock and prior CABG were excluded. Mean age was 63+ or – 11 years.Coronary angiography showed single vessels, double vessel and triple vessel disease in 15.4 % , 26.9 % and 57.7 % of patients respectively.
12 patients received single, 32 two, 30 three and 4 received 4 grafts, with a mean of 2.3 grafts per patients. The left internal mammary artery was used for grafting in 62 patients, the right mammary artery in 8 patients, both left and right 2 patients and the gastro-epiploic artery graft in 4 patients. Operative mortality was 1.3 %. There was no cases of post-operative myocardial infarction. During follow-up, no death was observed. Early coronary arteriography was performed systematically in 20 patients, revealing good patency of all the grafts.
The authors conclude that off-pump CABG can be achieved with good results with RAMA's method of coronary stabilization.

LONG- TERM CLINICAL RESULT OF THE PHILIPPINE HEART CENTER BIOPROSTHETIC HEART VALVE

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BACKGROUND: In 1981, the Philippine Heart Center (PHC) bioprosthetic mitral valve was developed and utilized as a possible alternative to the expensive imported prosthetic valves. **METHODS**: A longitudinal descriptive study was done on 62 patients who underwent mitral valve replacement from February 1981 to February 1986. Patients age ranged from 13 to 57 years with a mean of 28 ± 10.29 years. Mean follow-up period was 60.62 ± 52.7 months/patient. Preoperatively, 78.9% were in NYHA Functional Class III and IV. **RESULTS**: All-cause death rate was 24.2%, while PHC valve-related death rate was only 6.45%. Re-operation rate was 43.5%, with a mean implantation period of 7.22 ± 3.72 years. Actuarial survival at 8 & 10 years are both 89.14%. Freedom from valve-related events at 8 & 10 years are as follows: structural deterioration- 68.72% and 51.84%; re-operation- 65.4% and 49.36%; endocarditis- 92.6%; thromboembolic events –97.3%; anticoagulation-related bleeding-96.7%. **CONCLUSION**: Other than structural deterioration, the clinical performance of the PHC valve at 8 & 10 years are comparable to those of other current porcine valves.

Behavior of the Hancock 11 Bioprosthesis in Patients Ages 11-40 Years

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Background: Bioprosthesis are generally recommended for older age groups patients. Because of our difficult to anticoagulate patients (pts), we have been implanting bioprosthesis in young patients. This review examines the behavior of Hancock II bioprosthesis in patients ages 11-40 years (yrs).

Method: Between July 1988 and December 1996, 671 Hancock II valves were implanted in 609 patients (pts.) Considering 40 years as the cut off age for "young" pts, and excluding tricuspid valve replacement & other prosthesis replacements. 230 pts with 241 valves constituted the study group. Mean age was 27 ± 7.66 and median 28 yrs. Sixty pts (26%) were between 11-20 yrs, and 170 (74%) between 21-40 yrs, 20% were male, 80% female and 86% rheumatic. Preoperatively, 74% of the pts were in NYHA functional class III or IV, 30% in atrial fibrillation, and 44% had previous surgeries. The left ventricular function was normal in 80%, impaired in 12% and poor in 5%, unk in 3%. There were 124 isolated mitral valve replacements, 13 isolated aortic valve replacements and 11double valve replacements. 82 (36%) had a repair besides the Hancock replacement. Operative mortality was 1%. One pt required replacement of the bioprosthesis within the same hospital admission (paravalvular leak in the mitral position). Late mortality was 1%. 228 pts were followed for a maximum of 10.5 years (range 2 - 10.5 yrs; mean 6). Seven (3%) pts were lost to follow-up. 96% of the pts were in NYHA class I or II, 71% in sinus rhythm, 23% in atrial fibrillation, 67% on aspirin, 16% fully anticoagulated, and the rest taking neither.

Results: Twenty-one pts needed reoperations (1 pt had 2 reops) with a mean interval between surgeries of 4.2 ± 2.5 yrs (range 12 days - 8.2 yrs). The cause was structural valve degeneration(SVD)in 10 pts (9 failures in the mitral valve & I in the aortic valve), paravalvular leaks in 3 pts, endocarditis in 6 pts and 2 with AV or TV dysfunction(mitral valve was not touched). Three pts died at reoperation, 2 with endocarditis & one with hepatic complications related to a tear in the inferior vena cava. The actuarial survival at 10.5 yrs. was 91% ± 2.22, freedom from SVD was 85.22 ± 4.85, freedom from reoperation 72% ± 5.94, freedom from thromboembolism, 97.62% ± 1.05, freedom from endocarditis 96.70% ± 1.39, event free survival (including reops) was 69% ± 6.15, without reops was 90 ± 3.35.

Conclusions: Contrary to common belief, our data indicate that the Hancock II bioprosthesis performs well in young pts. This alleviates the anxiety many of us have about using a bioprosthesis in young pts requiring valvular replacement particularly in a population that may not be suitable for permanent anticoagulation.

EARLY FOLLOW-UP RESULTS OF A SERIES USING THE TISSUEMED STENTLESS AORTIC VALVE

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AIMS

Encouraged by the results of the Ross Procedure, we set out to evaluate the early and mid term performance of a new stentless biological valve.The Tissuemed valve is unique in that it is a freesewn porcine pulmonary xenograft.Potential advantages included ease of implantation, good haemodynamic performance and freedom from long term structural failure.

PATIENTS AND METHODS

Between March 1996 and February 1998, 34 patients underwent aortic valve replacement with a Tissuemed porcine pulmonary xenograft. The median age was 71.4 (range 63-84).The valves used ranged from 21-27mm with the 25 mm valve (16 patients,47 %) being the commonest used valve.15 patients(44%) had concomitant procedures in the form of bypass grafts and 1 patient had a carotid endarterectomy

RESULTS

The follow up was complete in 31 patients (91.17%),the median follow up was 29.26 months with a range of 18-41 months. . All patients had perioperative TOE that revealed normal prosthetic valve function and competence. There were no early deaths. There have been no documented haemmorhagic or thromboembolic complications.

21 patients are in NYHA Grade I or II. There were 7 late deaths including 2 patients who had had their valves replaced. None of these deaths were valve related. 27 patients were evaluated with a transthoracic echo. The median Peak Pressure Gradient was 12.84 with a range of 4-58 mm Hg. The Effective Orifice Area was 2.684 cm^2 with a range of 0.83 – 5.1 cm^2. The results showed severe regurgitation in 6 patients and the valve was replaced. Normal function in 7 patients, trivial regurgitation in 6 patients, mild in 4 patients and moderate in 3 was seen. The site of the leak was central in 8 and a mixture of central and paravalvular in 5. These patients did not have any clinical signs of AR or significant symptomatology.

CONCLUSION

In this series, the early follow up results showed no thromboembolic events. Early TOE showed excellent haemodynamic performance. However, the reoperation rate (17.6%) and the number of regurgitant valves at late TOE have led to us abandoning the use of this valve.

A STENTLESS, PERICARDIAL MITRAL PROSTHESIS-TECHNIQUE OF IMPLANTATION AND EARLY RESULTS IN 40 PATIENTS

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To introduce a stentless mitral bioprosthesis, illustrate the technique of implantation, and the results in the first 40 recipients in our institution.

A brief description of the valve and its development will be given.We have been implanting the **QUATTRO** valve since December 1996. Forty patients have received the valve thus far. (mean age 34 years, 10 male). All were symptomatic (NYHAFCIII-IV), and all were judged unsuitable for mitral repair at the time of operating. We chose this valve for use in these patients because we felt a mechanical device had all the known drawbacks, and theoretically at least, this devise has some advantage(fexible design, retains annulo-papillary continuity, biological material treated with an anti-mineralisation technique). All patients were assessed echocardiographically pre-and post-operatively, and by Prof. Barlow clinically post-operatively.

One patient died early postoperatively of sternal sepsis and two have late postoperatively. All survivors are in NYHAFC 1or II. There have been no thromboembolic events. One patient developed late prosthetic valve endocarditis. No cases of clinically signification haemolysis have been seen. One year postoperatively TEE revealed mitral regurgitation in 93% of patients(31%mild,62%trival). The valve area was measured echocardiographically and varied from 1.1 to 2. 2sq cm using different tecniques. Clinical assessment showed no cases to have more than mild+MS.

The early results with this valve show it to be safe to implant, not technically different as compared with mitral homografts, and to have acceptable heamodynamics. The measured valve area are disappointing, however they are comparable to those achieved with standard mechanical prosthesis in the mitral position. Although durability remains unknown it is likely that the valve will be more durable than conventional stented mitral bioprostheses because of its stentless design, early processing of the pericardium, and use of the anti-mineralisation agent polyol.

INTRAOPERATIVE TRANSESOPHAGEAL ECHOCARDIOGRAPHIC (TEE) EVALUATION OF VALVULAR HEART DISEASE.

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The cardiac anesthesiologist is increasingly called upon to make a precise evaluation of pathology of cardiac valves and provide information to the surgeon in order to make correct decisions regarding the type of valvular repair or replacement prior to starting a procedure. After coming off bypass the surgeon again expects a assessment of the adequacy of the operation performed. The anesthesiologist's contribution can impact the outcome of such surgery.

A sound knowledge of the normal anatomy is required to perform two dimensional (2D) examination. In order to make quantitative evaluation of pressure gradients, valve area and other hemodynamic calculations one needs to be familiar with principles of Doppler imaging modalities. Textbooks are an excellent resource for understanding Doppler equation, Bernoulli's equation and its modifications and basic physics applied to the equipment and techniques of echocardiography. Modalities commonly employed to asses different valvular lesions will be illustrated in the presentation.

Screening Cardiovascular Associated Genes By Express Sequence Tags (ESTs)

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The heart, which is composed of cellular components of the circulatory system, is a representative organ for obtaining genes expressed in cardiovascular system. In order to screen cardiovascular associated genes, we used partial sequences of a human fetal heart (HFH) cDNA library, or expressed sequence tags. To construct HFH cDNA library, the total RNA was extracted from fetal heart and picking up the plaques to prepare sequencing template. The cDNA inserts were enriched by PCR in the presence of vector primers flanking the inserts using a T3 forward and T7 reverse primer. The PCR products were used directly for cycles sequencing using a fluorescence-conjugated T3B primer, following sequence generation using automated DNA sequencer

Of 3132 cDNA clones (about 70% positive clones analyzed by sequence similarity searching against the Genebank data bases, the new sequences were 47,4% and the known genes were 44,1%.

These results show that the method is available to screen and identify characteristics of all specific clones of heart. Various application requiring high quality cDNA libraries are outlined, including large-scale single pass sequencing of cDNA clones to ESTs and differential screening of cDNA library. But one of the most crucial steps in the preparation of high quality cDNA library is the purification of high quality cDNA library is the purification of intact, undegraded mRNA.

Keywords : *mRNA, cDNA library, PCR, DNA Sequencing, ESTs*

THE REBOUND PULMONARY HYPERTENSION AFTER WITHDRAWING INHALED NITRIC OXIDE

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Aim: The purpose of this study was to determine the risk factors to develope rebound pulmonary hypertension(RPH) after withdrawing inhaled nitric oxide in postoperative care for congenital heart disease.
Method: We studied consecutive 19 children who were treated with inhaled nitric oxide(iNO) after open heart surgery for congenital heart disease. The children were divided into two groups(group I : without RPH, group II : with RPH). To identify the iNO effects between two groups and the correlation between the methods of the weaning and RPH, we measured hemodynamic and ABGA data before and after initiating iNO and just before withdrawing iNO and during first and second weaning process in group II. A same data at a half of the initial iNO concentration when iNO has been weaning was measured.
Results: In 6 of 19 patients(32%), iNO withdrawal caused a RPH. Second iNO withdrawl group II patients was successfully completed. Compared with group I, group II had an older age(1204±1688 versus 546±1654 days, $p < 0.05$), a shorter duration of iNO therapy(34±18 versus 57±46 hours, $p < 0.05$), a shorter duration of weaning process(5 ±3 versus 15±13 hours, $p < 0.05$) and a lower concentration of initial iNO therapy(11±8 versus 17±8 ppm, $p < 0.05$). Compared between the first and second weaning in group II patients, second weaning group had a longer duration of weaning process(11±10 versus 5±3 hours, $p < 0.05$), a lower iNO concentration just before iNO was withdrawn (2± 0.6 versus 4±1 ppm, $p < 0.05$), a decrease in difference of meanPAP/SAP(0.025±0.1 versus 0.048±0.08, $p < 0.05$) and a increase in difference of PaO_2/FiO_2(53±70 versus 61±85, $p < 0.05$) between initial and a half of the initial iNO concentration
Conclusions: We speculate an older age, a shorter duration of iNO therapy, a higher iNO concentration just before iNO was withdrawn, a shorter duration of weaning off the iNO and more increasing meanPAP/SAP and more decreasing PaO_2/FiO_2 during weaning process of the iNO may be risk factors of the RPH.

Ventricular Septal Defect - Surgical Closure

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Aim The aim of this study was to evaluate the results obtained from the retrospective review of the patients of Ventricular Septal Defect having Surgical Closure.

Method A retrospective study of 233 patients of the surgical closure of Ventricular Septal Defect between Jul 1989 to Jun 1999 in the thoracic and cardiovascular surgical dept of AFIC & NIHD Rawalpindi Pakistan. There were 163 males and 70 females patients. 25 patients had previously PA banding. 110 patients had transatrial approach 35 infants were done on total circulatory arrest. In the early post operative period 19 patients died and 6 during follow up period. 2 patients had reoperation for patch dehescence.

Conclusion We are having the encouraging results with surgical management of infants on total circulatory arest. Transatrial approach is one of the significant factor for good result in closure of VSD.

AMALGAMATION OF SINUS VENOSUS AND ATRIUM: EVOLUTION AND CLINICAL SIGNIFICANCE

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The sinus venosus is single symmetrical chamber ejecting into the common artrium through the sinoatrial valve in fish. In Channa striata, an air breathing fish which can absorb air through non-gill respiratory apparatus, a vein possibly carrying oxygenated blood drains into one half of the sinus venosus which is incompletely divided into two halves by a median ridge. The sinoatrial orifice remain in the midline. In the air-breathing India Cat-fish there is a shift of the sinoatrial orifice to the right and the left artrium, becomes smaller. The incomplete septation of the sinus venosus becoms more evident. In the frog the sinoatrial valve shift to the right and drains into the right side of the partially divided atrium. In the turtle, snake and the crocodile, the sinus venosus is connected to the right atrium which is completely separated from the left atrium by the interatrial septum. There is a pulmonary venous chamber with a common pulmonary vein. In birds, mammals and man, the sinoatrial valve is absorbed. The right venous valve is represented by the crista terminalis, Eustachian and Thebesian valves. The superior commissure becomes the septum spurium. The inferior commissure becomes the tendon of Todaro. In birds, mammals and men there is a band in the left atrium similar to the human situation are as follows:

1. We have observed sequential contraction of the vena cavae, sinus venarum, right atrium proper and the right ventrical Likewise there is sequential contraction of the pulmonary veins, pulmonary venarum,left atrium proper 'and the left ventricale. This obviously assissts in unidirectional flow without valves in the veins and atria. The electrophysiological basis for this quadruple rhythm need to be identified.

2. When coming off bypass we have observed isolated or asynchronous contraction of the terminal vena cavae, systemic sinus venarum and right atrium proper; the terminal pulmonary veins, pulmonary sinus venarum and left atrium proper. The terminal great veins and sinus venareal components of the atrial have intrinsic contractility.

3.The junction between the sinus venarum and the right atrium proper varies. Augmented sinus venareal contribution displacing the crista terminalis has been observed in superior and inferior sinus venosus syndromes as well as ostium secundum defects. The facilitates repair through incision confined to the sinus venarum and /or the cavae.

4. Cor-triatriatum is possibly related to left atrial crista terminalis, in anology with cor-triatriatum dexter related to right artil crista terminalis.

5. Phylogeny suggests that sinus venosus is the precursor of systemic and pulmonary sinus venarum.

ULTRASTRUCTURAL ANALYSIS OF HEALING MECHANISM IN IMPLANTED POLYTETRAFLUROETHYLENE (PTFE) PATCH GRAFTS IN HUMAN HEARTS

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Aims: This study was undertaken in an attempt to study the healing process of the PTFE graft inside the human heart following its implantation for repair of the congenital heart defects. Since 1979, we have been using PTFE patch for repair of cardiac defects.

Methods: From 1993 onwards, Implanted PTFE patch grafts were explanted during the Re-Do operation for residual lesions/staged procedures or following the death of the patient after obtaining written consent from the patients/next of kin. The duration of the implanted patch varied from 12 hrs to 20 months. 7 grafts underwent ultrastructural analysis employing transmission (TEM) and scanning electron microscopic (SEM) studies and immunohistochemistry.

Result ; The analysis showed that there were no inflammatory responses after 12 hrs following implantation. The SEM of the 72-hour-old specimen revealed absence of any propogative thrombus along the graft. The 6-week-old implant showed lack of tissue ingrowth into the interstices of the patch as a result of sepsis that was detected later. The 20-month-old patch showed liberal invasion of the collagen into the interstices of the patch without altering the integrity of the patch with microcalcification. There were few blood vessels in a fine stroma of fibrovascular tissue. There were minimal monocytes beyond the line of anastomosis.

Conclusion: Our study for the first time from human hearts demonstrates that the healing response for the PTFE graft is satisfactory with minimal tissue reaction, less thrombogenecity and insignificant microcalcification. The collagen invasion into the interstices of the patch is very encouraging.

Closure of Atrial Septal Defect without Cardiopulmonary Bypass: The Sandwich Operation

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Aim: Cardiopulmonary bypass has adverse effects on patient's physiology. We report encouraging experience with closure of atrial septal defects without cardiopulmonary bypass.
Method: Between August 1997 and May 1999, 56 patients aged 4 to 65 years underwent closure of ostium secondum atrial septal defects without cardiopulmonary bypass. The 'Sandwich' patch was used in all cases. The patch was inserted through the right atrial appendage and fixed with endoscopic stapler under transesophageal echocardiography. Follow up ranged from 1 month to 1.4 years.
Results: There was no operative mortality. Two attempts were abandoned and the defects were closed with cardiopulmonary bypass. The defects were successfully closed in 54 patients, 50 were completely closed, and 4 had residual shunt. Two patients were reoperated with the same technique for the residual shunt. The experience of the surgical team predicted effective closure.
Conclusions: Closure of atrial septal defect without cardiopulmonary bypass can be done safely and effectively. Successive technical improvements and experience of the surgical team should give better results.

RHEUMATIC MITRAL STENOSIS MANAGED BY CLOSED MITRAL VALVOTOMY (CMV)

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Aim: Review of closed Mitral Valvotomies, a treatment of choice for Rheumatic Mitral stenosis in developing country.

Method: A prospective study of closed Mitral Valvotomies, done from Jan 1994 to December 1998, at LRH. Total of 293 cases of pure MS, MS with mild MR, MS with mild AR, were admitted and operated for CMV. Male to female ratio was 1:1.8, age range from 10-53 years with mean age of 21.5 years. Transthoracic echo was done in all cases, while transesophageal echo was done in 39% of cases. Pre op. Mean MVA was 0.8 cm^2, pre op gradient was 28/19 and mean RV pressure was 79mmHg. 92 % patents were in NYHA III. 34% patients had severe TR and 66% patients had mild to moderate TR. 77% patients were in sinus rhythm Mitral valve dilated upto 3.5 cm^2.

Results: Post op. Echo done 02 weeks after operation. Post op. Mean MVA was 1.9 cm^2, mean gradient was 13/8, mean RV pressure was 48mmHg. There was mild to moderate TR in 30% cases. After 4-6 months 84% patients were in NYHA I, 12% in class II and 4% in class III. Peri operative mortality was 2.7%, one patient with severe MR operated for MVR. Procedure was abandoned in 02 cases due to calcification & clot in LA.

Conclusion: In countries with high incidence of RHD with limited facilities for open heart surgery & balloon valvotomy, due to financial constraints. CMV is a treatment of choice as it is safe and economical.

CLOSE MITRAL VALVOTOMY IN PREGNANCY A SAFE PROCEDURE

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To assess the safety and efficacy of close mitral valvotomy CMV in pregnancy.

Between 1988 and 1998, 33 pregnant women with a mean age of 23 years had close mitral valvotomy during their first trimester (3 cases), second trimester (26 cases) or their trimester (4 cases). Surgery was indicated due to failure of medical treatment. 02 (6%) were in NYHA Functional Class IV. 31 (94%) were in functional class III. Mitral valve was assessed echocardiographically. Mean mitral valve area was 1.1 cm^2. Mean gradient across mitral valve was 19 mmhg. Mean pulmonary artery systolic pressure was 60 mmhg. Through left anterolateral thoracotomy mitral valve was dilated with tubbs dilator. Average blood loss was 250 ml. Average intensive care unit stay was 18 hours. Pereoperatively there was no maternal or fetal complication. Pregnancy follow up was possible in only 18 (55%) patients which was uneventful. All were in functional class II.

Conclusion : CMV is an effective and safe procedure in pregnancy. Patients have immediate symptomatic relief. It avoids radiation hazards associated with baloon valvotomy.

TRANS-SEPTAL APPROACH -A SAFE TEACNIQUE FOR THE COMBINED MITRAL AND TRICUSPID VALVE PROCEDURES. 1994-98

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Between 1994-98, twenty six cases under went procedures on both mitral and tricuspid valves through the trans septal approach.

A retrospective analysis was made to determine the indication, operative difficulties, complications and mortality.

No significant morbidity or mortality was encountered in this group. The cross clamp and by pass time was short and acceptable.

In conclusion trans septal approach provides good exposure to mitral valve and saves time when concomitant tricuspid procedure is required.

SURGERY FOR ACTIVE CULTURE - POSITIVE INFECTIVE VALVE ENDOCARDITIS: PREDICTORS OF EARLY AND LATE OUTCOME

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Objective: To describe a single unit experience in the surgical treatment of active culture-positive infective valve endocarditis and identify predictors of early and late outcome.

Patients: One hundred and eighteen consecutive patients (80 males and 38 females, mean age 49.9 years) with positive blood culture up to 3 weeks before surgery (or positive valve culture) and macroscopic evidence of lesions typical for endocarditis, undergoing surgery between 1973 and 1996 were evaluated. The aortic was infected in 53 (48.9%), the mitral in 46 (39%), both aortic and mitral in 12 (10.1%), the tricuspid in 4 (3.9%) and the pulmonary valve in 3 (2.5%). Native valve endocarditis (NVE) was present in 83 (70.3%) and prosthetic valve endocarditis (PVE) in 35 (29.7%). Mean follow up was 5.8 years (range 0-25 years).

Results: Operative mortality was 7.6% (9 patients). Endocarditis recurred in 8 (6.7%). A re-operation was required in 12 (10.2%). There were 24 late deaths. Actuarial freedom from recurrent endocarditis, re-operation and death at 10 years were 85.9, 87.2% and 73.1%. On Cox logistic regression models the following were independent adverse predictors: pulmonary oedema (p=0.007) and impaired LV function (p=0.02) for operative mortality; PVE (p=0.01) for recurrent infection; myocardial invasion by the infection (p=0.01) and re-operation (p=0.02) for late cardiac death; coagulase negative Staphylococcus (p=0.02) and annular abscess (p=0.04) for survival.

Conclusions: Surgery for culture-positive active infective valve endocarditis can be accomplished with acceptable mortality, providing satisfactory freedom from re-infection, re-operation and survival. In this series patients` haemodynamic status at surgery was the major determinant of operative mortality. PVE, coagulase negative Staphylococcus and annular or myocardial infectious invasion were the critical determinants of the late outcome.

CORONARY ARTERY REVASCULARISATION WITHOUT BYPASS WITH THE HELP OF OCTOPUS STABILISER.

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BACKGROUND: Coronary Artery Revascularisation (CAR) without cardio-pulmonary bypass (CPB) has got potential advantages. Continuous movement of the heart makes it technically more difficult to achieve accurate anasthomosis. Myocardial stabillisation will be beneficial to do an accurate anastomoses. We report our experience with octopus stabiliser for off bypass CAR.

METHOD : Between December 1997 to September 1998 twelve patients underwent CAR with this technique through median sternotomy. The mean age of the patients was 62 years (range = 49- 79 years) with a 3: 1 male to female ratio. Ten of the patients were elective while two patients were in-house urgent. Four patients had single graft, five patients had two and three patients had three grafts.

RESULTS : Eleven of these patients were out of the Intensive Care Unit in less than 24 hours and one stayed for 36 hours. There was no mortality. There were no neurogical complications. One patient had AF due to hypokalemia and one patients had a UTI. The average hospital stay was 4.9 days (range = 4-9 days). Eleven out of the twelve patients were angina free and on no anti-anginal medications at a mean follow-up of 4.2 months (range = 6 weeks to 9 months). One patients had recurrent angina and repeat coronary angiography revealed patent LIMA to the LAD anastomoses. However the vein graft to the distal RCA was completely occluded.

CONCLUSION : Our experience suggests that in a selected group of patients the CAR can be satisfactorily performed without CPB with the help of the octopus stabiliser. The patients have shorter ITU and hospital stay minimal morbidity. This procedure is cost effective.

CORONARY ARTERY BYPASS GRAFTING THROUGH LOWER HALF MEDIAN STERNOTOMY.

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Cardiac operations are being performed through alternatives other than standard median sternotomy. In April 1998, we devised a modification of lower half T-sternotomy, initially evolved at LSD Hospital, Salt Lake City, USA. Thepresent study presents our initial hospital results at National Institute of Cardio-vascular Diseases, Karachi.

This technique, in comparison to the standard sternotomy, can be performed easily with no need for special instrument. Patients can be quickly mobalised. The scar has statistically significantbetter patient satisfaction. Lastly, our modification has overcome some of the limitations of original T-sternotomy.

TRANSOESOPHAGEAL ECHOCARDIOGRAPHY- A USEFUL ADJUNCT IN MINIMAL ACCESS CARDIAC SURGERY

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AIMS To describe the use of TOE as the primary imaging modality used in our institution's minimal access cardiac surgery programme.

METHODS

We have, in our unit, performed to date, 29 MIDCABs and 19 minimal access aortic valve replacements through a transverse sternotomy in the 3rd intercostal space. All the patients follow a standard anaesthetic protocol.

Following induction of general anaesthesia and intubation(double lumen tubes for the MIDCAB and single lumen for the aortic valves), an omniplane HP probe is introduced into the patient's oesophagus. A deep transgastric view (midpapillary short axis)allows assessment of three important haemodynamic features :

1. Global left and right ventricular function
2. Estimation of left ventricular filling
3. Determination of Segmental Wall Movement Abnormalities

The probe is then moved to study the intracardiac anatomy in multiple planes.

During the MIDCAB surgery, the TOE is used to assess pre-bypass left ventricular function, check accurate positioning of femoral venous cannula,confirm complete drainage of right heart. The accurate positioning of left ventricular vent,measurement of left ventricular volume and distention during fibrillation,confirmation of adequate de-airing and assessment of left ventricular function and filling during weaning are guided by the TOE.

In aortic valve replacement, TOE is used to confirm valvular pathology,aortic root diameter,quantiafy aortic regurgitation, accurate positioning of femoral venous cannula and assess completion of de-airing. The normal prosthetic valve function is checked with the TOE

CONCLUSION In conclusion we have found that intra-operative TOE during both minimal access AVR and MIDCAB has helped in surgical technique and has proved a safe and effective guiding tool.

MULTIVESSEL GLOBAL REVASCULARISATION ON A BEATING HEART USING INNOVATIVE TECHNIQUES FOR STABILISATION & AVOIDANCE OF ISCHEMIA- WITH ANGIOGRAPHIC FOLLOWUP.

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Absolute pre-requisites for beating heart surgery are a dry field so that sutures are placed precisely under vision , and avoidance of ischemia during the time the coronary artery is occluded. One of the reasons for morbidity and mortality in beating heart surgery is the fact that vessels in the lateral and inferior wall are ignored We present indigenous techniques which have enabled us to perform multivessel CABG in 100 patients with excellent clinical and postoperative angiographic results.

PERICARDIAL STABILISATION TECHNIQUE:Based on our experience that a beating heart procedure is easier in a re-operation as the target area is stabilised by adhesions, we have devised a way of stabilising a small area of myocardium by using the surrounding pericardium to anchor it.

RETROGRADE CORONARY SINUS PERFUSION TECHNIQUE:Oxygenated blood is delivered beyond coronary stenosis by means of a cannula in the coronary sinus. This allows unhurried precise anastomosis with no 'racing against the clock'

TRACTION SUTURE TECHNIQUE TO RETRACT THE HEART :A special 'no-touch' technique which does away with the assistants hand retracting the heart has been developed.

We have used these technique in 100 patients with severe triple vessel disease. The average number of grafts was 3.6 (range 3-5). Angiographic study was performed in 35 patients as a routine with 98% patency. All patients are clinically well and asymptomatic. We recommend our technique as a routine for multivessel CABG without compromising the quality of the anastomosis.

A NON RANDOMISED TRIAL OF 'ON BYPASS' vs 'OFF BYPASS' CORONARY ARTERY REVASCULARISATION

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BACKGROUND: Several groups have reported a decreased postoperative morbidity and length of hospital stay in 'off pump' coronary artery bypass grafting (CABG). We report on our initial 'off by-pass' CABG series and these compare with the unselected consecutive patients operated upon the same time period in our institution
METHODS: We retrospectively collected data of 100 consecutive patients who underwent CABG with cardiopulmonary bypass (Group A=55 patients) or without cardiopulmonary by-pass (Group B=45 patients) during a 4-months period. In the patients in Group A normothermic cardiopulmonary bypass was used with intermittent aortic cross-clamping and ventricular fibrillation. In Group B a CTS Access System (Cardiothoracic Systems, Cupertino, Ca, USA) was used to allow adequate exposure and stabilisation of the coronary arteries. Mean age of the patients in group A was 55 years while 63 years in Group B. Four patients in Group B had experienced a cerebral vascular accident in the 12 months preceding the heart operation and 3 patients had asymptomatic severe bilateral carotid artery disease. The average number of grafts was 3±1 in Group A vs. 2.5±0.8 in Group B in which branches of the Circumflex artery were revascularised in 21 patients (42%). In 50 % of the patients in Group A and in 5% in Group B at least two arterial grafts were used.
RESULTS: There was no hospital death. Post operative myocardial infarctions or ischemic ECG changes were not recorded in either of the two groups. Mean intubation time and ICU stay were similar in Group A and in Group B. Mean hospital stay was 5 days in Group A while it was 5.7 days in the 'off by-pass' group. The incidence of post-operative atrial fibrillation was 5.4% in Group A while 15% in Group B.
CONCLUSION: Our initial experience failed to show an advantage in the early post-operative period in the patients operated 'off by-pass' compared to the ones 'on by-pass'. The 'non randomised' allocation of patients with more non cardiac co-morbid conditions towards the 'off by-pass' treatment group may explain these early findings.

RESULTS OF CORONARY ARTERY BYPASS GRAFTING USING RAMA'S METHOD OF CORONARY STABLIZATION.

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This study summarises the results of off-pump coronary bypass grafting (CABG) using RAMA'S method of coronary stabilization,
Between March 1997 and November 1998, 78 patients underwent off-pump CABG: coronary stabilization was achieved by four stiches passed in the myocardium and knotted on a parch of Dacron. Patients with acute myocardial infarction, coronary angioplasty failure, cardiogenic shock and prior CABG were excluded. Mean age was 63+ or – 11 years.Coronary angiography showed single vessels, double vessel and triple vessel disease in 15.4 % , 26.9 % and 57.7 % of patients respectively.
12 patients received single, 32 two, 30 three and 4 received 4 grafts, with a mean of 2.3 grafts per patients. The left internal mammary artery was used for grafting in 62 patients, the right mammary artery in 8 patients, both left and right 2 patients and the gastro-epiploic artery graft in 4 patients. Operative mortality was 1.3 %. There was no cases of post-operative myocardial infarction. During follow-up, no death was observed. Early coronary arteriography was performed systematically in 20 patients, revealing good patency of all the grafts.
The authors conclude that off-pump CABG can be achieved with good results with RAMA's method of coronary stabilization.

LONG- TERM CLINICAL RESULT OF THE PHILIPPINE HEART CENTER BIOPROSTHETIC HEART VALVE

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BACKGROUND: In 1981, the Philippine Heart Center (PHC) bioprosthetic mitral valve was developed and utilized as a possible alternative to the expensive imported prosthetic valves. **METHODS**: A longitudinal descriptive study was done on 62 patients who underwent mitral valve replacement from February 1981 to February 1986. Patients age ranged from 13 to 57 years with a mean of 28 ± 10.29 years. Mean follow-up period was 60.62 ± 52.7 months/patient. Preoperatively, 78.9% were in NYHA Functional Class III and IV. **RESULTS**: All-cause death rate was 24.2%, while PHC valve-related death rate was only 6.45%. Re-operation rate was 43.5%, with a mean implantation period of 7.22 ± 3.72 years. Actuarial survival at 8 & 10 years are both 89.14%. Freedom from valve-related events at 8 & 10 years are as follows: structural deterioration- 68.72% and 51.84%; re-operation- 65.4% and 49.36%; endocarditis- 92.6%; thromboembolic events –97.3%; anticoagulation-related bleeding-96.7%. **CONCLUSION**: Other than structural deterioration, the clinical performance of the PHC valve at 8 & 10 years are comparable to those of other current porcine valves.

Behavior of the Hancock 11 Bioprosthesis in Patients Ages 11-40 Years

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Background: Bioprosthesis are generally recommended for older age groups patients. Because of our difficult to anticoagulate patients (pts), we have been implanting bioprosthesis in young patients. This review examines the behavior of Hancock II bioprosthesis in patients ages 11-40 years (yrs).

Method: Between July 1988 and December 1996, 671 Hancock II valves were implanted in 609 patients (pts.) Considering 40 years as the cut off age for "young" pts, and excluding tricuspid valve replacement & other prosthesis replacements. 230 pts with 241 valves constituted the study group. Mean age was 27 ± 7.66 and median 28 yrs. Sixty pts (26%) were between 11-20 yrs, and 170 (74%) between 21-40 yrs, 20% were male, 80% female and 86% rheumatic. Preoperatively, 74% of the pts were in NYHA functional class III or IV, 30% in atrial fibrillation, and 44% had previous surgeries. The left ventricular function was normal in 80%, impaired in 12% and poor in 5%, unk in 3%. There were 124 isolated mitral valve replacements, 13 isolated aortic valve replacements and 11double valve replacements. 82 (36%) had a repair besides the Hancock replacement. Operative mortality was 1%. One pt required replacement of the bioprosthesis within the same hospital admission (paravalvular leak in the mitral position). Late mortality was 1%. 228 pts were followed for a maximum of 10.5 years (range 2 - 10.5 yrs; mean 6). Seven (3%) pts were lost to follow-up. 96% of the pts were in NYHA class I or II, 71% in sinus rhythm, 23% in atrial fibrillation, 67% on aspirin, 16% fully anticoagulated, and the rest taking neither.

Results: Twenty-one pts needed reoperations (1 pt had 2 reops) with a mean interval between surgeries of 4.2 ± 2.5 yrs (range 12 days - 8.2 yrs). The cause was structural valve degeneration(SVD)in 10 pts (9 failures in the mitral valve & I in the aortic valve), paravalvular leaks in 3 pts, endocarditis in 6 pts and 2 with AV or TV dysfunction(mitral valve was not touched). Three pts died at reoperation, 2 with endocarditis & one with hepatic complications related to a tear in the inferior vena cava. The actuarial survival at 10.5 yrs. was 91% ± 2.22, freedom from SVD was 85.22 ± 4.85, freedom from reoperation 72% ± 5.94, freedom from thromboembolism, 97.62% ± 1.05, freedom from endocarditis 96.70% ± 1.39, event free survival (including reops) was 69% ± 6.15, without reops was 90 ± 3.35.

Conclusions: Contrary to common belief, our data indicate that the Hancock II bioprosthesis performs well in young pts. This alleviates the anxiety many of us have about using a bioprosthesis in young pts requiring valvular replacement particularly in a population that may not be suitable for permanent anticoagulation.

EARLY FOLLOW-UP RESULTS OF A SERIES USING THE TISSUEMED STENTLESS AORTIC VALVE

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AIMS

Encouraged by the results of the Ross Procedure, we set out to evaluate the early and mid term performance of a new stentless biological valve.The Tissuemed valve is unique in that it is a freesewn porcine pulmonary xenograft.Potential advantages included ease of implantation, good haemodynamic performance and freedom from long term structural failure.

PATIENTS AND METHODS

Between March 1996 and February 1998, 34 patients underwent aortic valve replacement with a Tissuemed porcine pulmonary xenograft. The median age was 71.4 (range 63-84).The valves used ranged from 21-27mm with the 25 mm valve (16 patients,47 %) being the commonest used valve.15 patients(44%) had concomitant procedures in the form of bypass grafts and 1 patient had a carotid endarterectomy

RESULTS

The follow up was complete in 31 patients (91.17%),the median follow up was 29.26 months with a range of 18-41 months. . All patients had perioperative TOE that revealed normal prosthetic valve function and competence. There were no early deaths. There have been no documented haemmorhagic or thromboembolic complications.

21 patients are in NYHA Grade I or II. There were 7 late deaths including 2 patients who had had their valves replaced. None of these deaths were valve related. 27 patients were evaluated with a transthoracic echo. The median Peak Pressure Gradient was 12.84 with a range of 4-58 mm Hg. The Effective Orifice Area was 2.684 cm^2 with a range of 0.83 – 5.1 cm^2. The results showed severe regurgitation in 6 patients and the valve was replaced. Normal function in 7 patients, trivial regurgitation in 6 patients, mild in 4 patients and moderate in 3 was seen. The site of the leak was central in 8 and a mixture of central and paravalvular in 5. These patients did not have any clinical signs of AR or significant symptomatology.

CONCLUSION

In this series, the early follow up results showed no thromboembolic events. Early TOE showed excellent haemodynamic performance. However, the reoperation rate (17.6%) and the number of regurgitant valves at late TOE have led to us abandoning the use of this valve.

A STENTLESS, PERICARDIAL MITRAL PROSTHESIS-TECHNIQUE OF IMPLANTATION AND EARLY RESULTS IN 40 PATIENTS

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To introduce a stentless mitral bioprosthesis, illustrate the technique of implantation, and the results in the first 40 recipients in our institution.

A brief description of the valve and its development will be given.We have been implanting the **QUATTRO** valve since December 1996. Forty patients have received the valve thus far. (mean age 34 years, 10 male). All were symptomatic (NYHAFCIII-IV), and all were judged unsuitable for mitral repair at the time of operating. We chose this valve for use in these patients because we felt a mechanical device had all the known drawbacks, and theoretically at least, this devise has some advantage(fexible design, retains annulo-papillary continuity, biological material treated with an anti-mineralisation technique). All patients were assessed echocardiographically pre-and post-operatively, and by Prof. Barlow clinically post-operatively.

One patient died early postoperatively of sternal sepsis and two have late postoperatively. All survivors are in NYHAFC 1or II. There have been no thromboembolic events. One patient developed late prosthetic valve endocarditis. No cases of clinically signification haemolysis have been seen. One year postoperatively TEE revealed mitral regurgitation in 93% of patients(31%mild,62%trival). The valve area was measured echocardiographically and varied from 1.1 to 2. 2sq cm using different tecniques. Clinical assessment showed no cases to have more than mild+MS.

The early results with this valve show it to be safe to implant, not technically different as compared with mitral homografts, and to have acceptable heamodynamics. The measured valve area are disappointing, however they are comparable to those achieved with standard mechanical prosthesis in the mitral position. Although durability remains unknown it is likely that the valve will be more durable than conventional stented mitral bioprostheses because of its stentless design, early processing of the pericardium, and use of the anti-mineralisation agent polyol.

INTRAOPERATIVE TRANSESOPHAGEAL ECHOCARDIOGRAPHIC (TEE) EVALUATION OF VALVULAR HEART DISEASE.

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The cardiac anesthesiologist is increasingly called upon to make a precise evaluation of pathology of cardiac valves and provide information to the surgeon in order to make correct decisions regarding the type of valvular repair or replacement prior to starting a procedure. After coming off bypass the surgeon again expects a assessment of the adequacy of the operation performed. The anesthesiologist's contribution can impact the outcome of such surgery.

A sound knowledge of the normal anatomy is required to perform two dimensional (2D) examination. In order to make quantitative evaluation of pressure gradients, valve area and other hemodynamic calculations one needs to be familiar with principles of Doppler imaging modalities. Textbooks are an excellent resource for understanding Doppler equation, Bernoulli's equation and its modifications and basic physics applied to the equipment and techniques of echocardiography. Modalities commonly employed to asses different valvular lesions will be illustrated in the presentation.

Screening Cardiovascular Associated Genes By Express Sequence Tags (ESTs)

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The heart, which is composed of cellular components of the circulatory system, is a representative organ for obtaining genes expressed in cardiovascular system. In order to screen cardiovascular associated genes, we used partial sequences of a human fetal heart (HFH) cDNA library, or expressed sequence tags. To construct HFH cDNA library, the total RNA was extracted from fetal heart and picking up the plaques to prepare sequencing template. The cDNA inserts were enriched by PCR in the presence of vector primers flanking the inserts using a T3 forward and T7 reverse primer. The PCR products were used directly for cycles sequencing using a fluorescence-conjugated T3B primer, following sequence generation using automated DNA sequencer

Of 3132 cDNA clones (about 70% positive clones analyzed by sequence similarity searching against the Genebank data bases, the new sequences were 47,4% and the known genes were 44,1%.

These results show that the method is available to screen and identify characteristics of all specific clones of heart. Various application requiring high quality cDNA libraries are outlined, including large-scale single pass sequencing of cDNA clones to ESTs and differential screening of cDNA library. But one of the most crucial steps in the preparation of high quality cDNA library is the purification of high quality cDNA library is the purification of intact, undegraded mRNA.

Keywords : *mRNA, cDNA library, PCR, DNA Sequencing, ESTs*

THE REBOUND PULMONARY HYPERTENSION AFTER WITHDRAWING INHALED NITRIC OXIDE

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Aim: The purpose of this study was to determine the risk factors to develope rebound pulmonary hypertension(RPH) after withdrawing inhaled nitric oxide in postoperative care for congenital heart disease.
Method: We studied consecutive 19 children who were treated with inhaled nitric oxide(iNO) after open heart surgery for congenital heart disease. The children were divided into two groups(group I : without RPH, group II : with RPH). To identify the iNO effects between two groups and the correlation between the methods of the weaning and RPH, we measured hemodynamic and ABGA data before and after initiating iNO and just before withdrawing iNO and during first and second weaning process in group II. A same data at a half of the initial iNO concentration when iNO has been weaning was measured.
Results: In 6 of 19 patients(32%), iNO withdrawal caused a RPH. Second iNO withdrawl group II patients was successfully completed. Compared with group I, group II had an older age(1204±1688 versus 546±1654 days, $p < 0.05$), a shorter duration of iNO therapy(34±18 versus 57±46 hours, $p < 0.05$), a shorter duration of weaning process(5 ±3 versus 15±13 hours, $p < 0.05$) and a lower concentration of initial iNO therapy(11±8 versus 17±8 ppm, $p < 0.05$). Compared between the first and second weaning in group II patients, second weaning group had a longer duration of weaning process(11±10 versus 5±3 hours, $p < 0.05$), a lower iNO concentration just before iNO was withdrawn (2± 0.6 versus 4±1 ppm, $p < 0.05$), a decrease in difference of meanPAP/SAP(0.025±0.1 versus 0.048±0.08, $p < 0.05$) and a increase in difference of PaO_2/FiO_2(53±70 versus 61±85, $p < 0.05$) between initial and a half of the initial iNO concentration
Conclusions: We speculate an older age, a shorter duration of iNO therapy, a higher iNO concentration just before iNO was withdrawn, a shorter duration of weaning off the iNO and more increasing meanPAP/SAP and more decreasing PaO_2/FiO_2 during weaning process of the iNO may be risk factors of the RPH.

Ventricular Septal Defect - Surgical Closure

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Aim The aim of this study was to evaluate the results obtained from the retrospective review of the patients of Ventricular Septal Defect having Surgical Closure.

Method A retrospective study of 233 patients of the surgical closure of Ventricular Septal Defect between Jul 1989 to Jun 1999 in the thoracic and cardiovascular surgical dept of AFIC & NIHD Rawalpindi Pakistan. There were 163 males and 70 females patients. 25 patients had previously PA banding. 110 patients had transatrial approach 35 infants were done on total circulatory arrest. In the early post operative period 19 patients died and 6 during follow up period. 2 patients had reoperation for patch dehescence.

Conclusion We are having the encouraging results with surgical management of infants on total circulatory arest. Transatrial approach is one of the significant factor for good result in closure of VSD.

AMALGAMATION OF SINUS VENOSUS AND ATRIUM: EVOLUTION AND CLINICAL SIGNIFICANCE

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The sinus venosus is single symmetrical chamber ejecting into the common artrium through the sinoatrial valve in fish. In Channa striata, an air breathing fish which can absorb air through non-gill respiratory apparatus, a vein possibly carrying oxygenated blood drains into one half of the sinus venosus which is incompletely divided into two halves by a median ridge. The sinoatrial orifice remain in the midline. In the air-breathing India Cat-fish there is a shift of the sinoatrial orifice to the right and the left artrium, becomes smaller. The incomplete septation of the sinus venosus becoms more evident. In the frog the sinoatrial valve shift to the right and drains into the right side of the partially divided atrium. In the turtle, snake and the crocodile, the sinus venosus is connected to the right atrium which is completely separated from the left atrium by the interatrial septum. There is a pulmonary venous chamber with a common pulmonary vein. In birds, mammals and man, the sinoatrial valve is absorbed. The right venous valve is represented by the crista terminalis, Eustachian and Thebesian valves. The superior commissure becomes the septum spurium. The inferior commissure becomes the tendon of Todaro. In birds, mammals and men there is a band in the left atrium similar to the human situation are as follows:

1. We have observed sequential contraction of the vena cavae, sinus venarum, right atrium proper and the right ventrical Likewise there is sequential contraction of the pulmonary veins, pulmonary venarum,left atrium proper 'and the left ventricale. This obviously assissts in unidirectional flow without valves in the veins and atria. The electrophysiological basis for this quadruple rhythm need to be identified.

2. When coming off bypass we have observed isolated or asynchronous contraction of the terminal vena cavae, systemic sinus venarum and right atrium proper; the terminal pulmonary veins, pulmonary sinus venarum and left atrium proper. The terminal great veins and sinus venareal components of the atrial have intrinsic contractility.

3.The junction between the sinus venarum and the right atrium proper varies. Augmented sinus venareal contribution displacing the crista terminalis has been observed in superior and inferior sinus venosus syndromes as well as ostium secundum defects. The facilitates repair through incision confined to the sinus venarum and /or the cavae.

4. Cor-triatriatum is possibly related to left atrial crista terminalis, in anology with cor-triatriatum dexter related to right artil crista terminalis.

5. Phylogeny suggests that sinus venosus is the precursor of systemic and pulmonary sinus venarum.

ULTRASTRUCTURAL ANALYSIS OF HEALING MECHANISM IN IMPLANTED POLYTETRAFLUROETHYLENE (PTFE) PATCH GRAFTS IN HUMAN HEARTS

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Aims: This study was undertaken in an attempt to study the healing process of the PTFE graft inside the human heart following its implantation for repair of the congenital heart defects. Since 1979, we have been using PTFE patch for repair of cardiac defects.

Methods: From 1993 onwards, Implanted PTFE patch grafts were explanted during the Re-Do operation for residual lesions/staged procedures or following the death of the patient after obtaining written consent from the patients/next of kin. The duration of the implanted patch varied from 12 hrs to 20 months. 7 grafts underwent ultrastructural analysis employing transmission (TEM) and scanning electron microscopic (SEM) studies and immunohistochemistry.

Result ; The analysis showed that there were no inflammatory responses after 12 hrs following implantation. The SEM of the 72-hour-old specimen revealed absence of any propogative thrombus along the graft. The 6-week-old implant showed lack of tissue ingrowth into the interstices of the patch as a result of sepsis that was detected later. The 20-month-old patch showed liberal invasion of the collagen into the interstices of the patch without altering the integrity of the patch with microcalcification. There were few blood vessels in a fine stroma of fibrovascular tissue. There were minimal monocytes beyond the line of anastomosis.

Conclusion: Our study for the first time from human hearts demonstrates that the healing response for the PTFE graft is satisfactory with minimal tissue reaction, less thrombogenecity and insignificant microcalcification. The collagen invasion into the interstices of the patch is very encouraging.

Closure of Atrial Septal Defect without Cardiopulmonary Bypass: The Sandwich Operation

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Aim: Cardiopulmonary bypass has adverse effects on patient's physiology. We report encouraging experience with closure of atrial septal defects without cardiopulmonary bypass.
Method: Between August 1997 and May 1999, 56 patients aged 4 to 65 years underwent closure of ostium secondum atrial septal defects without cardiopulmonary bypass. The 'Sandwich' patch was used in all cases. The patch was inserted through the right atrial appendage and fixed with endoscopic stapler under transesophageal echocardiography. Follow up ranged from 1 month to 1.4 years.
Results: There was no operative mortality. Two attempts were abandoned and the defects were closed with cardiopulmonary bypass. The defects were successfully closed in 54 patients, 50 were completely closed, and 4 had residual shunt. Two patients were reoperated with the same technique for the residual shunt. The experience of the surgical team predicted effective closure.
Conclusions: Closure of atrial septal defect without cardiopulmonary bypass can be done safely and effectively. Successive technical improvements and experience of the surgical team should give better results.

Anterior sandwich approach for Aorto-Pulmonary Windows an evaluation of surgical results.

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Aorto-Pulmonary window should be repaired promptly soon after the diagnosis of the lesion.

Aim: We conducted this retrospective study to assess the short & long term results after the surgical repair of Aorto-Pulmonary windows.

Methods: Between June 1987 and Oct 1988, 17 infants and children with AP window underwent anterior sandwich graft repair. 9 were more than 1 year old. The median age and weight were 20 months and 7.5 kgs respectively. There were 16 Type I lesions. A Polytetrafluroethylene patch was inserted as an anterior sandwich graft between the aorta & the pulmonary artery.

Results: There were 5 hospital deaths. 9 patients underwent associated procedures. Fisher's exact test and Mann – Whitney 'U' test for categorical and continuous variables were performed to evaluate the factors associated with mortality. Age < 6 months (p value 0.01) and the associated procedures (p Value-.02) were the risk factors influencing the outcome. The follow-up ranged from 3 months to 9 years. 10 patients are on regular follow-up & echocardiography revealed no residual lesions. 8 patients are not on any medications

Conclusion: This approach is a simple reproducible technique that gives excellent exposure of coronary ostiums, branching of pulmonary arteries and both valves.

IMPROVEMENT IN OXYGEN SATURATION FOLLOWING BI-DIRECTIONAL CAVOPULMONARY ANASTAMOSIS FOR TRICUSPID ATRESIA.

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AIM: To review increase in O2 saturation following Bi-directional Cavopulmonary Anastamosis.

Method: Retrospective study of eleven children with tricuspid atresia undergoing Cavopulmonary Shunt on cardiopulmonary bypass without interrupting antegrade flow through MPA. Age was 1 -3 years with 70% male dominance weight 6.5 - 17 kg. Early extubation aimed O2 saturation compared preoperatively to post operative.

Results: There was one mortality, improvement in saturation was mean 14.

Conclusion: It is a safe procedure and improves O2 saturation. Unlike shunts in which PTFE grafts are used we have not seen any thrombosis of Cavopulmonary shunt.

The Thermodynamic Profile of Heat Uptake in Patients Undergoing Hypothermic Cardiopulmonary Bypass, Dopexamine against Nitrate for Active Rewarming.

M. Ervine, M.Whitehorne, N.Chitkara, R.Ware
Intensive Care Unit, King's College Hospital, London, England.

INTRODUCTION: Cardiac surgery frequently relies on perfusion techniques involving moderate hypothermia. Problems during recovery (low cardiac output and high peripheral vascular resistance) may be due to the failure of adequate rewarming. Commonly nitrate derivative – nitroglycerin – is used as a vasodilator during bypass in an attempt to aid uniform (active) rewarming. Dopexamine, a dopamenergic and b2 agonist agent, has vasodilator effect on splanchnic and muscle vascular beds which could aid blood flow distribution and hence enhance heat uptake during the rewarming phase improving subsequent cardiovascular performance post bypass. Dopexamine has not, however, been evaluated for this indication.
OBJECTIVES: To compare the peri-operative thermodynamic course of the patients following routine coronary artery surgery under moderate hypothermia (32c) using either nitroglycerin or Dopexamine. During the active rewarming phase, the object was to compare the rate of heat uptake between the two patient groups. The efficiency of subsequent redistribution of delivered heat, from the core to the peripheries was assessed by comparing core peripheral temperature gradients at fixed time points, for the first five postoperative hours.
METHODS: 20 patients fulfilling standardized demographic, and surgical selection criteria were randomized to receive either nitroglycerin (0.3mg/kg/min.) or Dopexamine (2.0mg/kg/min.) from the onset of bypass to the completion of rewarming. Measuring the arterial and venous temperature gradient across the bypass circuit at fixed time intervals assessed subsequent heat uptake. These values were then computed with the product of measured blood flow and specific heat capacity. Completion of rewarming was defined as a stable nasopharyngeal temperature of 37c for 5 minute.
RESULTS: during the active rewarming phase differences were observed for rates of heat uptake between the two groups at each of the three time points. The results recorded were subjected to a repeated measures statistical analysis utilising a two- way anova. The Dopexamine patient group exhibited a higher rate of heat uptake ($F= 3,43$, df 1 ~18, $P =0.08$)
CONCLUSION: although significance was not shown at this stage (sample size 20, $P>0.05$) a power study carried out on the data obtained (Altman DG. Statistics and Ethics in Medical Research: III – How large a sample size? BMJ 1980; 281: 1336-1338) revealed a sample size >50 needed.
Dopexamine when compared to nitrates at stated doses seems to increase the efficiency of active heat transfer, following hypothermic cardiopulmonary bypass. This study is ongoing.

Title: Early extubation after Coronary Artery By- Pass Grafting Determinants of prolong ventilation.

Younas Khatri, N.I.C.V.D., Karachi.

Introduction: Early extiubation following CABG surgery is a viable option in carefully selected patients. It is possible to identify group of patients who do well with early extubation, despite a wide range of co-existing clinical problems.

Patients Methods: The study investigated 108 patients undergone CABG in year 1997 performed by single surgeon and the same anaesthetist. Anaesthetic and surgical management of all patients were compatible. All patients received combination of narcotics and inhalation agents with the intention of early extubation. Early extubation was defined as <or = 8 hours and late extubation > 8 hours.

Results: Out of 108 patients undergone CABG Surgery (Male 82 – 26) with an age range of 38 years – 76 years. 96 patients were extubated <or = 8 hours with mean duration of 4.78 hours (GROUP-II) 12 patients were ventilated for 8-24 hours with mean of 12.8 hours (GROUP-II). Common determinants of late extubation were low cardiac output, arrhythmia's, excessive bleeding, old age and abnormal metabolic status.

Conclusions: It is practical to early extubate, majority of patients under going CABG surgery. Inhalation relaxant anaesthesia as opposed to narcotic anaesthesia increases the like hood of early extubation.

The choice of earlly extubation therefore requires careful consideration of anaesthetic technique and pre-operative selection of patients.

PERIOPERATIVE MANAGEMENT OF PATIENTS UNDERGOING OFF-PUMP CORONARY ARTERY BYPASS GRAFTING-ANAESTHETIC CONSIDERATIONS

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Department of Anaesthesia, Surgical Intensive care Unit, National Institute of Cardiovascular Diseases Karachi, Pakistan.

Aim: Minimally Invasive techniques like Off-pump CABG provide many Anaesthetic challenges including monitoring requirements, managing myocardial ischemia, arrythmias and hypotension. The aim was to evaluate monitoring requirement and describe haemodynamic alterations during Coronary artery bypass grafting without extra corporeal circulation.

Method: This study was carried out at three different centers and various ways of perioperative management were identified. Different surgical and anaesthetic techniques were used for haemodynamic management and monitoring requirements.

Results: The results were compared using standard statistical analysis.

Conclusion: Off-pump CABG surgery requires careful Anaesthetic management, because of the haemodynamic alteration caused by the procedure. Complication rate is low but need to be evaluated and compared with conventional CABG.
In conclusion, Off-Pump CABG will continue to evolve in terms of patient selection, instrumentation and feasibility of performing multiple coronary artery grafts at one sitting.

TOTAL INTRAVENOUS ANAESTHESIA DURING OPEN HEART SURGERY

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Dr. N. ZAIDI
Dr. A. BAJWA
Department of Anaesthesia and Intensive Care, Punjab Institute of Cardiology.

ABSTRACT

600 consecutive patients undergoing open heart surgery were studied for conscious awareness at Punjab Institute of Cardiology , Lahore. This study was conducted to compare total intravenous technique [TIVA] with volatile anaesthetic technique . These patients were equally divided in two groups.First group received volatile anaesthetics [isoflurane] during ventilation period and intravenous anaesthetics [morphine] during cardiopulmonary bypass. Second group received total intravenous anaesthesia[propofol , midazolam and morphine] during the whole procedure. No volatile anaesthetics were used during ventilation . The incidence of awareness was found to be low in both groups.There was no difference for the incidence of awareness between these two groups.

TIVA was found to be suitable technique for open heart surgery.

ABDOMINAL COMPLICATIONS AFTER OPEN HEART SURGERY: A STUDY OF OUTCOME AND VARIABLES IN 3039 CASES

Z TUFAIL, N Patel, J Deane, BM Fabri
The Cardiothoracic Centre, Thomas Drive, Liverpool, UK

Aim: To determine the incidence and clinical variables affecting abdominal complications after open heart surgery.

Method: All consecutive patients from 1st April 1997 to 31st march 1999 undergoing open heart surgery were included in the study. Case notes of 75 patients who had abdominal complications were reviewed.

Results: Seventy-six patients (2.5%) had 80 abdominal complications which included Gastrointestinal bleeding (40%), Hepatic failure (5%), Illeus(8.8%), acute abdomen(22.5%), pancreatitis(7.5%), ischaemic bowel(8.8%),bowel perforation (5%) and acute acalculous cholecystitis (1.3%). Overall mortality for patients with abdominal complications was 32.9%. Mortality for Ischaemic bowel, bowel perforation and hepatic failure was 87.5%, 75% and 50% respectively. Of thirteen patients who underwent laparotomy, 3 had negative laparotomy, 2 had extensive irresectible ischaemic bowel while 8 patients underwent definitive surgical procedures. Higher mortality for bowel perforation was attributed to delayed diagnosis. Out of thirty patients who had GI bleed only three had previous history of acid peptic disease. Patients on aspirin and warfarin together had a higher incidence of GI bleeding (p=o.o5).

Conclusion: Abdominal complications following open heart surgery are uncommon but carry very high mortality. Ischaemic bowel and delayed diagnosis of bowel perforation remain important causes of mortality.

DOES NORMOTHERMIA DURING CPB INFLUENCE ENDOTOXIN AND TUMOUR NECROSIS FACTOR RELEASE IN ELDERLY.

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The Cardiothoracic Centre, Thomas Drive, Liverpool, UK

Aim: To determine effects of normothermia during cardiopulmonary bypass on release of Endotoxin and tumour necrosis factor in elderly. To assess whether rise in Endotoxin on release of cross clamp is due to rewarming or cross clamp release.

Method: 40 patients above 65 years of age undergoing nonemergency CABG (3 or more grafts) were randomised to warm (36-37 C) and cold (28 C) cardiopulmonary bypass. Patients known to have colitis, mesenteric arterial insufficiency, infection during last 1 month and poor LV function were excluded. Endotoxin levels were measured prior to operation, on cardiopulmonary bypass, prior to rewarming or last coronary anastomosis, prior to cross clamp release, 5 minutes after cross clamp release and 1 hour postoperatively. Tumour necrosis factor levels were measured prior to operation, 5 minutes after cross clamp release, 4 and 12 hours postoperatively. Troponin T and CKMB levels were measured 4 and 12 hours postoperatively.

Results: Endotoxin levels rose significantly after removal of cross clamp and remained elevated at 1 hour postoperatively. Tumour necrosis factor levels increased significantly after release of cross clamp and remained high at 4 hours postoperatively. No significant difference was observed between cold and warm groups. Postoperative course was not different in patients with higher levels of endotoxin and Tumour necrosis factor. CKMB levels were however higher in cold CPB group which reached stastical significance.

Conclusions: Normothermia during cardiopulmonary bypass does not affect release of Endotoxin and tumour necrosis factor in elderly. Rise in these levels is not seen in all patients and does not affect postoperative recovery and clinical outcome as described in past.

BLOOD CONSERVATION IN CORONARY ARTERY BYPASS SURGERY

ZA Jafri.NH Rizvi
The Aga Khan University Karachi

OBJECTIVES:

To review blood product use in CABG surgery during the first 4 years of open heart surgery and identify the risk factors leading to blood usage

METHODS:

Retrospective review of perfusion ICU and ward records of patients undergoing CABG surgery from 1.11.94 to 31-10-1998 and the measures taken to avoid the need for donor blood transfusion. The identify the patients receiving blood products. The incidence, quantity and types of products used and the risk factors for blood component usage investigated.

RESULTS:

446 CABG operation were done during this study period. Of these 118 (26%) did not receive banked blood. Of them 76% were males and 24% females. A low BSA was a significant risk factor for blood transfusion. Other factors indentified were poor Lv function, age > 65 years, emergency, prolonged CPB,No. of grafts, reoperations for bleeding, and the use of diltiazam.

CONCLUSION:

With porper patient selection CABG surgery can be safely performed without the use of banked blood. The relatively frequent use of blood products in Pakistani population as compared to those in the Western countries seems to be related to their lower BSA and the general lack of tolerance of a Hct of below 26%.

DELETERIOUS EFFECT OF CRYSTALLOID CARDIOPLEGIA ON THE MYOCARDIAL MICROCIRCULATION

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Department of Cardiac Surgery, University of Glasgow, UK.

Aim: The use of hyperkalaemic crystalloid cardioplegia has been associated with endothelial injury and loss of myocardial capillaries. We tested the hypothesis that sanguinous cardioplegia may protect the microvasculature of the heart.

Method: The effect of St. Thomas' no.1 crystalloid cardioplegia or sanguinous cardioplegia on coronary capillary density was investigated in an erythrocyte perfused isolated rat heart model. In the control hearts microvascular corrosion casts were made after 30 mins in the working mode. In the experimental group casts were made either after 30 mins of cold cardioplegic arrest or following 30 or 60 mins of reperfusion after cardioplegic arrest (n=6 in all groups). Cast density was expressed as the percentage ratio of the cast weight to the dry weight of the left ventricle. All data is expressed as mean ± SD.

Results: In the control hearts cast density was 9.93 (±1.21). Crystalloid cardioplegic arrest resulted in a decrease to 6.86 (±0.98, p=0.0001); even after 60 mins of reperfusion this did not return to control levels (8.16±1.1, p=0.08 compared to cardioplegic group, and p=0.02 compared to control). Cardioplegic arrest with sanguinous cardioplegia did not alter the cast density compared to control (10.02 ± 3.1, p=0.56), but it was significantly higher than after crystalloid arrest (p=0.0009). Reperfusion had no further effect in the sanguinous group. However at all points sanguinous cardioplegia resulted in higher cast density when compared to crystalloid cardioplegia.

Conclusions: Marked coronary microvascular loss is seen following crystalloid cardioplegic arrest; full recovery is not observed even after 60 mins of reperfusion. In contrast the use of sanguinous cardioplegia results in the preservation of capillary beds.

EXTRACARDIAC TOTAL CAVOPULMONARY CONNECTION: EVOLVING TECHNIQUES OF CARDIOPULMONARY BYPASS

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Department of cardiothoracic surgery. The Freeman hospital, Newcastle. England.

OBJECTIVE: Total Cavopulmonary anastomosis using an extracardiac conduit is an accepted form of surgical palliation for complex congenital cardiac lesions. Over the last two decades the Fontan procedure has undergone many surgical modifications not only in the choice of venous pathways but also in the surgical technique in its construction. The aim is to share the experience of Extracardiac Total Cavopulmonary Connections (Ec TCPC) and the modifications in the methods of CPB from 1996 to 1999 at the Freeman Hospital.

METHODS: Retrospective review of case records of all patients who underwent Ec TCPC over the last 4. The variables studied were the diagnosis & indications of surgery, operations, CPB techniques and the postoperative course.

RESULTS: 5 children, 3 males and 2 females had an Ec TCPC. The age ranged from 5-15 years. All the patients had complex congenital heart disease, all with previous palliative procedures. The indications for surgery were worsening cyanosis and exercise tolerance. The method of CPB during Ec TCPC changed from circulatory arrest in 1996 to partial CPB with a beating heart with cooling to 34°C. This latter technique employed IVC cannulation via the femoral vein which was used both as a CPB venous cannula as well as a sump sucker during the distal caval anastomoses. The post-operative complications occurred more frequently in those children who had circulatory arrest as compared to patients in whom partial bypass and mild hypothermia was employed. The complications were pericardial effusion, reopening, and atrial arrhythmias. Three had subsequent cardiac angiograms with two showing mild LV dysfunction. All were symptomatically better and maintaing O2 saturation in the nineties on room air.

CONCLUSION: Even though the numbers are small one can conclude that those children who underwent Ec TCPC employing partial CPB and mild hypothermia fared better than those where circulatory arrest was employed.

Muhammad Rashid Khan, Dept of Cardiac Surgery
Dow Medical College Civil Hospital Karachi.

MYOCARDIAL PROTECTION

AIM: Review of Myocardial Protection Techniques

METHOD: Literature Review

Myocardial Protection is the main stem of any successful cardiac surgical procedure. Various modalities have been employed. With better understanding of molecular function new techniques have been regularly emerging. This paper is presented as a comprehensive review of the various procedures in practice in the field at this time.

Advantages and relative indications are discussed and future developments are speculated.

Conclusion: Various Techniques are safe and indicated in different Procedures.

BUBBLER VS MEMBRANE OXYGENATORS THE PESHAWAR EXPERIENCE

HIDAYAT ULLAH, AAMER BILAL, SHAHKAR AHMED SHAH, PERVEZ MANNAN.
Perfusion Department Govt. Lady Reading Hospital Peshawar.

Comparative analysis of Bubbler and Membrane Oxygenators
Method. From Jan, 1 994 to June 1999 a total 462 open Heart Surgeries were perfomed. Out of these there were 102 CABGs, 160 MVR, 50 AVR, 26 DVR, 106 ASD, & 5 VSD and 11 Others. Aretrospective study was undertaken to compare the merits and demerits of both Bubbler and Membrane Oxygenators and attempt to recommend a suitable Oxygenators for each individual procedure. Keeping in view our financial constraints & availability of Oxygenators.
Results. Out of 102 CABGs, 15 had Bubblers & 87 were Membrane Oxygenated. Out of 160 MVR, 56 were Bubblers 104 were Membrane Oxygenated. Out of 50 AVR, 17 were Bubblers & 33 Membrane Oxygenated. Out of 106 ASD, 67 were Bubblers & 39 were Membrane Oxygenated.

The following observation were made with Bubblers :

1. Where total Bypass time was more then 2 hrs, Patients tended to Ooze/Bleed.
2. If the O_2 flow (Sweap) was less then 2Lrs then Patients on Bubblers become acidotic.
3. Bubblers Patients had high Po_2 in the range of 300 – 500 as compered to 100-200 for Membrane.

Conclusion. Therefore we recommend :

1. ASD and Single valve replacements can be safely done on Bubblers.
2. CABGs with single / Dubble bypass too can be done on Bubblers.
3. DVR, CABGs x 3 and above are better off with Membrane.

The average savings obtained, using a bubbler oxygenator are in excess of Rs. 10,000 is 20% of total disposable/drugs cost in open cardiac surgery.

PERFUSION STRATEGIES IN INFANTS AND NEWBORNS

A.K.U.H

N. H. Rizvi

The dramatic improvement in the quality of results in surgery for congenital heart disease has been attributable in part to an improvement in cardiopulmonary bypass techniques. This in turn is a consequence of improvement in the quality of components of the bypass circuit and an improved understanding of the pathophysiology of cardiopulmonary bypass.

Pediatric perfusion is performed using many different techniques and philosophies. Arguments for or against a particular method abound and institutions manage their perfusion in various manners. Some arguments of the adult realm of perfusion are also present in the pediatric perfusion. Topics such as pulsatile versus constant flow, alpha stat versus ph stat, are just as controversial in pediatric perfusion. Until such controversies are resolved, pediatric perfusion must be general in concept and deal with aspects that are accepted and agreed upon by most perfusionists.

The presentation identifies these basic principles and defines our strategies and current practice in this group of patients.

VIDEO-ASSISTED THORACOSCOPIC MAJOR LUNG RESECTION

MING-CHIH CHOU, Jang-Ming Su

Division of Thoracic Surgery, Department of Surgery,

Chung Shan Medical & Dental College Hospital, Taichung, Taiwan.

Aim: Video-assisted thoracoscopic major lung resection has been advocated recently. We present our experience of 17 VATS lobectomy and one VATS pneumonectomy in treating the benign lung lesions and NSCLC.

Method: There were 19 patients (M/F= 12/7) undergoing video-assisted major lung resection with median age of 67 years (range 19 to 76). Five patients had benign lesions and 14 had NSCLC. Four patients had preoperative FEV1< 1.0. An utility thoracotomy and two thoracoport incisions were employed for the surgical procedures. Radical LNs dissection routinely included N2 groups for NSCLC in addition to major lung resection.

Results: Conversion to open thoracotomy occurred due to intraoperative vascular injury in one patient. Mean operation time was 3.73 hrs, blood loss 219 cc. Complications were few. Mean postoperative stay was 6.6 days. Analgesic requirement was minimal.

Conclusions: VATS lobectomy or pneumonectomy is safe and feasible with advantage of reduced wound pain, minimal analgesic requirement, shortening hospital stay and unaffected shoulder movement. The operation is also beneficial to the patients with inadequate pulmonary function for open thoracotomy. For treating NSCLC, the operation with radical LNs dissection is suggested for cT1-2N0M0 patients.

Surgical Management of Pulmonary Tuberculosis (The Karachi Experience)

Raheel Hussain, Khuda Bux Shaikh, Abdul Bari Khan. Dept. of Cardiothoracic surgery, CHK, Dow Medical College, Karachi.

Tuberculosis by far stays the most morbid disease in our community. T.B. sanitoria are overwhelmed with patients, who with medical treatment if provided, would recover fully with functional lung. Surgical salvage has been in practice for a long time. Recently in our region it is noticed that more and more patients are waiting in the wards for surgical rescue.

We, over a period of 20 months were referred 122 patients. Age range was from 11 – 65 yrs. There were 87 males and 35 females. Our policy was that to strictly deal with the sputum –ive cases, therefore six patients were referred back to the physicians who were sputum +ive.

One hundred and five patients had chest intubation for various duration anywhere from few days to several months. Sixty- seven of those had persistent air leak. Eleven of the total numbers were toxic looking. Elosier's Flap was created in a majority of patients. Given time the lungs fully recovered, and discharge ceased. Various other procedures were carried out, which would be discussed at length at the presentation.

SURGICAL MANAGEMENT OF PULMONARY TUBERCULOSIS- AN EXPERIENCE AT LR.H. PESHAWAR 1990-97.

Shah S. S. A, Khan Z.
Department of Cardio-Thoracic Surgery,
Postgraduate Medical Institute, Lady Reading Hospital,
Peshawar.

Between 1990-97, 62 patients underwent major surgical procedures at out department for surgical complications of pulmonary tuberculosis.

A retrospective analysis has been made to determine the indications, morbidity and mortality of these cases.

Major indications were lifethreatening hemoptysis and destroyed lungs (34%).

Pulmonary truberculosis has been declared a global emergency by the W.H.O.

Surgical intervention at times remain the only option in the treatment of major complications of pulmonary . tuberculosis and is accompanied by significant morbidity and mortality

"SURGICAL TREATMENT OF PULMONARY HYDATID DISEASE – Peshawar Experience of 150 Cases"

AMER BILAL, Shahkar Ahmed Shah, Zahoor Ahmed, Khalid Irshad
Department of Cardiothoracic Surgery, Postgraduate Medical Institute,
Govt. Lady Reading Hospital Peshawar,

To share the Peshawar experience of 150 cases of Pulmonary hydatid dealt with surgically.

Method: A total of 150 patients underwent surgery for pulmonary hydatid between 01/07/1990 and 30/06/1999. Ages ranged from 4-70 years with a mean age of 37.7 years and M:F 95:55, L:R 53:96. Sizes ranged from 0.5 cm – 8 cm diameter with a mean size of 3.6 cm (as judged on xray chest). All patient had xray chest, chest ultrasound (cystic 125/150, echogenic 22/150, solid 3/150), abdominal ultrasound (liver cysts 41/150, splenic cyst 3/150, others 2/150), haemagglutination test for Echinococcus (positive 123/150). Operations performed were cystectomies 124, lobectomies 19, Decortications 6 and thoracoplasty 1. All patients has post-operative adjuvant zentel for at least one cycle of 2 weeks.

Results: Out of 150 cases operated, 108 had a single cyst, 42 had multiple cysts while 7 were bilateral. There were 124 cystectomies, 19 lobectomies, 6 decortications and 1 thoracoplasty. Segmental distribution was predominantly RLL 51/150 followed by RUL 32, LLL 29, LUL 21, RML 17. Of the 21 LUL, 12 were in the lingula. Of the 46 infected cysts 4 had led to an empyema, which needed decortication. The post-operative complications were (i) Wound infection 9/150 (ii) Recurrence 6/150 (iii) Air leak 42/150. Of the 42 patients with air leaks 33 responded to conservative treatment i.e. chest intubation with/without low pressure suction. The remaining had to be re-explored and of these 3 had resuturing done, 6 had lobectomy. Out of these 6 one patient had to be re-explored a 3rd time and a thoracoplasty done. There were 3 deaths in our series, all starting with prolonged air leak --- BPF--- Pneumonia ---- death.

Conclusion: Hydatid constitute near 15% of our surgical workload. Cystectomy in experienced hands, remains the treatment of choice with a mortality of 3/150 --- 2%. Where the size of the cavity is considered too large to obliterate, lobectomy is another option. Chances of recurrence are greatly reduced (i) If the cyst is delivered in toto (ii) meticulous surgical toilet (iii) adjuvant zental therapy. Post-operative air leak is minimized if any communication with the bronchial tree is closed individually under vision, besides multi-layered obliteration / closure of the cavity.

EMERGENT TUBE THORACOSTOMY FOR PENETRATING THORACIC TRAUMA

AMER BILAL, Shahkar Ahmed Shah, Zahoor Ahmed, Mohd. Salim
Department of Cardiothoracic Surgery, Postgraduate Medical Institute, Govt. Lady Reading Hospital Peshawar.

Aim: To assess the role of emergent tube thoracostomy in penetrating thoracic trauma.

Method: Over a period of 1 year (May, 96 – May, 97) a prospective study was carried out at Cardio-Thoracic Unit to assess the role of emergent tube thoracostomy in penetrating chest trauma. In this one year period 120 patients were received, of which 105 were missile injuries (85 gunshot, 20 stray bullets), 14 stab, while one had steel bar injury. Chest x-ray was done in every case, before and after intubation. 110 were intubated, 10 required observation only and 3 proceeded to emergency thoracotomy. Single dose antibiotic (1st generation cephalosprin) was administered prophylactically prior to intubation.

Results: Out of 120 cases, 110 were intubated, 10 observed and 3 converted to thoracotomy. There were 78 hemothoraces, 25 hemopneumothoraces, 5 pneumothoraces, 5 lung contusions, 1 chylothorax and 4 chest wall injuries. All 110 intubated survived. In 105 (96%) there was complete lung expansion, both clinically and radiologically. 14 patients had complication which were 5(4.5%) wound infection, 3 (2.7%) clotted hemothorax 2(1.8%) air leak, 2 (1.8%) hemoptysis, 1(0.9%) empyema and 1(0.9%) chylothorax.

Conclusion: Emergent closed tube thoracostomy is the mainstay of initial treatment in penetrating chest trauma. It is an important determinant of patient's progress and the need for surgery. Moreover, early removal of thoracostomy tube is important in preventing intrathoracic sepsis.

THORACIC SURGERY, JINNAH POSTGRADUATE MEDICAL CENTRE.

DR HUMAYOON SARWAT , PROF SYED FAHIM-UL-HAQ

Hydatid cyst disease is endemic to many cattle and sheep raising areas of the world like, Australia, NewZealand, South America and North China.

Sixty patients of Pulmonary Hydatid cyst disease 31 Males and 29 Females were treated surgically in Department of Thoracic Surgery, Jinnah Postgraduate Medical centre, Karachi during the period of January, 95 to December, 98.

The presentation of these patient were variable.57 cases(95%)had chest pain, cough in 56 cases(93%),expectoration in 42 cases(70%),fever in 39 cases(65%), dyspnoea in 27 cases(65%) and abdominal pain in 6 cases(10%).There were associated multiple cyst in different organs like 15 cases had it in liver(20%) 1 case in spleen,1 case in kidney and 2 in peritoneum.6 cases had ruptred hydatid cyst in pleural cavity resulting in empyema.

Analysis of the cases for their age incidence, sex distribution and various clinical features will be presented.

The Thermodynamic Profile of Heat Redistribution in Patients Having Undergone Hypothermic Cardiopulmonary Bypass and Subsequent Active Rewarming: Dopexamine against Nitrate for Reducing the "Afterdrop" Phenomenon.

M.Ervine, M.Whitehorne, N.Chitkara, R.Ware
Intensive Care Unit, King's College Hospital, London, England.

INTRODUCTION: Cardiac surgery frequently relies on perfusion techniques involving moderate hypothermia. Problems during recovery (low cardiac output and high peripheral vascular resistance) may be due to the failure of adequate rewarming. Commonly nitrate derivative – nitroglycerin – is used as a vasodilator during bypass in an attempt to aid uniform (active) rewarming. Dopexamine, a dopamenergic and b2 agonist agent, has vasodilator effect on splanchnic and muscle vascular beds which could aid blood flow distribution and hence enhance heat uptake during the rewarming phase improving subsequent cardiovascular performance post bypass. Dopexamine has not, however, been evaluated for this indication.

OBJECTIVES: To compare the peri-operative thermodynamic course of the patients following routine coronary artery surgery under moderate hypothermia (32c) using either nitroglycerin or Dopexamine. During the active rewarming phase, the object was to compare the rate of heat uptake between the two patient groups. The efficiency of subsequent redistribution of delivered heat, from the core to the peripheries was assessed by comparing core peripheral temperature gradients at fixed time points, for the first five postoperative hours.

METHODS: 20 patients fulfilling standardized demographic, and surgical selection criteria were randomized to receive either nitro-glycerine (0.3mg/kg/min.) or Dopexamine (2.0mg/kg/min.) from the onset of bypass to the completion of rewarming. Subsequent heat redistribution was assessed by measuring the core/peripheral temperature gradients at fixed time intervals. Core temperature was measured at the nasopharyngeal site, and peripheral temperature recorded by insertion of a needle thermister probe into the quadriceps femoris muscle to a depth of 30mm from the skin. Gradients were recorded at 1 hour intervals.

RESULTS: During the afterdrop phase following active rewarming significant differences were observed in the gradients recorded ($P < 0.05$) between the Dopexamine group and the nitrate group at considered time points. The results recorded were subjected to a repeated measures statistical analysis utilising a two-way anova. The Dopexamine patient group exhibited consistently lower gradients ($F = 6.08$, df 4~14, $P=0.02$).

CONCLUSION: Significant differences were observed between temperature gradient values recorded in the Dopexamine and nitrate groups at corresponding time points, gradients within the Dopexamine group being consistently lower. If we presuppose that the size of the gradient is inversely proportional to the efficiency of heat redistribution, we can conclude that Dopexamine when compared with nitrates does increase the efficiency of thermal equilibration between the core and the periphery. The study is ongoing.

INFECTIOUS COMPLICATIONS OF RADIAL ARTERY CANNULATION IN OPEN HEART SURGERY PATIENTS

Dr. A. MOHSIN
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Dr. A. BAJWA

DEPTT. OF ANESTHESIOLOGY AND INTENSIVE CARE PUNJAB INSTITUTE OF CARDIOLOGY.

ABSTRACT

Infectious complications of invasive blood pressure monitoring are well documented. We prospectively analyzed its incidence at Punjab Institute of Cardiology in 100 adult patients who underwent various open heart surgical procedures. Both right and left radial arteries were used for cannulation. Arterial catheter tip positive cultures were seen in 31 patients. No evidence of local or systemic infection was observed in any patient.

USE OF INHALED NITRIC OXIDE (iNO) IN THE ICU.

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Inhaled nitric oxide has now been used in a variety of conditions in the ICU for several years. The experience with its use has been rewarding in some pathological conditions while in other situations the results have been either hopeless or less gratifying. In this presentation a general overview of its use will be shared with audience. Particular reference will be made to its application in cardiac surgical patients with pulmonary hypertension especially the perioperative use of iNO in congenital heart disease. Studies related to ARDS, persistent pulmonary hypertension of the newborn (PPHN), and lung transplantation will be discussed and finally our own experience with iNO in the cardiac surgical ICU will be presented.

Timing of Endotracheal Extubation with two different anaesthetic agents for Coronary Artery Bypass Surgery.

Dr. Rehana S. Kamal, Dr. Farouk Atiq, Dr. Fazal Hameed Khan. Dr. Hamid Iqil Naqvi.
The Aga Khan University Hospital, Karachi, Pakistan

INTRODUCTION: Early extubation is associated with early discharge from ICU, shorter hospital length of stay (LOS). reduces cost and improve resource use. Early extubation can be facilitated by modification in anaesthetic technique.

OBJECTIVE: Objective of the study was to see the timing of endotracheal extubation and discharge from ICU using IV Midazolam and propofol as anaesthetic agents for Coronary Artery Bypass Surgery.

METHODS: Time to extubation and ICU length of stay were studied in 30 consecutive patients undergoing Coronary Artery Bypass Surgery. Patients received Fentanyl, IV anaesthetic agent at induction and pancuronium for muscle relaxation. After endotracheal intubation, anaesthesia was maintained using Isoflurane 0.2 - 1.2%. During CPB, infusion of either propofol or midazolam was continued in the post CPB period and in the ICU. Times noted included: duration's of surgery, CPB, cross-clamp time, Post-op time to awaken and extubation, stay in the ICU and length of stay in the hospital.

RESULTS : Results are being compiled and statistical analysis using ANOVA will be done and presented at the conference.

Hemodynamic response in Coronary revascularization patients - Comparison of two IV anaesthetic agents.

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INTRODUCTION:High dose opioid anaesthesia in cardiac surgery results in prolonged ventilation in ICU. Inhalation based anaesthesia and TIVA using Propofol have been recommended to facilitate early extubation. Propofol is known to produce hypotension, but has been used in patients undergoing coronary revascularization and seen to be hemodynamically stable.

OBJECTIVE: The objective of the study was to see the haemodynamic effects of Propofol in a balanced anaesthesia technique in patients undergoing coronary revasularization.

METHODS: Perioperative haemodynamic parameters were studied in 30 consecutive patients undergoing coronary revascularization. The patients received Propofol 0.5 - 1.0 mg/kg or Midazolam 0.1 - 0.15 mg/kg, Fentanyl 10 ug/kg at induction and pancuronium for muscle relaxation. After endotracheal intubation, anaesthesia was maintained with Isoflurance 0.2 to 1.2%. During CPB, infusion of Propofol 2 - 4mg/kg/h agent was administered to maintain anaesthesia, infusion was continued in the post CPB period and in the ICU. HR, Blood Pressure, CVP and other hemodynamic parameters when using a pulmonary artery catheter, were measured at different timings perioperatively.

RESULTS: Compilation of the results is under way statistical analysis will be done using ANOVA and presented at the conference.

SURGERY FOR TRACHEAL MALIGNANCY

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AIM: To evaluate the surgical management of tracheal malignancy which sometimes comes as emergency case

METHOD: Retrospective study, 1990-1998

RESULTS: Fifteen patients with tracheal malignancy underwent surgical intervention between 1990-1998. There were 14 males and 1 female. The eldest was 75 years old and the youngest was 22 years old. Six of them (40%) were emergency cases caused by respiratory distress.

Types of the tracheal malignancy:

- Primary tracheal cancer	5 cases
- Invasion of thyroid cancer to the trachea	5 cases
- Invasion of lung cancer to the trachea	5 cases

The procedures performed:

- Resection, end-to-end anastomosis	3 cases
- Wedge resection	4 cases
- Wide excision and pericardial flap	1 case
- Pneumonectomy, wide excision and bronchial flap	2 cases
- Sleeve pneumonectomy	1 case
- Laser surgery	2 cases
- Debulking and stenting	2 cases

Depending on histopathologic finding and stage of the malignancy, patients received post-operative radiotherapy and chemotherapy. Surgital mortality was 1 case. We found no post-operative surgical complication.

Tracheobronchoplasty for malignant and benign conditions: A retrospective study of 45 cases

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Frenchay Hospital, Bristol, UK

Objective:
To study the different operative techniques employed and the problems encountered in tracheobronchoplastic procedures both during and after surgery.

Patients & Methods :
Forty-five patients with a mean age of 51.68 years (range 15 to 80 years), underwent tracheobronchoplastic procedures in the period from 1976 to 1998. There were 28 males and 17 females. Forty-two of these had planned surgery. Three trauma patients had emergency surgery. Out of 42 planned operations 27 suffered from cancer and 15 had bening lesions. Amongst the cancer group the nodal status was N0 in 9 patients, N1 in 12 and N2 in 6. Bronchial sleeve resection with lobectomy was performed in 24 patients. Six patients had sleeve pneumonectomies. Fifteen others included bronchial sleeve resections without lobectomies, and tracheo- bronchoplasties for trauma and stricture. Reconstruction was performed in the earlier years with stainless steel wire of 36/38 SS gauge (n=22), Vicryl (n=4) and Prolene (n=1). More recently ethibond (n=18) was routinely used for this purpose. Anaesthesia was maintained via oro-tracheal intubation inter spaced with a short period of intubation of one or the other bronchus through the thoracotomy incision.

Results :
The mean operating theatre time including the anaesthesia was 207 minutes (range 120-375 minutes). The duration of stay in the high dependency unit was not prolonged beyond the customary three days. Postoperative problems included cexcessive bronchial secretions and partial atelectasis (one patient requiring bronchoscopy), prolonged mechanical ventilation (n=1), prolonged air leak (n=1) and tacchyarrhythmia (n=1). There was no per-operative, hospital, or 30 day mortality. Four out of 27 cancer patients lived more than five years, 12 died between two and five years and 11 lived less than two years.

Conclusions :
Whilst tracheobronchoplasties require special anaesthetic techniques and stringent high dependency post operative care, there is minimal operative morbidity and mortality. Acceptable duration of survival can be expected enven in the cancer patients.

'NON-SMALL CELL LUNG CANCER (NSCLC)' DISEASE SPECTRUM AND ROLE OF SURGERY

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OBJECTIVES: The basic objectives of our study were to:
(i) review the disease spectrum and presentation in a tertiary care hospital.
(ii) evaluate the role of surgery in the management of NSCLC at AKUH.
(iii) analyze the role of various diagnostic modalities in predicting the post-op stage.
(iv) assess the role of post-op stage in predicting the recurrence and outcome.

MATERIALS & METHODS: The medical records of all the patients who were diagnosed to lung cancer between 1988 and 1998 were retrospectively reviewed. The data was extracted and analyzed for patients with NSCLC only.

RESULTS: A total of 773 patients were admitted with a diagnosis of lung cancer at AKUH over 10 years period. Out of these 21(2.71%) underwent staging mediastinoscopy while 20(2.58%) patients underwent exploratory thoracotomy and biopsy without any resection, as the disease was found to be unresectable. Only 18 patients (2.32%) underwent surgical resection. There were 15 males and 3 females and the mean age was 53 years. Mean duration of symptoms was 12 months and cough and hemoptysis were the main presenting symptoms. Most of the tumors were located on the right side. CT scan & Mediastinoscopy were mainly used to stage the disease. Complete surgical resection including en-bloc resection of adjacent structures was attempted, when possible. Mean follow up duration was 18 months and the recurrence rate was 39%. There was no significant correlation between post-op stage and recurrence.

CONCLUSIONS & RECOMMENDATIONS: Most of the patients present at the advanced stage and resection is possible in a minority of patients only. The size of primary tumor and local extension should not contra-indicate surgery in patients with negative mediastinal nodes and without distant metastasis as it can be performed safely. All pulmonary lesion in the adults must be thoroughly investigated as early diagnosis and complete resection is the only key to cure and long term survival.

COMPARISON OF SPECTRUM OF DISEASES REQUIRING LUNG RESECTION "CASTLE HILL VS LADY READING HOSPITAL"

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Aim: The spectrum of diseases requiring lung resection in U.K is markedly different from that in Pakistan with inflammatory lung disease in Pakistan replacing malignancy in U.K. A comparison is made of a surgeon's experience while training at Castle Hill and working at Lady Reading Hospital.

Method: A retrospective study was carried out comparing the spectrum of diseases requiring lung resection, by taking 50 cases done at Castle Hill and comparing them to cases done at LRH. Moreover, an attempt was made to analyze any change in the local spectrum by taking both the 1st 50 and last 50 cases done at LRH and comparing them to the 50 cases at Castle Hill.

Results: In the 1st 50 cases at LRH there were 19 carcinomas of which 7 were inoperable, 7 inoperable thoracotomies, 6 hydatids, 5 lung abscesses, 5 tuberculous cavities, 4 bronchiectasis and 11 destroyed lungs. In the last 50 cases there were 22 carcinomas of which 3 were inoperable, 7 hydatids, 3 lung abscesses, 3 tuberculous cavities, 6 bronchiectasis, 2 bullous lungs, 7 destroyed lungs. In U.K out of the 50 cases there were 45 carcinomas, 4 bullous lungs and 1 lung abscess.

Conclusion: In Peshawar the spectrum of lung surgery is 40% carcinoma, 40% inflammatory lung disease and TB, 15% hydatids and 3% others. In U.K it is 90% carcinoma, 8% bullous lung disease and 2% lung abscess.

A REVIEW OF 70 CASES OF HYDATID LUNG DISEASE OPERATED IN GULAB DEVI CHEST HOSPITAL.

SHABBIR RAZA, S. A. BHATTI, JAWAD SAJID KHAN

The larval stage of echinococcus Granulosis presents as hydatid cyst in its intermediate host i.e., human beings. These cysts not only give suspicious shadows on chest x-rays but if left untreated, may rupture & cause anaphylactic reaction leading to death. Communication of these cysts with a bronchus may cause a bronchopleural fistula, which is again a serious complication. Inspite of the fact that certain medicines have proved successful in preventing the formation of these cysts, yet surgical excision still remains the treatment of choice. During the last two years, we operated upon 70 patients of hydatid lung disease and a review of these cases is being presented. We observed that haemoptysis was the most common presenting symptoms, which was present in 54(77%) patients, 42(60%) patients had solitary lung cysts. In 64(71%) patients, cysts were enucleated while in rest of the cases, a lobar resection had to be done. All the patients did well pot-operatively except 04(5.7%) who developed a bronchopleural fistula after surgery. We conclude that enucleation of hydatid cyst through thoracotomy is still highly successful in treating hydatid lung disease. If required, however, it may combined with drug therapy afterwards.

OUTCOME OF 71 PATIENTS WITH PENETRATING CHEST TRAUMA PRESENTING IN EMERGENCY OF MAYO HOSPITAL, LAHORE.

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A study over a period of five years (1990- 1995). There were 71 patients who were divided into two groups.

Group A : - There were 47 patients. They were managed with chest tube intubation initially. Out of 47 patients 35 developed empyema. Delayed thoracotomy was done in 27 patients.

Group B : There were 24 patients in this group. Early thoracotomy was done. They were operated upon within a week of the initial injury.

The results in group B were far better as compared to the Group A in terms of early recovery , rehabilitation , lesser postoperative complications , lesser pre and post operative stay of the patients in hospital and financial matters.

CHANGING TRENDR IN CORONARY ARTERY BYPASS SURGERY

M.Ahmed, R.A. Badar , S.Khalil

CABG (Coronary Artery Bypass Grafting) is being conventionally performed by using CPB (Cardiopulmonary Bypass). This procedure is not free of certain risks associated with Heart Lung Machine and other components of CPB.
Patients associated with certain diseases e.g., chronic renal failure, chronic pulmonary insufficiency, severe carotid disease and bleeding disorders which render them as high risk for multi-system organ failure when on extra corporeal circulation . Recently it has become possible to perform CABG (Coronary Artery Bypass Grafting) without CPB (Cardiopulmonary Bypass) in these patients.
Author has performed 25 operations of CABG (Coronary Artery Bypass Grafting) without CPB (Cardiopulmonary Bypass) at PIC and Mayo Hospital Lahore till June 1999. There was no mortality and the cost of the procedure was minimal. No patient required inotropic support. Average ventilatory time and ICU stay was markedly reduced. Post-operative blood transfusion requirement was 0.5 unit per patient.
33.3 % patient had single vessel disease, whereas the other 66.6% had double vessel disease. We did not have any peri-operative complications i.e., peri-operative infarct, stroke or any major respiratory complication.
Initial experience of direct CABG on the beating heart has created a new hope that this could be an effective technique for myocardial revascularisation in selected group of patients.

A Comparison of Operative Mortality in Asians and Non-Asians Undergoing Coronary Artery Bypass Grafting.

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Aim: To compare the operative mortality (OM) for coronary artery bypass grafting (CABG) in Asians (Indian Subcontinent) and non-Asians.

Methods: From the prospective cardiac surgical database at the Hammersmith Hospital, 1937 consecutive patients undergoing primary CABG between January 1993 and December 1997 were identified. 431 (22%) were Asians and 1506 (78%) were non-Asians. Logistic regression analysis was performed to determine the preoperative predictors of OM.

Results: The overall OM was 3.5% (67/1937), and was predicted by gender (p=0.0001), myocardial infarction within 1 month (p=0.0001), preoperative balloon pump use (p=0.0005), creatinine/body surface area (bsa) (p=0.0007), left ventricular function (p=0.003), preoperative nitrates (p=0.01), preoperative inotropes (p=0.01) and hypertension (p=0.04). Of the population 1611 were males (83%) and 326 (17%) were females. The OM for all males was 2.8% (43/11611), and was predicted by myocardial infarction within 1 month (p=0.0001), preoperative balloon pump use (p=0.0004), preoperative inotropes (p=0.001), Asian ethnicity (p=0.005), creatinine/bsa (p=0.02), left ventricular function (p=0.02), age (p=0.02) and hypertension (p=0.02). The OM for Asians was 5.8% (5.2% for males and 8.2% for females) and for non-Asians was 2.8% (1.9% for males and 5.0% for females) (p=0.003) Myocardial infarction within 1 month (p=0.0001), height (p=0.0004, bsa (p=0.001), body mass index (p=0,02), left ventricular function (p=0.02) and creatinine/bsa (p=0.04) predicted OM in Asians.

Conclusion: Asians have a higher OM following CABG in common with the known higher mortality for coronary artery disease. This cannot be explained by cardiac factors alone and the other causes of the increased OM in this group deserves further investigation.

PRE OPERATIVE RISK FACTOR EVALUATION BY EURO SCORING SYSTEM, HOSPITAL MORTALITY AND SURVIVAL, EXPERIENCE OF CABG LAST 10 YEARS.

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AIM: Aim of the study was to evaluate patients pre operatively with Euro Scoring System to judge the endpoint, hospital mortality or survival in all the CABG done by a single surgeon.

METHOD: From June 1989 to June 1999, the data of 262 cases of CABG done, was collected on the data sheet and each case was scored pre operatively with Euro Scoring System. The 3 groups were made.Pre Op data was collected and analysed. The end point was hospital mortality.

RESULTS: The age range was 25-77 years, male were 94.7% and 5.3% were female, Regarding again status 85.9% were stable and 14.1% were unstable.Obesity was present in 3.4% of cases. Hypertension was present in 44.3% and 55.7% were non hypertensive. In the whole group 78.6% were no diabetic, 21.4% were diabetic Good EF was found in 81.7%, fair in 15.6% and poor were 2.3% of cases. Tripple vassel disease was found in 64.1%, two vassel disease was found in 22.5%, single vessel was found in 5.7% cases and 6.8% were having LMD. Elective operation was don in 92.4% cases, urgent in 4.8%, Emergency 2.7% and salvage procedure was done in 3 (1.1%) cases. The Euro score from 0-5 was having 6.1% mortality, the score from 6-10 was having 20% and the score from 11-15 was having 80% mortality.

CONCLUSION: The scoring of patient pre op is a very good tool to predict the out come of CABG.

CORONARY ARTER BYPASS GRAFTING VS CORONARY ANGIOPLASTY VS MEDICAL THERAPY IN THE ELDERLY

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Coronary artery disease is more prevalent with increasing age, yet there may be some hesitancy to utilize more aggressive interventions for coronary artery disease (CAD) because elderly patients are believed to be fragile with more frequent multisystem disorders.. **Objectives:** Objectives include evaluating differences among the three treatment groups with regards to improvement in functional class, in-hospital morbidity and mortality, actuarial 3-year survival, and cardiac event-free survival - from death, myocardial infarction, revascularization through percutaneous coronary angioplasty (PTCA) or coronary artery bypass grafting (CABG). Predictors of in-hospital mortality were sought. **Methods:** 215 patients aged 70 years and older with angiographically proven CAD who underwent coronary angiography at the Philippine Heart Center from January 1992 until December 1995 was included. 108 were treated medically, 68 by CABG and 39 underwent PTCA. The chi-square, t-test/Anova were used to compare outcomes among the three treatment groups. Predictors for mortality were obtained by univariate analysis and logistic regression. **Results:** The three treatment groups were homogenous except for significantly more females in the PTCA group, and more utilization of intra-aortic balloon counterpulsation and inotropes. The PTCA and CABG groups had more patients in functional class IV. There was a significant improvement in functional class for both CABG and PTCA groups, although 3-year survival and freedom from myocardial infarction are not significantly different. Those in the PTCA group required more repeat revascularization compared to the CABG group. For patients subjected to CABG, predictors of in-hospital mortality include urgent rather than elective revascularization, left ventricular ejection fraction, and renal insufficiency. For the PTCA group, predictors of mortality include pre-PTCA hypotension, and use of IABP and inotropes, urgent revascularization, and functional class. **Conclusion:** CABG and PTCA result in improvement in functional class, although 3-year survival is not different from the medical group. The CABG group had more in-hospital morbidity compared to PTCA, but the need for subsequent revascularization is less.

MID-TERM OUTCOME OF SURGICAL CORONARY OSTIAL PLASTY OUR EXPERIENCE

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AIMS: The conventional CABG procedures of isolated critical stenosis of the left main coronary artery restores a less physiological perfusion of the myocardium, consuming an appreciable length of bypass material. Coronary ostial plasty has been described as an alternative surgical technique in proximal obstructive coronary artery disease without calcifications.

METHOD: We report 23 patient(13 males,8 females; age:37-78;averge :57)underwent surgical ostial plasty. Ostial reconstruction with only fresh pericardial patch was performed in 15 cases in the left main and in 6 cases in the right coronary artery; 3 patients underwent bilateral ostial enlargement. In 7 cases, coronary artery bypass grafting was added for contralateral distal stenosis with a total of 5 arterial conduits and 6 venous grafts.

RESULTS: In 20/23 patients, good technical results were achieved, as demonstrated at control coronary angiograph and Tallium-201 stress test at follow-up time(49±8months).In the only cases of post-operative death, the ostial plast appeared to be patent at necropsy.

CONCULSION: Providing that the well-defined contraindications(mainly, coronary calcifications, involvement of the left main distal bifurcation, older age)are respected, we believe that ostial plasty deserves a place in the surgical treatment of coronary artery disease. The technique restores a more physiological perfusion of the coronary arteries and is likely to better preserve the future of the patients, as it economises bypass material for later bypass grafting and allows sub-sequent percutaneous transluminal coronary angioplasty.

INTRAAORTIC BALLOON PUMP SUPPORT IN CORONARY ARTERY SURGERY: EXPERIENCE AT AFIC / NIHD

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We analyzed the prognostic predictors of 183 patients undergoing coronary artery surgery and required IABP support at our institute from January 1993 to May 1999. **GROUP-I** (n=16) include patients who were provided IABP support pre-operatively. **GROUP II** (n=167) include patients who required intraaortic balloon support post-operatively. To evaluate the major determinants of poor prognosis in patients on intraaortic balloon pump support, Gp-II patient were further divided in to SURVIVOR (n=72) and NON SURVIVORS (n=95).

The overall incidence nf the use of intraaortic balloon was 10.22%. The incidence of the use of intraaortic balloon pre-operatively was 8.74%. The survival in Gp-I was 87.5% and in Group-II was 43.11%. From parameters available at the time of IABP insertion. Univariate analysis identified the following factors as associated with early death. Female gender, pervious MI, Pervious cardiac operation, emergency operation, presence of diabetes mellitus, New York Heart Association class, preoperative renal dysfunction, left ventricular ejection fraction, end-diastolic pressure, endarterectomy, perfusion time, timing of IABP insertion as independent risk factors for early death ($p<0.05$).

The early mortality rate in patients who received an IABP was high. The significantly better short-term survival of patients who received an IABP before operation may justify more liberal preoperative use of the IABP in high-risk patients. Moreover identification of the group of patients who are at the highest risk of death at the time of IABP insertion will help to determine which patient may benefit from temporary support of the heart beyond that offered by the IABP or from other management strategies.

SURGICAL MANGEMENT OF COARCTATION OF AORTA WITH PATCH AORTOPLASTY

Dr. Muhammad Rehman, Dr. Mukhtar, Dr. Jamal Abdul Nasir

The cases of coarctation of aorta, coming under our care in surgical department of NICVD generally fall into two groups. The first group consist of those patient who are younger, present with heart failure and usually have coexisting cardiac anomalies. The most common among these anomalies is bicuspid aortic valve followed by patent ductus arteriosus and mild MR. The other group comprises those patients who are older and their main symptom is uncontrolled hypertension. Some of these are picked up incidentally while rest present with headache, chest pain, palpitation and dyspnea. In this way our experience is quite different from that being reported in the literature because we are dealing with different population of the patients.

Our experience with repair of coarctation of aorta is limited to synthetic patch aortoplasty the main reason behind choosing this procedure is that our patients are in old age group and subclavian flap operation and resection and end-to-anastomosis are not appropriate in this age.

The purpose of our study is to review aortoplasty using an elliptical patch polytetrafluroethyline to compair our results with of those of various centers using different techniques of aortoplasty and to assess the hospital mortality and morbidity.

From July 1994 to July 1996, we operated on total of 30 patients with coarctation of aorta. More than 50% of the patients were in age group of 11 to 20 years. All the patients underwent patch aortoplasy. Only 3 % of the patients developed postoperative complication e.g. heamorrahage abdominal pain chylothorax. Postoperatively 80 % of the patients did not require antihypertensive treatment. Only one patient developed residual or re-coarctation of aorta.

REVIEW OF THIRTY PATIENTS UNDER GOING P A BANDING FOR VENTRICULAR SEPTAL DEFECTS WITH PULMONARY HYPERTENSION, CLINICAL INDICATORS OF ADEQUATE BANDING.

Dr. Asjad Khan, Dr. S M Javed, Dr. Masood Sadiq,
Dr. M.Amin and Prof. M. A. Cheema

Back Ground : VSD closure is now standard form of treatment for Symptomatic patients with VSD, irrespective of age. In our set up however paedriatic cardiac surgery and intensive care is in the evolution phase, PA banding remains an important form of treatment for patients with large VSD in first year of life.

Aim: To evaluate clinical parameters per operative and post operative as indicators of adequate pulmonary artery banding.

Setting : Children Hospital Lahore, PIC, Lahore

Method: This is a retrospective study of thirty patients under going pulmonary artery banding for ventricular septal defects with pulmonary hypertension at two centers. The age range was from 4 to 9 months weight 3.5 to 7 Kg. Standard median sternotamy with pulmonary artery banding with nylon tape using Toronto formula, which we were able to use in 80% of the cases. Perioperative rise in systolic blood pressure by 10 mmHg and a fall in Oxygen saturation by 5 was taken as criteria of adequate banding how ever patient with dilated MPA would not tolerate standard Toronto formula which we could not apply in 20% of our patients, post operatively a fall in respiratory rate, fall in Oxygen saturation, change in VSD murmur were taken as indicative criterion. All patients had Echocardiography before discharge and Mean gradient was 45 mmHg range 25-75.

Results: We had two deaths one because of fulminate pneumonia and second because of accidental rapid injection of Potassium.

Conclusion: The standard Toronto formula is not always applicable in patients which have dilated Pulmonary Artery. Perioperative increase in systolic blood pressure by > 10 mmHg and drop in oxygen saturation to 85 to 90 % are per operatively good indicators of adequate banding and drop in respiratory by 5to 10 per minute and early gradient of > 40 mmHg are post operative indicators of adequate banding.

BIDIRECTIONAL GLENN SHUNT

Maj Inam Ullah, Brig Syed Afzaal Ahmed,
Maj Gen Masud Ur Rehman Kiani, AFIC/NIHD
Rawalpindi, Pakistan

Aim. The purpose of this study was to review retrospectically the outcome of the patients whom were operated for Glenn Shunt.

Method. We retrospectively reviewed 22 patients who were opertaed between Dec 1993 and Jun 1999. THere were 22 patients out of them 16(72.8%) male and 6 (27.3%) female, age from 3.5 years to 35 years (Mean age was 12 years).

The anatomic diagnosis were Tricuspid Atresia 6 patients, TGA with Ps 5 patients, DORV 3 patients, DILV 3 patients, Multiple VSD's 3 patients and TOF 2 patients. We have done the Bidirectional Glenn Shunt procedure total circulatory arrest in which transected SVC was anastomosted end to side to Rt Pulmonary artery with closer of Main Pulmonary artery and stump of SVC to Rt atrium.

Results. 2 patients died post operatively due to severe superior vena Caval Obstruction.
1 patient is having high Jugalar Venous pressure with cynosis.

Conclusion. We admit that Bidirectional Glenn Shunt is an interim step in palliation for functional single ventricle but it is physiological equal to half a Fontan procedure, accepted as a reasonable palliation in our study.

NOVEL TECHNQUES OF BGS WITHOUT CARDIOPULMONARY BYPASS

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AIM : We report novel techniques of doing bi-directional Glenn shunt (BDG) without cardiopulmonary bypass (CPB)

METHOD : 5 cases single ventricle and pulmonary stenosis (PS) complex were taken up for BDG without CPB. The criteria for case selection were an unrestrictive atrial septal defect (ASD), no atrio ventricular (AV) valve regurgitation and no other intra cardiac defects requiring correction. A temporary shunt was established between superior vena cava (SVC) and contralateral branch pulmonary artery (PA) for venous drainage during SVC clamping for BDG anastomosis in 4 cases. In case 5, a shunt was put between SVC and right atrium (RA) for venous drainage and modified Blalock Taussig (BT) shunt and patent ductus arteriosus (PDA) were left open till the completion of the BDG.

RESULTS : Central venous pressure (CVP) increased to mean of 22.4 mm of Hg during SVC clamping with improvement of oxygen (O2) saturation from 62.4% to 82.4%. After Glenn shunt CVP and O2 saturation maintained 13.2 mm of Hg and 87.4% respectively. Postoperatively there were no neurological abnormalities and no hospital mortality.

Conclusion : Our techniques give an excellent venous drainage with improvement of O2 saturation during SVC clamping. It avoids problems related to CPB and economical. It is easily reproducible with excellent results in selected group o patients without compromising the completeness of repair.

MINIMALLY INVASIVE OPERATION FOR PDA CLOSURE.

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AIM: To describe a new minimally invasive approach to PDA closure and to compare the outcomes of this technique with the previously practiced standard thoracotomy.

METHODS: The records of all the patients undergoing elective surgery for PDA from Jan. 1990 to May 1999 were reviewed retrospectively. The characteristics and outcomes of the new group (A) operated with minimally invasive approach are compared with those of the previous group (B) operated through standard posterolateral thoracotomy.

T-test or the Mann Whitney U-test and chi-square test were used to compare the two groups.

RESULTS: Sixty Seven patients were identified after excluding urgent in-hospital referrals: 30 in group A and 37 in group B. The groups were similar with regard to age (mean 29.2 mths in group A and 23 mths in group B, p=0.66), weight (mean 9.3 kg vs 8.8 Kg, p=0.51), associated cardiac lesions (20% vs 21.6%, p=1). The PDA was divided in 50% of patients in group A and 10.8% in group B (p=0..0001). The requirement of narcotic analgesia was 53.3% vs 94.5%, (p=<0.001). Average blood loss (ml/Kg body wt.) was 2.41 vs 4.59, (p=0.076). Mean anesthesia time was 1.9 vs 2.1 hours, (p=0.12). Mean hospital stay was 2.12 vs 3.8 days, (p=<0.001) and cost was (US $) 794 vs 855.5, (p=0.01).

One 10 month old child in group A had to be converted to standard thoracotomy because of hemorrhage and was the only patient transfused. Transient recurrent laryngeal nerve palsy occurred in one patient in group A and 2 patients in B, pneumothorax in 2 patients in group A and 1 patient in group B and chylothorax in one patient in group A. Other devices such as coil occlusion and VATS have limited applications. Coil occlusion is associated with coil embolization to pulmonary artery in 12% and to systemic arteries in 3% of patients (Abraham Rothman et al 1997) and cannot usually be applied in large ducts and in small children. The length of the 3 to 4 ports used in VATS more or less equals the length of our incision. After 6 weeks complete closure can be achieved in 80.9% of cases (Goyal et al 1997). In case of VATS residual flow after 2 months occurs in 12% of cases. (Redmond P. Burke et al 1997 Harvard Medical School).

CONCLUSION:
The minithoracotomy group had significantly reduced hospital stay, cost and narcotic analgesia requirement. The incidence of division of duct was significantly greater suggesting adequacy of exposure, where as there was a trend towards reduction in anesthesia time and blood loss. The consistent results with this technique have inspired the introduction of a two day in hospital package for PDA closure.

BIDIRECTIONAL GLENN SHUNT

Maj Inam Ullah, Brig Syed Afzaal Ahmed,
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Rawalpindi, Pakistan

Aim. The purpose of this study was to review retrospectically the outcome of the patients whom were operated for Glenn Shunt.

Method. We retrospectively reviewed 22 patients who were opertaed between Dec 1993 and Jun 1999. THere were 22 patients out of them 16(72.8%) male and 6 (27.3%) female, age from 3.5 years to 35 years (Mean age was 12 years).

The anatomic diagnosis were Tricuspid Atresia 6 patients, TGA with Ps 5 patients, DORV 3 patients, DILV 3 patients, Multiple VSD's 3 patients and TOF 2 patients. We have done the Bidirectional Glenn Shunt procedure total circulatory arrest in which transected SVC was anastomosted end to side to Rt Pulmonary artery with closer of Main Pulmonary artery and stump of SVC to Rt atrium.

Results. 2 patients died post operatively due to severe superior vena Caval Obstruction.
1 patient is having high Jugalar Venous pressure with cynosis.

Conclusion. We admit that Bidirectional Glenn Shunt is an interim step in palliation for functional single ventricle but it is physiological equal to half a Fontan procedure, accepted as a reasonable palliation in our study.

Limited posterior thoracacotomy for open heart surgery in the current era

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Aim: We present our technique of correction of congenital heart defects employing the limited posterior thoracotomy approach.

Methods: Between June 1997 to April 1998, 27 patients underwent correction of various intracardiac defects without any mortality. There were 19 Ostium Secundum defects. There were 6 Sinus Venosus defects. 2 patients had ventricular septal defects while 2 patients had partial atrio-ventricular defects. In two other patients, pulmonary stenosis was repaired with pulmonary valvotomy in one patient while the other patient required short transannular patch.

Results: The median age and weight were 7 years and 20 kgs respectively. The median bypass and the cross clamp time were 63.25 and 35.0 mins respectively. The median ICU stays was 24 hrs. Short-term follow up revealed no functional or physical disability of the thoracic wall and the right arm.

Conclusion: Limited posterior thoracotomy offers a viable alternative for other approaches. It has the advantage of a scar in the back, does not impede the future growth of the breast tissue. Our approach does not need any new instruments. Our results have shown satisfactory short-term results and better cosmesis.

A LOW COST, LOW STRESS METHOD FOR MINIMAL ACCESS CORONARY SURGERY

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DEPARTMENT OF CARDIOTHORACIC SURGERY, CASTLE HILL HOSPITAL, CASTLE ROAD, COTTINGHAM, HU16 5JQ.

Aims: To present an indigenous approach to minimal access coronary artery bypass grafting.

The treatment of single vessel coronary disease by minimal access coronary bypass grafting (MIDCAB) is a contentious issue. Various techniques have been utilised including myocardial stabilisers; heart rate reduction and drug induced asystole. The Heart Port system is said to allow near perfect conditions offering a bloodless field and a still heart, however this system is prohibitively expensive. We have developed an alternative system at a fraction of the cost.

Method: A small left anterior thoracotomy is performed and the pericardium opened, the heart is inspected, if the distal vessel is suitable for grafting the internal mammary artery (IMA) is dissected under direct vision with video assistance only used for the most proximal dissection. A special IMA retractor is used for this. Cardiopulmonary bypass is then established from the femoral vessels using a long venous cannula with active drainage via a centrifugal pump. Transoesophageal echocardiography is used to check both the position of the venous cannula and adequate cardiac emptying during bypass. Temperature is allowed to drift to 34C. The pericardium is lifted and a left ventricular vent inserted. The heart is then electrically fibrillated. The left anterior descending artery is isolated and opened, an intra coronary occluder is inserted and the IMA is anastomosed in the routine fashion.

Results: In our minimal access cardiac surgery programme we have so far performed 48 cases, of which 29 have been MIDCAB operations. We have operated utilising a variety of approaches both on and off bypass. We, like others, have had anxiety over the quality of the anastomosis during beating heart surgery and as a result have evolved this system over the last 5 cases. There have been no deaths and all patients have reported resolution of angina. Two patients have had PTCA to other vessels.

Conclusion: In the cases that we have performed, this technique allows for a bloodless field with a safely vented and fibrillating heart. The setting for a satisfactory vascular anastomosis is provided. The technique allows for a low stress procedure with excellent results.

CABG WITH LEFT VENTICULAR ANEURYSM AT DR ZIAUDDIN MEDICAL UNIVERSITY HOSPITAL

DR TARIQ M. SHERANI, DR S. SHARIF A. SHAH, DR REHANA, DR MANSOOR, MR AQEEL

AIM::

Evaluation of prognostic value of CABG with Left ventricular Aneurysm resection

METHOD:

Study of 32 cases who were operated at DR ZIAUDDIN MEDICAL UNIVERSITY HOSPITAL for CABG during the period of 1991 to 1999 . All the patients had moderate to severe L.V.Dysfunction. 45 patients underwent for L.V.Aneurysmectomy with CABG . 5 patients had only L.V.Aneurysmectomy with dacron patch repair . 12 patients had only CABG and L.V.Aneurysm left as it is.All the patients had tissue echo for post operative evaluation.

RESULT :

Total 32 patients had CABG with L.V.Aneurysm
15 pt.s had CABG with the resection of apical aneurysm
Graft to RCA ,OM1 , OM2 , px LAD, DG1
8 pt.s had CABG with L.V.Aneurysmectomy ,
Graft to RCA, OM1, DG1
3 pt.s had only L.V.Aneurysmectomy , close with Dacro patch
6 pt.s had only CABG ,resection / plication was not attempted

CONCLUSION

We concluded that patient who had L.V.Aneurysm resection + CABG had the same mortality as witout resection of L.V.Aneurysm . L.V.aneurysm resected patients had much less incidence of CCF post operatively with great increase in exercise tolerance than compared to ones without resection

Abstract

A Successful Surgical Repair of an Impending Rupture of LV Aneurysm, Combined with Septal Perforation (VSD) and Rupture of Papillary Muscle (Mild Mitral Regurgitation) after Acute Myocardial Infarction

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Acute cardiac rupture following acute myocardial infarction (AMI) carries a high mortality. The progression and rapid hemodinamic deterioration is the usual clinical course, with 50–80% mortality within the first week. The combination of septal perforation, impending cardiac rupture of LV aneurysm and rupture of anterior part of papillary muscle after AMI has rarely been reported. This article describes a case of successful surgical repair of this condition in a 52 years old man. The important clinical features were as follows : 1) a sick looking patient in gross congestion heart failure, 2) persistent pulmonary oedema, 3) hepatomgali, 4) arrhytmias, 5) cardiogenic shock. The electrocardiagram revealed persistent ST-elevation of $V_1 - V_6$, while the chest radiograph showed congested plethoric lungs and bulging of the left ventricular apex. An echocardiography evaluation showed mild mitral regurgitation and apical, septal and anterior wall hipokinesia-akinesia. There was LV aneurysm and L to R shunt venticular septal defect (VSD). Catheterization was performed inmediately, which revealed a 95% stenotic in proximal left anterior descending artery and confirmed the presence of single large VSD in the apical segment of the interventicular septum. Subsequently.IABP was inserted with improved the hemodynamic. The patient was operated upon immediately. Reversed saphenous vene grafting was performed to the left anterior descending artery and first diagonal branch. The VSD was repaired with daeron patch, the partial papillary muscle rupture was repaired and aneurysmectomy were performed successfully. The respirator was removed on the first postoperative day. An echocardiography evaluation on the 3rd postoperative day showed normal LV dimension, normal LV sistolic function. The were no VSD and no mitral regurigation, but apical and septal wall still show hipokinesia-akinesia. The ejection fraction showed improvement from 44% to 71%. The patient was discharged from hospital on the 30th postoperative day.

BEATING HEART SURGERY WITH THE OCTOPUS II STABILIZER, LA PITIE EXPERIENCE.

Authors : AZHAR MUNIR, A.J.PAVIE, L.LIMA, A.RAMA, N. BONNET, P.LEPRICE, I.GANDJBAKHCH La Pitie Hospital, Paris. France.

OBJECTIVE : One of the major problems to perform beating heart coronary surgery is the stabilization of the coronary site. We have prospectively studied the use of the Octopus tissue Stabilizer, model one and then model two.

METHOD : All these operations, were performed through median sternotomy or mini-anterior-thoractomy (7 cases). We always mounted the articulating arms, at right shoulder and left hand of patient, and used the SAM TWO Performed Right and Straight Right tissue stabilizer.

RESULTS : From February 97 to January 99, 1515 patients had CABG, in La PITIE Hospital. 209 of them (13.8%) underwent beating heart CABG. 72 of those (59 males, 13 females, mean age 61.18 $_{+/-}$ 11.9y) were performed with Octopus stabilizer. The indications were a suitable coronary anatomy, particularly in high risk patients : age > 70 y (n=27), LVFE < 30 % (n-16), polyvascular disease (n=11), redo (n= 5). A total of 126 coronary anastomosis was carried out (1.76 per patient). There were : LDA (n= 71), RCA (n=18), DIAG (n= 15), CX (n=19), PDA (n=3).Complications were : conversion to CPB for hemodynamic instability (n=2), low cardiac out-put (n=3). One patient died due to postoperative myocardial infarction.

Conclusion : The versatility of the Octopus stabilizer allows to reach every heart territory for beating heart multivessel CABG. It also provides an excellent stabilization.

RISK ADJUSTED ANALYSIS OF PATIENTS UNDERWENT CABG AT AKUH.

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The Aga Khan University and Hospital.

Aim:
To asses morbidity and mortality risks in patients underwent coronary artery bypass grafting, as per Cleveland Clinic risks score and European system for cardiac operative risk evaluation (EuroSCORE).

Materials and methods:
Retrospective review of records of all patients, who underwent coronary artery bypass grafting, at The Aga Khan University and Hospital, between 1995 -1999. Data was collected using National Cardiac Surgery Database. Using SPSS software, risk factors were correlated with Cleveland risk score and EuroSCORE , to distinguish low, medium and high risk groups.

Results:
586 patients (486 males and 100 females) underwent coronary artery bypass grafting. Mean age was 55 years (range 20 to 80 years). Significant risk factors identified were age, female gender, comorbid condition like COPD, serum creatinine > 2 mg %, emergency surgery, low ejection fraction, previous MI, previous open heart surgery, unstable angina, intractable congestive heart failure and left main trunk narrowed >90% . Overall mortality rate was 2.19%. Patients were stratified as low, medium and high risk groups and the respective mortality observed was 0.94%, 2.25% and 13.79%. Also increased morbidity was demonstrated with increasing risk scores.

Conclusion:
The clinical scoring system i.e. Cleveland risks score and EuroSCORE, are useful for pre-operative estimate of morbidity and mortality risks. Outcome of our patients closely matches with estimated risks mentioned in Cleveland risks score and EuroSCORE.

PRE-OPERATIVE PREDICTION OF POST CORONARY ARTERY BYPASS GRAFTING ATRIAL FIBRILLATION

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AIM:

To find criteria for pre-operative prediction of post C.A.B.G Atrial Fibrillation.

METHOD:

144 (3:1 Male to Female Ratio) Coronary Artery Bypass Grafting were studied retrospectively. 46 (31.9%) of them went into Atrial Fibrillation post operatively. The pre-operative ECG's of all patients were studied and various ECG's criteria were analysed statistically to find the probability of developing Atrial Fibrillation.

The ECG criteria were measured by blinded independent observers to eliminate bias.

RESULTS:

The pre-operative P Wave duration in V1, was found to be the only significant predictor for post operative Atrial Fibrillation. The greater the P wave duration the greater was the probability of post operative Atrial Fibrillation as seen in the table.

PROBABILITY OF A.F. FOR MALES AND FEMALES BASED ON PRE-OPERATIVE P WAVE DURATION

P Wave Duration (ms)	Males Probability of AF	Females probability of AF
0.04	0.1490	0.0994
0.06	0.2467	0.1711
0.08	0.3799	0.2784
0.10	0.5339	0.4192
0.12	0.6818	0.5744

CONCLUSION

The probability of developing atrial fibrillation after coronary artery bypass grafting can be accurately predicted by using P wave duration. This patient group with P Wave duration greater than 0.08 ms, should be studied further to find best prophylaxis and treatment to reduce morbidity and extended admission after coronary artery bypass grafting.

MYOCARDIAL REVASCULARISATION WITHOUT CARDIO-PULMONARY BYPASS

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Results of an ongoing study 67 patients, undergoing complete myocardial revascularisation without CPB is presented. In the study period , June 15, 1999 to October 31, 1999 a total of 160 patients had primary or redo CABG. CABG without CPB was attempted in 72 patients and completed successfully in 67 patients. Five conversions to conventional CPB were due to hemodynamic instability. Average age was 54.4 years and male predominance was 7:1. 30% patients had Diabetes mellitus, 50 % had HTN and 48% patients were smokers. EF ranged between 30-65 % , 18(28%) had EF below 45 %. Average no of grafts per patients were 3.3 and 77 IMAs were used . 10 patients had Bil IMA and 5 Radial arteries were used. Two had coronary endarterectomies and two had sequential grafts. 90% patients required grafts in the Lt. CX distribution. One patients each had associated carotid endarterectomy and Aorto-Iliac Bypass. Mean ventilation time was 5 hrs. Peri-op ionotropes were used in 3 (4.4 %) patients, no patients required IAB. Average blood loss was 670 ml and 7 (12 %) patients required blood or blood products. Superficial wound infection occurred in 4 (6%) patients, Atrial Fibrillation in 3 (4.4 %) and per-op MI in 1 (1.5 %). There were no deaths.

Conclusion : Complete myocardial revascularisation is achievable in majority of elective patients with low incidence of peri-operative complications, low incidence of blood transfusion.

Durability of Mitral Valve Repair with Home-made Annuloplasty Rings

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Aim: There are many kinds of prosthetic mitral annuloplasty rings. We report results of our home-made annuloplasty rings and identify factors influencing the durability of mitral valve repair.
Method: Between January 1991 and May 1999, 132 patients with mitral insufficiency underwent mitral valve repair with home-made annuloplasty rings. Mitral insufficiency was due to rheumatic diseases in 78 patients, degenerative disease in 44 patients, endocarditis in 6 patients, and congenital heart disease in 4 patients. A total of 85 patients were in functional class III or IV preoperatively. Mid-term follow-up was available in 131 patients from 1 month to 8.1 years(average 2.9 years).
Results: Operative mortality was 0.8%. At 5 years, survival and event-free survival rates were 92% and 82%, and freedom from thromboembolic complications and reoperation were 96% and 92% respectively. 114 patients(97%) were in class I, 3 patients(3%) were in class II. Echocardiography at follow-up showed satisfactory mitral valve function. Durability of repair was adversely affected by younger age, rheumatic heart disease, atrial fibrillation, associated diseases, and functional class.
Conclusions: Mid-term results of home-made annuloplasty rings are comparable to commercial ones. Durability was adversely affected by multiple factors.

MITRAL VALVE REPAIR FOR PURE MITRAL REGURGITATION AND MIXED MITRAL VALVE DISEASE

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- Sharif Medical City Hospital, Lahore, Pakistan.
- Punjab Institute of Cardiology, Lahore, Pakistan.

Aim:

To find out the results of mitral valve repair for pure regurgitation and mixed mitral valve disease.

Method:

60 patients with either pure mitral regurgitation or mixed mitral valve disease underwent repair of their valve. The age range was between 10 and 50 years. All patients had rheumatic involvement of their mitral valve.

Results:

Of the 46 patients being followed up 87.00% are in functional class I or II, 13.0% patients are in functional class III or IV. 54.4% patients have trivial mitral regurgitation on post-operative echocardiogram while 30.4% have moderate regurgitation.

Conclusion:

Mitral valve repair can give good results even in rheumatic group of patients.

LEFT ATRIAL REDUCTION AND PULMONARY VEIN ISOLATION FOR CHRONIC ATRIAL FIBRILLATION IN PATIENTS WITH MITRAL VALVE DISEASE.

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Chronic Atrial Fibrillation (AF) occurs in 50-60% of patients with mitral valve disease, adversely affecting the performance of heart and the importance of restoration of sinus rhythm in these patients is well known. Electrical isolation of pulmonary vein effectively isolates the body of left atrium from possible ectopic foci and is the basis of various surgical procedures for management of atrial fibrillation. The left atrial size is the major differentiating factor between maze amenable and maze refractory atrial fibrillation. Based on these concepts, from May 1998 to June 1999 pulmonary vein isolation and reduction of left atrium was performed in 25 patients along with mitral valve procedure to abolish AF. There were 17 males and 8 females. The age ranged from 14 to 55 years with an average of 46.25 years. Ten of them had redo procedures and 15 had primary procedures. Two had repair of para-valvular leak, 1 had stuck valve, 6 had previous closed mitral valvotomy and 1 had open valvotomy. Technique involves division of superior vena cava and extending the regular left atriotomy incision all around to encircle the pulmonary veins as well as excision of a ring of left atrium and left atrial appendage. This is followed by the mitral valve procedure. The cardio-pulmonary bypass time ranged from 71 to 131 minutes with an average of 96.54 minutes. The aortic cross clamp time ranged from 40 to 94 minutes with average of 62 minutes. Post operatively, 22 patients came off CPB in sinus rhythm and maintained sinus rhythm. In the other three patients the reduction in the size of left atrium was insufficient and one is in flutter and other in AF. One patient died in the hospital and others are followed up regularly. At 6 months follow up (18 patients) all of them are in sinus rhythm and transesophageal echocardiography demonstrated contractility of left atrium in 14 patients. Thus pulmonary vein isolation and LA reduction is very effective in restoring sinus rhythm in patients with mitral valve disease.

CARDIAC SURGERY UNDER NORMOTHERMIC INFLOW OCCLUSION

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Normothermic inflow occlusion implies surgery with occlusion of venous inflow by occluding both superior and inferior vena cavae. Assistance from cardiopulmonary bypass is not needed. Hyperventilation with 100% oxygen, prophylactic sodium bicarbonate and cardiac fibrillation are used.

During the past 1½ years 28 cases of semi lunar valve stenosis (18 of pulmonary valve and 10 of aortic valve stenosis) were dealt with this technique. Mode of presentation was mildly symptomatic to severe congestive heart failure. Diagnosis was established on clinical examination, ECG, X-Ray Chest and Echocardiography. Cardiac cathetrization was used in 6 cases only. The patients were 02 month to 43 years of age at operation.

The patients were subjected to valvotomy under normothermic inflow occlusion avoiding morbidity, mortality and the cost of the cardiopulmonary bypass. The anatomy of the heart and non invasive diagnosis confirmed during the procedure.

There was no mortality directly due to the technique. There was one death in intensive care unit due to severe left ventricular dysfunction. There was no major post-operative complication. Intensive care unit and surgical floor stay was significantly shortened.

Follow up after 6 months revealed all the patients functionally improved (23 in class-I and 5 in class-II).

Post operative echocardiography demonstrated increased ventricular function and valve area while regression in myocardial hypertrophy and gradient across the valve under consideration.

18 YEARS EXPERIENCE WITH REDO MITRAL VALVE SURGERY.

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AIM: Reoperative mitral valve surgery is necessary because of degeneration of valve and progression of disease. We did a retrospective analysis of all the patients who underwent redo mitral valve surgery to study the morbidity and mortality.

METHOD: This study was conducted from Jan. 1981 to March 1999. A total of 244 patients underwent redo mitral valve replacement of which 148 were females and 96 were males.

RESULTS: Progression of native valve pathology was the commonest cause for redo surgery (62.9%) followed by bioprosthetic valve degeneration (25.2%). The mortality was higher for emergency procedures (32.3%) and patients in congestive failure (13.5%). The overall mortality was 6%.

CONCLUSION: This study shows that the morbidity and mortality with redo mitral valve surgery can be reduced with good surgical technique and improved myocardial protection, inspite of later stage at presentation and greater technical difficulty.

REOPERATIVE SURGERY FOR VALVULAR DYSFUNCTION OF THE PHILIPPINE HEART CENTER (PHC) BIOPROSTHESIS

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BACKGROUND: From 1981 to 1985, the Philippine Heart Center (PHC) bioprosthetic mitral valve was implanted into 77 subjects. **METHODS**: Results of mitral valve re-replacements of the PHC valves were evaluated among 62 retrievable charts. **RESULTS**: There were a total of 27 bioprosthetic explantations from 1981 to 1997. The most common presenting symptom leading to PHC valve replacement was easy fatigability (66.7%). Predominant cause of re-replacement was structural deterioration as seen in 20(74.07%) cases. Four(14.8%) patients underwent reoperation for endocarditis and three(11.1%) for paravalvular leakage. Pathologic studies demonstrated that thirteen (48.1%) of these excised bioprosthetic valves had various forms of cuspal tears, microperforations, dehiscence or detachments from the stents.The rest (51.9%) were grossly intact, but revealed microscopic cellular and tissue degenerations. Overall reoperative mortality was 11.1%. Actuarial freedom from bioprosthetic primary valve failure at 8 and 10 years were 68.7% and 51.8%, respectively; while freedom from bioprosthetic valve-related reoperation were 65.4% and 29.3% respectively.
CONCLUSION: Reoperation for PHC bioprosthetic valve failure is a major concern, although our mortality rate for elective cases was low and acceptable. Late primary dysfunction was mostly a result of degenerative processes, especially calcification, and often accompanied by secondary tears.

Surgical treatment of constrictive pericarditis – an analysis of outcome

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Three hundred and sixty five patients of constrictive pericarditis were operated among two cardiac surgical units over a period of ten years. There were 197 males and 168 females. 175 patients were operated by median sternotomy and 190 were operated by anterolateral thoracotomy. Mean follow up was 5 years and 3 months.

- -- had parietal involvement while – had both parietal and visceral involvement. In hospital mortality was 9.6%. Aetiology was worked out on the basis of histopathology and operative findings. It was tuberculous in -- %, and non- tuberculous in --%.
- Low cardiac output accounts for the majority of deaths following pericardiectomy. On statistical analysis independent predictors of poor prognosis include advanced NYHA class(III,IV), severe ascities, peripheral edema, high right ventricular end diastolic pressure, renal dysfunction, bilateral pleural effusion and diuretic use. Differentiation between the diagnosis of constrictive pericarditis and restrictive cardiomyopathy remains a problem.

HOSPITAL PERFORMANCE IN ITS FIRST DECADE, PUNJAB INSTITUTE OF CARDIOLOGY 1989 - 1999.

Yunus A, Khan A H, Akhtar R P, Zaman H, Hameed K, Ahmad M, Khan J S, Cheema M A

Punjab Institute of Cardiology is currently the busiest cardiac surgical center in the country. An over all review of the hospital performance in the department of cardiac surgery in the last ten-year is presented. The total number of cases done over the last decade with a review of disease spectrum and brief results are presented. The number of cases has progressively increased and the variety of surgery has also changed, the results have been improving and are comparable to any of the world center of similar capacity despite socio-economic restraints. The disease distribution and workload is markedly different from the west. Ischaemic disease in the young, rheumatic heart valve disease and adult congenital workload is quite common. With improved facilities this centre will continue to grow in professional services.

HEART TO HEART GROUP
(C.Q.I CIRCLE)

SURRIYA YOUNUS MASIH,(R.N)

Department of Cardiac Surgery,The Aga Khan University Hospital,Karachi. Pakistan.

The initiative taken by the Cardiac Surgical and Nursing staff to minimize the cost of Cardiac Surgery with out compromising the Quality was supported by the group of people associated with Cardiac Surgery.

The Heart to Heart group first made a diagnostic journey then brain storming, made criteria, and collected data of last 10 patients. Then group felt that utilizatioin of medical/surgical and pharmacy items is high and at times it was felt that there was tremendous fluctuation in usage of the above-mention from one case to another. Then group made a mission to reduce cost of medical/surgical and pharmacy supplies in OR and CICU of uncomplicated Coronary Artery by-pass grafting by 25% by the end of March 1999. After 3 months study and research, the group succeeded to reduce the cost by more than 25%

SURRIYA YOUNUS
Cardiac Nurse (R.N)

CAN WE CHANGE TRENDS IN RHEUMATIC HEART DISEASE IN PAKISTAN?

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Aim: To retrospectively evaluate the incidence of Rheumatic Heart Disease in Lahore.

Method: We in N.S.S.S.H Lahore deal with a purely low socioeconomic group of patients.Other Cardiac departments in the city deal with a mixed population.We compared the incidence of Valvular Heart disease in our hospital with another hospital in the city.
Operations for Valvular heart disease comprises 45% of the workload in Nawaz Sharif Social Security Hospital,Lahorewhen compared with in the other hospital.Nearly all the Valvular pathology in N.S.S.S.H is secondary to Rhuematic Heart Disease.

Results: More than 50%of these patients are in the age range 07 - 39yrs undergoing repair or replacements.
This is the result of low socioeconomic conditions in Pakistan.These conditions are also responsible for other diseases like like Tuberculosis.Malaria etc.Is it possible to device a methodology which work in our setup to erradicate or controll Rhumatic Heart Disease in Pakistan.

Conclusion:Rheumatic Heart Disease alone is causing us millions of rupees per yer towards Open and Closed Valvular procedures.

Primary cardiac neoplasms: Surgical treatment and review of results at PIC / Mayo Hospital, Lahore.

Haider Zaman, Abdul Waheed, Ammar Hameed Khan, Jawad Sajid Khan

We review our experience in 56 patients who underwent surgery for primary cardiac tumors at Punjab Institute of Cardiology and Mayo Hospital, Lahore between January 1990 and October1999. Mean Age was 32.8 years. The presenting symptoms included dyspnea, palpitations and syncope. One patient had signs and symptoms of SVC obstruction and one presented with features of constrictive pericarditis. In myxomas the tumor was completely resected with no recurrence in a mean follow up of three and a half years. 80% of the intracavity tumor was resected in one of the three malignant tumors , the others were inoperable. All patients survived operation in myxoma group but one survived in malignant group. Excellent early results were obtained in patients with benign lesions after resection. Effective palliation and local control of disease is possible with extensive resection of malignant primary tumors along with adjuvant therapy to improve prognosis.

MINITRACHEOSTOMY AND THORACIC EPIDURAL ANALGESIA IN PATIENTS REQUIRING OESOPHAGECTOMY BENEFICIAL

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OBJECTIVE : Respiratory complication's following oesophagectomy are a major cause of increase morbidity and mortality along with the prolonged hospital and ITU stay. We reviewed our experience retrospectively over ten years with and without the routine use of epidural analgesia and minitracheostomy in patients undergoing oesophagectomy.

METHOD : Notes of 103 patients who underwent oesophagectomy between 1983-1993 were reviewed retropectively. Routine use of epidural and minitracheostomy was started from 1991 (33 patients / group A) while before 1991 (70 patients / group B) were managed with IV analgesia and chest physio. We analysed the patients' ITU stay, post-operative mortality, morbidity and total hospital stay.

RESULTS : All of the patients in group B required ventilatory support post operatively. Six out of the 70 patients required readmission to the ITU because of chest complications. Only 3 out of 33 patients in group A required ventilatory support in the ITU. In these 3 patients, the epidural analgesia was not effective. Respiratory complications were lower in group A then B (3/33 vs. 16/70). There was no significant difference in mortality (14.7 % in group B vs. 14.4% in group A). The total hospital stay was 11 +/ - 4 days in group A vs. 17 +/- 4 days in group B.

CONCLUSION : Effective elective thoracic epidural analgesia and routine minitracheostomy is beneficial in patients undergoing cardio-oesophagectomy. They do not require ITU or high dependency stay. They have less morbidity with respiratory complications and have early hospital discharge. This in turn is cost effective.

ESOPHAGECTOMY FOR CARCINOMA OF THE ESOPHAGUS AND CARDIA

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AIM: To evaluate the results of different surgical approaches used in the management of the esophageal carcinoma in our unit.
METHOD: Twenty men and 5 women(mean age,49.5 yrs) with carcinoma of esophagus&or cardia that were surgically treated between Sep 97 and Mar 99 . Four approaches were used for resection ;for cervicothoracic tumors laryngophrangoesophagectomy(LPE)(N=7),For middle third McKeown esophagectomy (ME) (N=5),and for lower third and cardia Ivor-Lewis (ILE)(N=5),& Left thoracolaprotomy (LTL) (N=6) . Main outcome that measured, Surgical mortality, morbidity and short-term follow-up of patients
RESULTS: The over all mortality rate was 8%; 4% with the ILE,4% with the LTLapproach.One patient needed reoperation for postoperative hemorrhage , anastomotic leak which managed conservatively observed in 2 patients, pneumonia & ARDS observed in 3 cases,two patients had myocardial infarction,& wound Infection was seen in 2cases. Mean operating time was152.2 mins mean blood loss was 1000 ml,mean stay in ICUwas3.2 days, while mean hospital stay was 8.7 days. Three-month follow-up revealed anastomotic stricture in3 patients, reflux symptoms seen in 3 cases and diarrhea in 4 cases.
Conclusion: Esophageal resection provides the patient with adequate relief of dysphagia & offers the chance of a potential cure in the early stage of the disease

TRANS-THORACIC HELLER'S MYOTOMY FOR ACHALASIA CARDIA- AN EXPERIENCE AT LADY READING HOSPITAL PESHAWAR 1990-95

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The aim of the study is to show the results of trans-thoracic Heller's myotomy without an anti-reflex procedure.

METHOD: Twenty eight patients were operated for achalasia in our department at LRH between May 1990-April 1995.

The age range was from 10 years to 80 years (mean 39.01). Sixteen were male (57.14%) and twelve were female (42.86%).

All had a vertical single myotomy extending 2. Inch above the narrowed segment and 1 cm over the gastro-oesophageal junction, preserving the posterior phreno-oesophageal membrane.

RESULTS: There was no in-patient mortality. One patient has post operative leak from myotomy site which was successfully repaired in a subsequent thoracotomy.
All patients had total relief from dysphagia and none suffered from symptoms of gastro-oesophageal reflux.

CONCLUSION: Hellers myotomy with phreno-oesophageal membrane preservation provides excellent relief of dysphagia without concomitant G.O. reflux.

RETRO-STERNAL COLONIC INTERPOSITIONING FOR BY PASSING OESOPHAGUS- A SAFE OPTION IN SERIOUSLY ILL, DYSPHAGIC PATIENTS (1988-1998)

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AIM: To assess the safety of retrosternal approach for by passing benign, undilatable oesophageal stricture using a pedicled colonic graft.

METHOD: A retrospective study was conducted to analyse the results of this unusual and an infrequent procedure.

Between 1988-98, four patients with age ranging from 4 years -45 years underwent this procedure. One was a female while three patients were males.

All had benign, chronic, undilatable strictures associated with extreme malnutrition and chronic sepsis due to repeated aspiration pneumonitis.

All were considered unsuitable for routine oesophgectomy through a thoracotomy due to extremely high associated anaesthetic risks.

The oesophages was by passed with a pedicled colonic graft after suitable preparation, routing substernally and anastamosing with cervical oesphogaus proximally and stomach distally.

RESULTS: All four patients survived with good symptomatic relief of dysphagia. One patient had an obstruction at the colo-colic anastomosis and had a covering ileostomy which was subsequently closed in two months time.

All patients are now enjoying a normal life following routine follow up visits.

CONCLUSION: This method is asthetically acceptable and results in a good palliation through a least possible operating risk.

SURGICAL TREATMENT OF T-E FISTULA BEFORE WEANING MECHANICAL VENTILATOR-A CASE REPORT

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Aim: Surgical treatment of tracheoesophageal fistula before weaning mechanical ventilator.

Method: The T-E fistulas most result from complication of mechanical ventilation, and most are accompanied with postintubation stenosis. So a conservative approach to manage the complicated fistula was proposed at Massachusetts General Hospital surgical group. But in our institute the first case of aggressive surgical treatment of T-E fistula was encountered while a tracheostomy has been carrying on. During operation, large amount of gastric content appeared in the tracheal lumen, a fistula was identified. For temporally managed the situation, the orotracheal tube was inserted distally to pass by the fistula. Then bronchoscopy was performed, a small tracheoesophageal fistula was identified, and there was no tracheal stenosis. A right side cervical approach was performed to localized the fistula, divided and closed the tracheal defect with 4-0 prolene sutures. The esophageal defect was closed and covered with a strap muscle. The ventilator was weaned and patient was extubated successively one week later. The lung was clear, and nasogastric tube feeding was satisfatory for this patient.

Conclusion: When there is no postintubation tracheal stenosis, aggressive surgical treatment of acquired nonmalignant tracheoesophageal fistula is encouraged.

Day Care Thoracic Surgery

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Conventionally Thoracic Surgery means hospital admission for days and a lot of pain and agony to the patient. We have developed a fast track procedure, whereby certain thoracic surgery patients are admitted for hours rather than days. So far twenty-two procedures have been performed on this principle. Fifteen anterior mediastinotomy for biopsy of either a mass or a lymph node, One cervical sympathectomy through axillary approach for raynaud's disease. One patent ductus occlusion through standard left thoracotomy, and five eloiser's flaps were constructed for Tubercular empyema. Age ranged from 12 yrs to 56yrs. There were 18 males and four females. Three of them were diabetic. Intercostal nerve block and infiltration of surgical incision was carried out with 0.5% Bupivicaine in all cases. One patient was detained for over 24 hrs. Solely for logistic reasons. Antibacterial prophylaxis was achieved by single dose para surgical 1st or 2nd generation cephalosporins. All patients reported back after 10 days. None of them had any wound infection or chest complication.

In conclusion, we are happy with our new protocol and find it safe and effective in a selected group of patients

POSTERS

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Q. Abid, S. Kendall.
Department of Cardio-Thoracic Surgery, South Cleveland Hospital, Marton Road, Middlesborough, ENGLAND TS4 3BW.

CORONARY ANGIOGRAPHY IN TYPE A AORTIC DISSECTION -- A CASE REPORT. VR-10

Q. Abid, D. Price, G. Morrit.
Department of Cardio-Thoracic Surgery, South Cleveland Hospital, Marton Road, Middlesborough, ENGLAND TS4 3BW.

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Solomon Victor, Vijaya M Nayak.
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Division of Cardiovascular Medicine, Philippine Heart Center, Quezon City, Metro Manila, Philippines.

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Najaf S.M., Sami S.A., Khan G.U., Kazmi K, Basir N.
Cardiology Section, Department of Medicine, The Aga Khan University Hospital, Karachi, Pakistan.

LEFT VENTRICULAR DIVERTICULUM, A RARE CONGENITAL HEART DEFECT (CASE REPORT).

Dr. Asjad Khan, Dr. Amir Mansoor, Dr. Abdul Waheed, Prof. J. S. Khan at Mayo Hospital, Lahore.

SURGICAL EXPERIENCE WITH HYDATID CYSTS OF LUNGS. T-1.

Rajbhandar G.L.
Cardio-Thoracic Surgery, Shree Birendra Military Hospital, Kathmandu, Nepal.

FLUROSCOPY AIDED THORACOSCOPIC RESECTION OF PULMONARY NODULE LOCALIZED WITH CONTRAST MEDIA. T-10.

Moon SW, Wang YP, Sim SB, Jin W, Kim YW, Jo DK, Yoon JS, Jo KH, Kwack MS, SW Kim.
Department of Thoracic and Cardiovascular Surgery, Kang Nam St. Mary Hospital, The Catholic University of Korea, Seoul, South Korea.

A PROSPECTIVE RANDOMIZED CONTROLLED TRIAL - EARLY VERSUS CONVENTIONAL TRACHEAL EXTUBATION AFTER CABG.

Sherani, T.M.,-- Yasin, R. -- Niazi, M. -- Sharif, A.
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INTRAAORTIC BALLOON PUMPING CARDIAC SUPPORT TRENDS AND OUTCOME AT ZIAUDDIN HOSPITAL - 1993 TO 1999.

Sherani, T.M.,-- Yasin, R. -- Niazi, M. -- Shah, S.A. -- Vohra, R -- Naheed Arjumand, Sharif Shah.
Department of Cardiac Surgery, Ziauddin Hospital, N. Nazimabad, Karachi.

ANEURYSM OF ASCENDING AORTA WITH AORTIC REGURGITATION ASSOCIATED WITH SPONTANEOUS RUPTURE OF ABDOMINAL AORTA INTO A FALSE SAC. VR-7

Brig. Ashur Khan, Col. Asif Ali Khan, Col.Etezaz Ahmed, Major Sohail Aziz, Dr. Naveed Ahmed, AFIC / NIHD, Rawalpindi.

USE OF THE NATIVE AORTIC VALVE AS THE PULMONARY VALVE IN THE ROSS PROCEDURE. V-2.

Na CY, Lee YT, Oh SS, Kim WH, Lee CH, Kim WS, Park YK, Kim CH.
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SPACE OCCUPYING BENIGN LESIONS IN CHEST IN CHILDREN

Nasir Iqbal, Javaid Sadiq, Mehmood Shaukat, Dr. Ali Khan

HEMANANGIOENDOTHELIOMA, CHEST WALL

Dr. A R Uraizee, Prof. S. Faheem ul Haq
Department of Thoracic Surgery, Jinnah Postgraduate Medical Center, Karachi

TEXT: USE OF INTRAAORTIC BALOON PUMPM IN REPAIR OF LV RUPTURE FOLLOWING MITRAL VALVE REPLACEMENT

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Background : Left Ventricular rupture following mitral valve replacement is a fatal complication. Almost all of these complications are technically avoidable. Once it occurs management is very challenging. Identification and repair of LV tear with a smaller size valve reinsertion is advised. However mortality in these patients remain very high. Afterload reduction with intra aortic balloon pump could be beneficial to reduce tension on suture line and improve coronary circulation.

Method : Between 1994-1999 we have two cases of LV rupture following mitral valve replacement. Both of these were type 1 rupture. One was identified in theatre after coming off bypass while the other was recognised shortly after arrival in the intensive care unit. In both of these patients cardiopulmonary bypass was reinstituted, the valve was removed, tear was identified and repaired. Re-replacement of the valve with a smaller size was performed. Intraaortic balloon pump was inserted transfemorally by open technique in both cases before coming off bypass.

Results : There were no significant bleeding from either of these patients. One was discharged home ten days post operatively. The other patient had a prolong ITU stay with chest infection which lead to multi organ failure and death on eleventh post operative day.

Conclusion : All precaution should be taken to avoid LV rupture during mitral valve replacement. Once occurred an Intra aortic balloon pump will be an ideal adjuvant to LV repair. In our knowledge its utilisation in such situation has not been reported.

TEXT: CORONARY ANGIOGRAPHY IN TYPE A AORTIC DISSECTION-- A CASE REPORT

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Background : Type A Aortic dissection is major cardiac surgical emergency. Delay in surgery in unstable patient may be detrimental, however in stable and chronic type A dissection role of angiography is reported.! Majority of these patients have associated coronary artery disease which is one of the major killer post operatively. Coronary Angiography in these patients will be beneficial to decide about combine coronary artery bypass grafting at the time of repair of Aortic dissection. 66 years old obese hypertensive gentlemen transferred from a district hospital with 24 hour history of lower back and abdominal pain. He was resuscitated from hypovolaemic shock and investigated at district hospital with C-T Scan showing Aortic dissection. He require IV Labetelol with sodium nitroprusside to control his blood pressure. Echocardiogram showed involvement of Ascending Aorta. This gentleman also have history of angina and was awaiting coronary angiography. After long discussion we proceeded with coronary angiography which showed significant triple vessel disease. He underwent interposition Dacron graft with triple vessel coronary artery bypass grafting using femoro-atrial bypass. The myocardium was protected with cold crystelloid cardioplegia with topical cooling. He made an uneventful recovery and was discharged home on day 10 post op.

Conclusion : This case report support the view that in selected patient with type A dissection coronary angiography will be beneficial in planning the operation. This can avoid a peri operative myocardial infarction which is one of the common cause of post op mortality in patients with type A dissection

Sino-Ventricular Dysunion with Muscularised Aortic Sinuses and Leaflets

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The sinoventricular junction exhibits interesting features during evolution . In the cartilaginous fish , such as the shark, bulbar musculature extends onto the truncal sinuses and the truncal leaflets upto the lunules.

In the birds, there is an annular band of musculature at the sinoventricular junction extending into the ventricular third of the aortic leaflets and floor of the aortic sinuses. Thus in phylogeny, there is muscularisation of the truncal / aortic sinuses and leaflets. We present three clinical examples of sinoventricular dysunion, associated with muscularisation of aortic sinuses and leaflets.

Case 1: Male aged 21, developed syncope in August 1988. Heart block was diagnosed and a pacemaker was implanted. Cardiac catheterisation was suggestive of aneurysm of sinus of Valsalva, burrowing into the interventricular septum. At surgery, in October 1988, aortotomy revealed muscular pouches in the root of the aorta in relation to right and left coronary sinuses burrowing into ventricular musculature , below the coronary orifices. The corresponding aortic leaflets were muscularised with only a narrow 2mm wide strip of membranous leaflet along the free edge. The concave aortic surfaces of these leaflets were blending with the muscularised aortic pouches. The non coronary sinus was normal. The trileaflet valve, though abnormal was functionally competent. The free edges of the muscularised left and right coronary leaflets were sutured to the superior rim of the pouches. The ventricular surfaces of the muscularised leaflets formed a neo-outflow for the left ventricle, and also excluded the outpouchings from the aortic lumen. The nearly normal non-coronary leaflet was excised. A Starr Edward valve was inserted. The pacemaker was replaced in April 1998. He remains asymptomatic in September 1999. Echocardiogram revealed minimal paraprosthetic leak in 1996 which has not been progressive.

Case 2: S, male, aged 41, underwent surgery for aortic regurgitation in June 1997. Aortotomy revealed that the right coronary sinus and base of related leaflet were muscularised. It had an ostium surrounded by sclerosed endocardium leading to a 2mm x 2mm muscular cavity. The aortic annulus was tilted. Aortic leaflets were excised and a Starr Edward valve inserted.

Case 3: S, male aged 59, underwent surgery for infective endocarditis and aortic regurgitation in July 1997. The aortic valve appeared tilted and displaced downward into the ventricular cavity. The wall of the right sinus of Valsalva was muscularised, in its caudal half. The leaflets had vegetations. These were excised and replaced by a Starr Edward aortic valve.

These cases demonstrate abnormal muscularisation of the walls of the aortic sinuses and leaflets, possibly due to phylogenitic regression of the genes controlling formation of the sinoventricular junction.

PARTIAL ANOMALOUS PULMONARY VENOUS RETURN WITH INTACT ATRIAL SEPTUM: A CASE REPORT

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Partial anomalous pulmonary venous return (PAPVR) occurs in fewer than 1 % of congenital heart disease. PAPVR of the right lung is usually associated with an atrial septal defect; an intact atrial septum is exceptional. This case report concerns a 28-year-old female with PAPVR with an intact atrial septum. Clinical, diagnostic and pathophysiologic features of the patient are presented. She had clinical features of atrial septal defect and right ventricular hypertrophy. However, no negative contrast effect was demonstrated echocardiographically. Hemodynamic studies revealed PAPVR of the right upper and right lower pulmonary veins to the superior vena cava, with a Qp:Qs of 2.04:1, and an intact atrial septum. Surgical correction was done by atriotomy and the creation of a baffle from the superior vena cava to the left atrium. Although PAPVR constitutes a distinct clinical entity, its clinical diagnosis may be difficult. PAPVR has to be considered in patients with clinical findings of atrial septal defect, but no ASD demonstrated echocardiographically. For diagnosis and precise localization of the lesion, cardiac catheterization has to be done.

C-RING TRICUSPID ANNULOPLASTY AND CHORDAL REPLACEMENT USING EVERTED AUTOGENOUS SAPHENOUS VEIN

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Desire to use autogenous inexpensive material with a vascular endothelial surface led us to use an everted segment of long saphenous vein for C- ring tricuspid annuloplasty in one patient and chordal replacement in another.

C-Ring Tricuspid Annuloplasty

The tricuspid valve essentially consists of straight and curved leaflets. The straight leaflet is related to the interventricular septum is not scalloped. The curved leaflet is subject to systolic deformation by the contractile mural wall of the right ventrical. Hence it is scalloped to adapt itself to this deforming force. The classical anterior leaflet is the dominant scallop of the curved leaflet. On its left, as viewed by the surgeon through the right atrium, there may be one, two or three scallops. Thus the curved leaflet can have upto six scallops. In tricuspid regurgitation the curved segment of the annulus related to the curved leaflet is lengthened. It need to be shortened uniformly without excessive pleating of any scallop.

A segment of long saphenous vein is everted. The middle of this segment is sutured to the middle of the summit of the arch of the curved annulus realted to the curved leaflet. The two ends are anchored to the junction of the curved and septal leaflets on either side ensuring that they sufficiently pull the summit of the curved leaflet toward the septal leaflet. Thus the vein forms two bow strings on either side. The related annulus of the curved leaflet forms the shaft of the bow. The bow strings are sutured to the shafts of the bows. This uniformly shortens the curved segment of the annulus and aids the coaptation of the straight and curved leaflets. There is no fear of the sutures cutting through and forming a bow-string. The autogenous vein with its living endothelial surface provides a free, flexible, non- thrombogenic support for the annulus.

Chordal Replacement: In a male aged 60 ruptured chordae to the posteromedial half of the mural leaflet were substituted using a strip of everted long saphenous vein.

SURGICAL REPAIR OF POST-INFARCTION LEFT VENTRICULAR FREE WALL RUPTURE-FIRST CASE REPORT FROM PAKISTAN

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BACK-GROUND: Left ventricular free wall rupture (LVFWR) is an unpredictable complication of acute myocardial infarction (AMI) with an incidence of 4-6% and accounting for 8-17% mortality after AMI, only second to pump failure. LVFWR may not be suddenly fatal, as anticipated, and upto 40% of deaths occur sub-acutely over a matter of hours, not minutes. If this condition goes untreated, death is almost certain, only 17 survivals reported without surgical repair

OBJECTIVE: First report for surgical repair in LVFWR was by Montegut in 1972. Since then scattered case reports and small series of surgical experiences have appeared in European, American and Japanese literature. At Medline search from 1966, no report from Southeast Asia was found and to our knowledge this is the first case report form Pakistan.

RISK FACTORS AND DIAGNOSIS OF LVFWR: Risk factors for LVFWR include advancing age, female gender, first AMI, no previous angina, no evidence of left ventricular hypertrophy, lack of mural thrombus and presence of transmural infarct. Different morphologic patterns of rupture have been described. The most common site of rupture is the anterior or lateral wall, and a mid ventricular position along the apex to base axis (66%). More than 90% of LVFWR occur within first week. Data on effect of reperfusion therapy over incidence of LVFWR is conflicting. Electromechanical dissociation is neither the only nor the main clinical presentation. Other symptoms occurring hours or days before the final event includes pleuritic chest pain, repetitive emesis, unexplained hypotention, transient bradycardia and persistent or progressive ST -elevation in the absence of reinfarction, pericarditis and ventricular aneurysm formation. On echocardiogram pericardial effusion (PE) with echodense masses over lying the heart, independently of cardiac tamponade is highly suggestive of LVFWR

CASE REPORT: We report a 43 year old man admitted for extensive anterior myocardial infarction of six hours duration. He was immediately started on streptokinase (SK) infusion, which was discontinued ten minutes later for severe allergic skin rash requiring steroids. On second hospital day his echocardiogram showed severe LV systolic dysfunction without any evidence of PE. On fourth hospital day he had pleuritic chest pain, became hypotensive and bradycardiac with global ST-Segment elevation on ECG. Repeat echocardiogram revealed PE with tamponade effect and indistinct LVFWR. He was immediately taken to operating room, IABP inserted, peripheral cannulation established, LVFWR at lateral wall confirmed and successfully repaired with bovine pericardial patch applied with GFR glue and suture reinforcement. The patient made complete recovery subsequent to a complicated postoperative course. He was discharged home on eleventh post-operative day. At four-month follow up, he remained well in NYHA class-II.

CONCLUSION: We conclude that early recognition and urgent appropriate intervention may change the outcome of this devastating mechanical complication. We suspect steroid therapy may have contributed towards LVFWR in our patient.

LEFT VENTRICULAR DIVERTICULUM, A RARE CONGENITAL HEART DEFECT (CASE REPORT) DR. S. M. JAVAID.

DR. ASJAD KHAN, DR. AMIR MANSOOR, DR. ABDUL WAHEED, PROF. J. S. KHAN, MAYO HOSPITAL, LAHORE

Aim: A case report of rare congenital heart defect.

Method: A 3.5 kg infant was referred by paediatric surgery to cardiac surgery unit, Mayo Hospital, Lahore with a pulsating abdominal swelling located in midline, Echo, MRI and angiography confirmed the communication of the swelling to the left ventricle. The child underwent ligation of the diverticulum without cardiopulmonary bypass and had uneventful pot-operative course.

Results: Full recovery.

Conclusion: A rare congenital heart defect, which is easy to cure.

SURGICAL EXPERENCE WITH HYDATID CYSTS OF LUNGS

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During last 5 year(1994 to 1998) of staring Cardio-Thoracic Surgical Unit in Shree Birendra Military Hospital, Kathmandu 10 patients of Hydatid Cysts of lungs were operated.

There were 9 Male and one Female their age range from 20 to 71 years. 6 patient had right sided hydatid Cysts and 4 left sided hydatid Cysts of lungs, 3 patients had associated Liver hydatid Cysts.

All 10 cases had Thoracotomy and Enucleation of Hydatid Cysts from Lungs and 2 patients had Laparatomy for Liver Hydatid Cysts following Albendazole treatment.

All the patients had smooth post operative recovery and there was no recurrence during last 5 years.

All patients had pre and post operative Albendazole treatment.

FLUOROSCOPY AIDED THORACOSCOPIC RESECTION OF PULMONARY NODULE LOCALIZED WITH CONTRAST MEDIA

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Aim The pulmonary nodules have become the major indication of video assisted thoracic surgery (VATS). Recently, several preoperative or intraoperative techniques for identifying small or deeply seated pulmonary nodules have facilitated thoracoscopic resection. We describe the new technique for detecting difficult lesions.

Method Preoperatively, we marked the visceral pleura near the pulmonary nodules with dye, simultaneously injected contrast media (1 water soluble Optiray, 23 barium sulfate, 11 Lipiodol) into or around the nodule under computed tomography (CT) guidance. During VATS, we were easily and accurately able to detect and resect all the nodules localized with contrast media, of which the radio-opacity was visualized on the portable fluoroscopic monitor.

Results Between February 1996 and May 1999, we thoracoscopically resected thirty five nodules in 33 patients (16 were women; age, 53 ± 14 years). The resected nodules were 16 ± 8 mm (range; 4 to 32 mm) in size, and 8.7 ± 8.3 mm (range, 1 to 34 mm) in depth. The pathologic diagnosis of the nodules was benign in twenty two and malignant in twelve (seven primary cancers of lung and six metastatic cancers). There were several minor complications.

Conclusions This new technique can help the surgeons detect and resect the difficult lesions with safety and rapidity by VATS without thoracotomy.

A PROSPECTIVE RANDOMIZED CONTROLLED TRIAL - EARLY VERSUS CONVENTIONAL TRACHEAL EXTUBATION AFTER CABG.

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Aim: We undertook a prospective, randomized, controlled clinical trial to evaluate morbidity outcomes and safety of a modified anaesthetic technique to provide shorter sedation and early extubation (1 - 2 hrs) than those of the conventional anaesthetic protocol used for prolonged sedation and extubation (6 - 10 hrs) in patients after CABG.
Methods: 90 patients undergoing elective CABG were prospectively assigned randomly to either an early extubation group (n = 45 ; 15 uh/kg fentanyl and 2 to 6 mg/kg/hr propofol and isoflurane) or to a conventional extubation group. (n = 60 ; 50 ug/kg/ fentanyl and 0.1 mg/kg midazolam and isoflurane). Cardiac morbidity (postoperative ischaemia, postoperative MI, sympathoadrenal stress response), respiratory morbidity (postoperative apnoea, pulmonary shunting, oxygen consumption, atelectasis, and reintubation), hemodynamic values, vasoacvtive medication requirements, intraoperative awareness, postoperative cognitive function, 30 days mortality, and ICU and hospital lengths of stay were compared between the two groups.
Results: 51 patients in the early group and 58 patients in the later group were extubated within the defined time period. ICU and hospital stay was shorter in the early group. At 48 hrs. There was no significant difference between the two groups myocardial ischeamia. Postextubation apnoea characteristics were similar between the two groups. Intrapulmonary shunting fraction improved significantly in the early group at 3 hrs. after extubation. The incidences and degree of atelectasis did not differ between the two groups.
Conclusion: Early extubation after CABG is safe and does not increase perioperative morbidity. There is an important imtrapulmonary shunt fraction and a reduction in ICU and hospital length of stay.

INTRAAORTIC BALLOON PUMPING FOR CARDIAC SUPPORT TRENDS AND OUTCOME AT ZIAUDDIN HOSPITAL - 1993 TO 1999.

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Objectives: A total of 66 cases of IABP support have been inserted at Ziauddin Hospital since the first insertion in 1993. This report describes the patterns of intraaortic balloon use and associated outcomes.
Methods: A retrospective record review was conducted.
Results: The practice of balloon placement for control of ischaemic (44 cases) has become more frequent, whereas support for hemodynamic decompensation (CCF, Hypotension, cardiogenic shock) has shown a great increase in the past year (22 cases). 84.8% (56 cases) of the total patient population receiving IABP underwent cardiac surgery. Placement preoperatively (8 patients -- 12.1%0 was associated with lower mortality (1 patient - 12.5%) than intraoperatively (49 patients, 4.5%) with mortality of 12 patients (24.5%) or postoperative use (3patients, 4.5%) with mortality of 1 patient. In 6 patients it was used to help our cardiologists with mortality of 3 patients. Independent predictors of death with balloon pump support were insertion in the OR/ICU, transthoracic insertion, age, procedure other than CABG and insertion for cardiogenic shock. Independent predictors of death with intra-operative IABP insertion were age, prolonged CPB, urgent / emergency operation, preoperative renal dysfunction, complex ventricular ectopy, right ventricular failure and emergency reinstitution of CPB.

ANEURYSM OF ASCENDING AORTA WITH AORTIC REGURGITATION ASSOCIATED WITH SPONTANEOUS RUPTURE OF ABDOMINAL AORTA INTO A FALSE SAC.

COL. ASIF ALI KHAN, BRIG ASHUR KHAN, COL ETEZAZ, MAJOR SOHAIL AZIZ, DR. NAVEED, BRIG. SYED AFZAL AHMAD.

A 28 year old female presented with shortness of breath, palpitation and abdominal pain, Clinically she had aortic regurgitation with a systolic trill and ill defined, pulsatile mass in the epigastrium. X-ray chest revealed a dilated ascending aorta. 2/D Echocardiography confirmed an aneurysm of ascending aorta alongwith severe aortic regurgitation. Ultrasonography of the abdomen showed a leaking abdominal aortic aneurysm into a false sac extending below the renal arteries. Aortogram confirmed the above findings.

Bentall procedure and repair of abdominal aorta was done simultaneously. She had a smooth recovery.

A review of the literature is presented.

USE OF THE NATIVE AORTIC VALVE AS THE PULMONARY VALVE IN THE ROSS PROCEDURE

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Aim
Aortic valve replacement in young patients has its problems. Biologic prosthetic valves degenerate and need replacement. Metalic prosthetic valves are more durable, however, anticoagulation which has its inherent problem is inevitable. The use of Ross procedure in young patients is gaining wider acceptance. The need of foreign pulmonary valve in right ventricular outflow tract(RVOT) will require reoperation due to RVOT obstruction, later. To overcome this problem, we reimplanted the native aortic valve in the pulmonary position in 8 patients on utilizing the Ross procedure for aortic insufficiency.

Medhods
The cause of aortic insufficiency was rheumatic in 4 patients, congenital in 4. Patient age ranged from 10 to 33 years(mean 20.6 years). The root replacement technique with coronary artery reimplantation was used. The native aortic valve was implanted into the right ventricular outflow tract.

Results
All patients had marked reduction of left ventricular dilatation and good function of the reimplanted native aortic valve with mean follow up 10.5 months(range 4 - 10months). In the all patient, 6 had absent or trivial, and 2 had mild to moderate, neoaortic valve regurgitation. In the pulmonic position, 4 had absent or trivial, and 4 had mild to moderate, neopulmonary valve regurgitation, and 1 had absent, and 7 had mild to moderate, pulmonary stenosis.

Conclusions
We concluded that use of the native aortic valve with the Ross procedure is the alternative procedure in aortic insufficiency.

SPACE OCCUPYING BENIGN LESIONS IN CHEST IN CHILDREN

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An experience of benign space occupying lesions in chest in children in a developing children's thoracic surgical unit.

The five cases presented in this paper are inflammatory Pseudotumor of the lung, hydatid cyst in the lung , and congenital pulmonary cysts. The average age of the patients was between 4 months to 10 years.

HEMANANGIOENDOTHELIOMA , CHEST WALL

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A 20 year old male patient had a history of trauma to right anterior lower chest wall after which he noticed a swelling at that site,gradually increasing in size.The patient experienced trauma again at the same site after which the pain started.His incisional biopsy was attempted but patient had profuse bleeding so the procedure was abandoned.After complete evaluation and assessment tumor was excised along with resection of the anterior part of eighth rib.On histopathology the tumor turned out to be Epithelioid Hemangioendothelioma. Hemangioendothelioma is a rare tumor and constitute 1% of all vascular tumours.It has got an intermediate behaviour between innocuous hemangioma and highly malignant angiosarcoma. Hemangioendothelioma of chest wall is extremely rare and only one case has been reported in the literature (Yokoi,K;etal 1997) arising from chest wall.

Notes

COMPARITIVE ANALYSIS OF RECOVERY OF CARDIOPULMONARY BYPASS RESIDUAL BLOOD

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Keywords:- Cell saver; hemoconcentrator; Blood loss; Transfusion; Hemodilution.

CELL SAVER V/S HEMO-CONCENTRATOR

For surgical bleeding problem, the cell sever has been used to return shed blood; however; overuse can lead to a deficit in coagulation factors. Its use fullness has gained widespread in many surgical settings.

The hemoconcentrator can aid in raising the hematocrit level while reducing blood utilization where large blood volume or large amounts of irrigation are returned to the perfusion circuit. The hemoconcetrator returns red blood cells without removing coagulation factors, unlike the cell saver.

In order to determine which method of returning residual blood from the cardiopulmonary bypass circuit in more desirable, blood samples were drawn both pre and post transfusion from 15 cell saver patients, and 14 hemoconcetrator patients, twelve hour after blood lose was recorded in 40 patients with each group.

The fibrinogen, platlets count, total protein, albumin and WBC count were similar between the two groups, as was the blood loss. The only significance difference found were the post RBC count, post hemoglobin, all being higher in autotransfusion group.

In conclusion returning blood through the hemoconcentator in the average adult perfusion circuit was not able to significully raise certain coagulation parameters, nor reduce postoperative bleeding.

CARDIAC TUMOURS

Nadeem Ahmed , Prof M.Rehman

A study of 71 patients undergoing surgery for, cardiac masses at NICVD from December 1984 to July, 1996 is presented. There were 21 (30%) male and 50 were female (M/F 1 : 2.4). The age ranged from 15-60 years with a mean age of 38 years. Cardiac Myxoma was present in 67 patients. In 59 patients it was present in left atrium, while right atrial myoma was present in 6 patients and one patients presented with biatrial myxoma. Three patients had hydatid cyst and one patient had rhabdomyosarcoma. Cardiac Myxoma presents clinically with a variety of signs and sym-proms which are neither specific nor sensitive for pre-operative diagnosis. All the patients were preliminary investigated by physical examination , ECG, Chest X-Ray and routine laboratory investigations followed by 2-D Echocardiography. All the Cardiac Tumours were successfully removed by standard open heart procedure. All the cardiac tumours were confirmed by histopathological examination. Myxoma was found to be the commonest tumour. There was no in hospital mortality in case of cardiac myxoma. However, there was one mortality from bleeding who died on the table found to be rhabdomyosarcoma by histopathological examination. So far none of the patient with atrial myxoma came back with recurrence. It is concluded that cardiac myxoma occur not infrequently in Pakistan and pre-operative diagnosis has become feasible with 2-D Echo. It is a curable disease with low morbidity and mortality.

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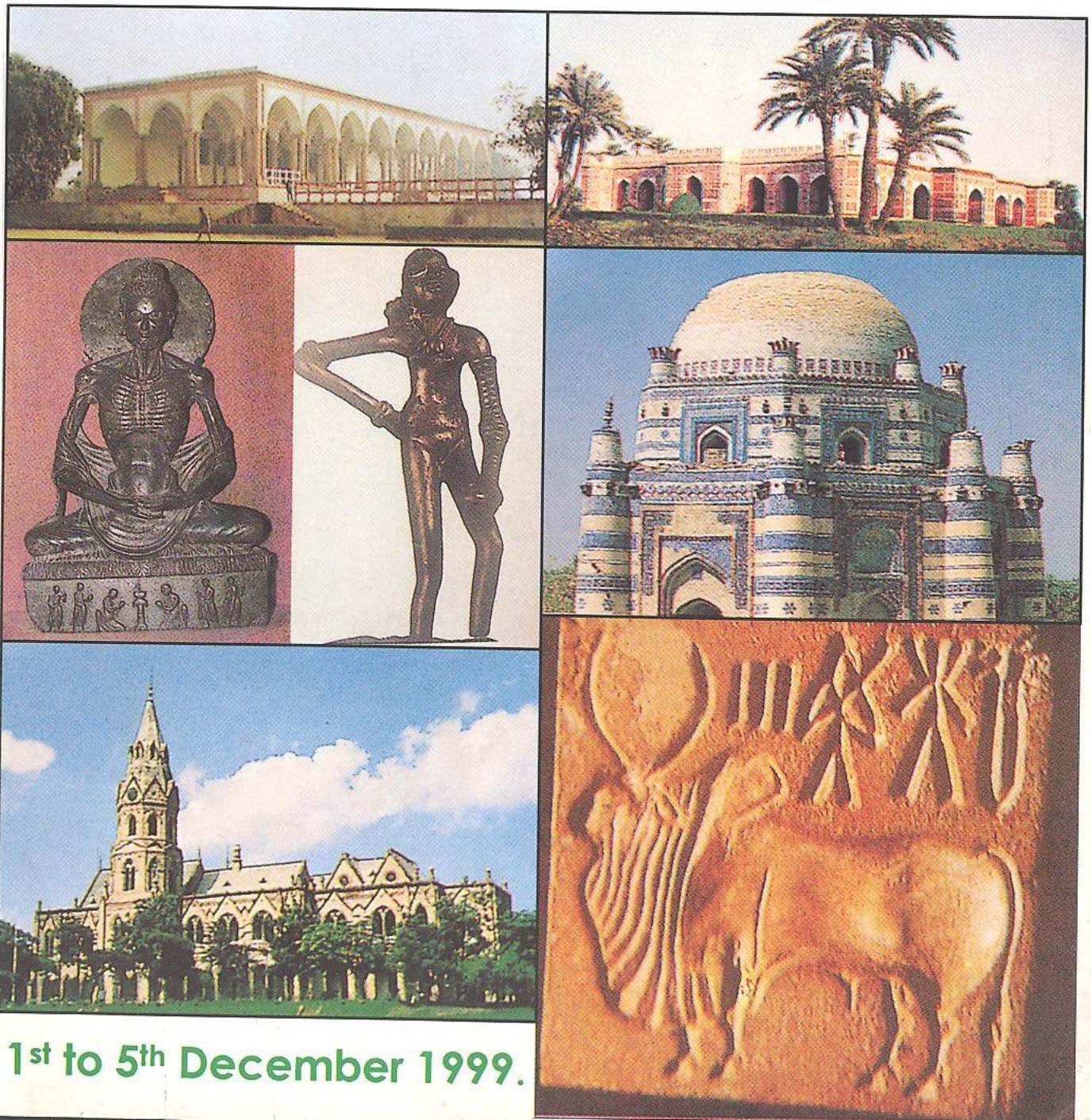

1st to 5th December 1999.