

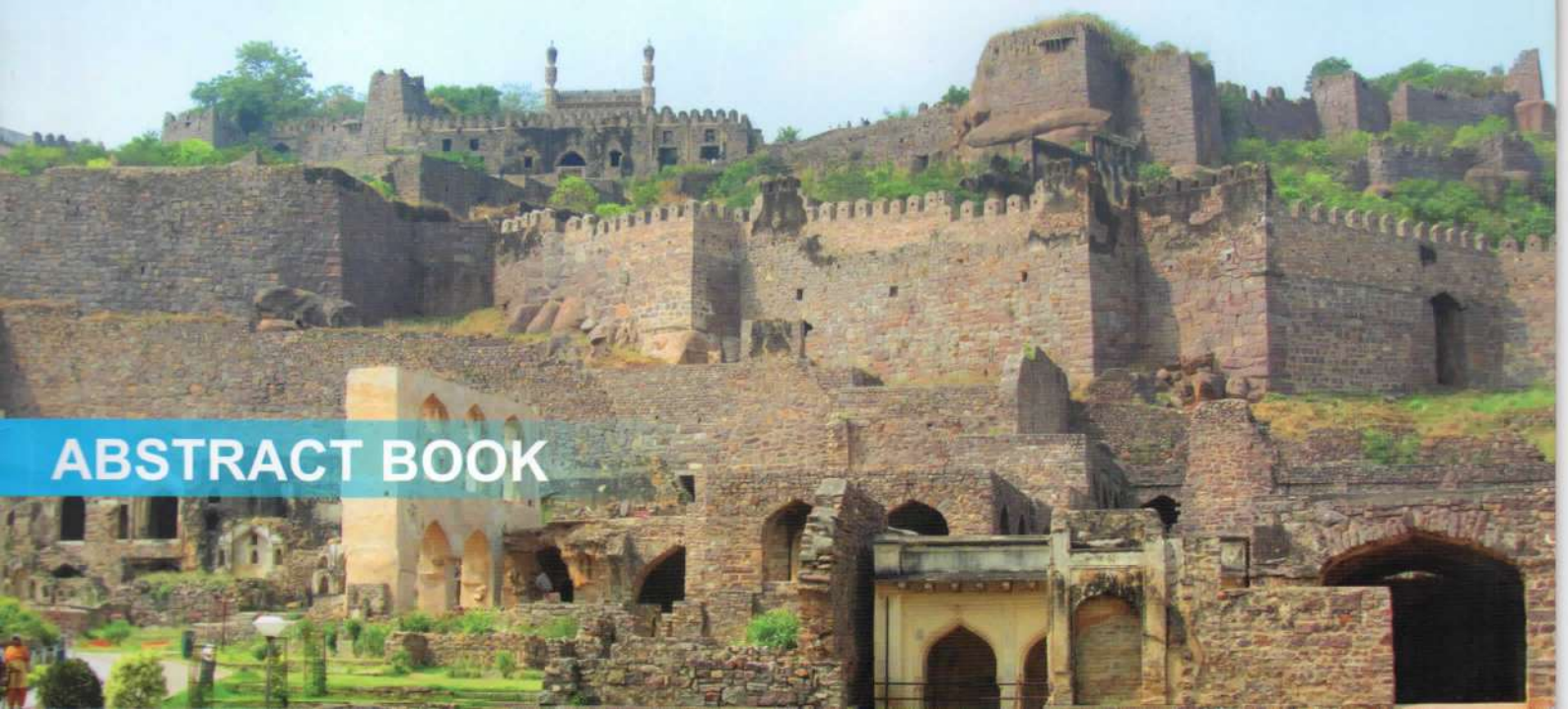


15th Annual Meeting HYDERABAD

20th, 21st, February, 2015
Marriott Hotel & Convention Centre

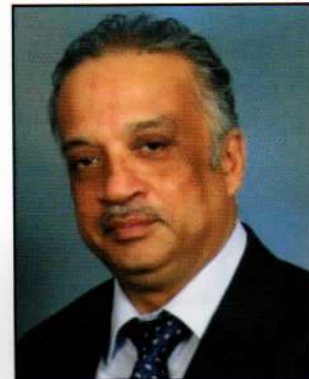


The Indian Society of Extra Corporeal Technology



ABSTRACT BOOK

Message from PRESIDENT of IACTS



Dear Friends,

It's the time to meet again in **15th Annual Conference of Indian Society of Extra Corporeal Technology (ISECTCON 2015)**. It is a great opportunity to renew our fellowship and also update ourselves in scientific and technical innovations.

Given the transition that we have been going through, we should also be utilizing this opportunity to devise future strategy.

Mr G. Satyanarayan and Mr G. Naveen Kumar and their team has put together has academic feast that we will all enjoy. The hard work of his team will ensure success this conference.

God Bless ISCET.

May be continue our journey from strength to strength.

Best Wishes

DR. KUNAL SARKAR
President- IACTS



I am very happy to note that perfusion technologists are holding their independent annual meeting, at Hyderabad, to discuss advances in Perfusion medicine. It has been over 60 years since Heart-Lung machine was introduced in to Cardiac Surgery, which has changed the way open heart surgery is done and opened up possibilities to correct any and every defect of the Heart.

Since then, the role of the perfusion technologist was largely confined to running the pump efficiently and broadly speaking very few new things were added to the speciality, till recently. With the advent of Off-Pump coronary Surgery, the involvement of all you has some what diminished.

However, as the Cardio-vascular technology has opened up possibilities of new ways of performing old operations such as, MICS with vacuum assist, TAVR, TEVAR and Hybrid suites etc. A time has come for the perfusion Technologist to take fresh look at his or her role in the light of emerging trends and carve a new path for themselves as an important team member. Next two decades are very important for all of you to reestablish your new place in the operating room. Hopefully, this meeting will create the necessary foundation for those new thoughts. I wish all of you very best and enjoy your stay in Hyderabad.

Best wishes

DR. GOPI CHAND MANNAM

Organising Secretary

IACTSCON 2015



Dear Colleagues,

Greetings to you all !

On behalf of Organizing Committee of ISECTCON 2015 and Indian Society of Extra Corporeal Technology. It's my great pleasure to welcome you all in HITEC CITY Hyderabad for the 15th Annual National Conference of "Indian Society of Extra Corporeal Technology" on 20th and 21st February, 2015.

This is an excellent opportunity for Perfusionists to share their experience in the presence of a large number of Senior Perfusionists from India and abroad.

My best wishes to Mr Tribhuvan Roy, Mr Madhusudan Rao – Advisors, Mr G Satyanarayana, Mr G Naveen kumar – Organizing Secretary and their Team for the herculean task ahead and publication of Souvenir.

Once again I extend my warm welcome to each and every one of you for your endeavour to make this conference a grand success.

With best wishes

DR KAMLA RANA
PRESIDENT ISECT



Greetings from ISECT!

It gives me great pleasure to welcome each one of the participants of the 15th Annual Conference of the Indian Society of Extra Corporeal Technology which is being held at Hyderabad.

ISECT conferences have now become a part of the international conference calendar and have a good following amongst Perfusionists across the globe. I am sure that this conference will also live up to the high standards that we have set for ourselves. The organizing committee has put in great efforts to make this an innovative, interactive and informative meeting.

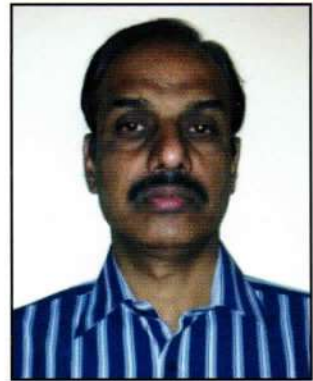
I would also like to take this opportunity to express my gratitude to all our sponsors from the industry. We have grown together from strength to strength and hope that this support and bonding continues in the years to come.

While you enhance your professional expertise, do also enjoy the warm hospitality of the people of the twin states -- Seemandhra and Telengana.

For and on behalf of ISECT,

RAVINATH SWAMI

General Secretary



Dear Friends,

Warm greetings to all Perfusionists & all other professionals.

Indeed its a great pleasure for me to invite all of you & very happy ocasion for me to inform you all as Organising Committee chairman of ISECT CON 2015, the scientific programme of the conference will provide a platform for Perfusionists leading to fruitful exchange of ideas and advancement made in the field.

I request all of you to attend the conference on these two days and also actively participate whole heartedly in all activities of the conference and make it a grad success.

Once again we extend our warm welcome to all of you and also request you to enjoy our hospitality.

Thanking you
Yours Sincerely

KRISHNA REDDY A
Organising Chairman
ISECTCON 2015



On behalf of the Organising committee of 15th Annual conference of Indian society of Extracorporeal Technology, I look forward to receive you all with a warm welcome at Hyderabad.

We are confident of making the conference a successful and memorable one with participation of largest number of delegates from India and abroad.

The scientific committee has taken efforts to make this session interesting and interactive.

Best wishes and warm Regards to one and all.

G. V. N. KAMESHWAR RAO

Organising president
ISECTCON 2015



It is god given opportunity to be associated with all the perfusionist of ISECT. Now it is time for us to set long term vision and goals to keep our ISECT, the best in the world in the coming years I strongly believe that nothing is impossible in the world if we strive hard with patience. I am sure there will be a golden era for ISECT in the years to come.

I congratulate all the ISECT members for their dedicated hardwork to make ISECTCON – 2015 grand success, I wish all the best

MR MADHUSUDAN NAIDU V

Organising President
ISECTCON 2015



Dear Friends,

I am delighted to welcome you all to our Annual Perfusionists meeting at Hyderabad. It is a great honour for us to host this conference, and it is our hope that it will be an interesting and learning experience for all of you.

Much has been achieved, but there is always more that remains to be done and a conference like this, where knowledge and information is shared, is central in the pursuit for a better understanding.

I am very happy to note that every advance in technology is being followed in India. Today our Perfusionists and our Technical expertise is as good as any western counter part.

I am confident that you will enjoy your stay and that the conference will be an informative and enjoyable event.

I wish my warmest greetings to the delegates and my fellow organisers.

G. NAVEEN KUMAR

Organising Secretary

ISECTCON 2015



Dear friends,

It gives me immense joy to welcome all of you to the ISECTCON 2015 at Hyderabad. For the first time we are conducting the conference at Hotel Marriott, an internationally renowned 5-star hotel. The weather is pleasant and cool in Hyderabad in February and ensures a perfect setting for our deliberations.

I am sure you will go back with an unforgettable experience. Looking forward to meet each of you in person,

With warm regards,

G. SATYANARAYANA
Organizing Secretary
ISECTCON 2015



Its is a pleasure and privilege for me to invite all the delegates of ISECTCON 2015 to Hyderabad, a city with distinct culture and history.

In this present times of globalization we should enhance our knowledge and learning experience should be broadened and our career path should be diversified.

We hope ISECTCON 2015 will be a benchmark in scientific sessions and clinical engagement which will pave along way in our extracorporeal journey.

I extend my best wishes to all the delegates and invites.

A NAGARAJU

Treasurer
ISECTCON 2015



It is so delightful for us to receive an opportunity to organize the 15th Annual conference of the Indian association of extra corporeal technology at Marriot Hotel, Hyderabad from the 20-21st february 2015. On behalf of Scientific Committee, we would like to invite you to be involved in and to attend the conference.

We highly appreciate your active participation and look forward to your contributions by submitting your abstracts of oral or poster presentation, as well as presenting your expertise sharing and debating any concerned topics in perfusion technology.

The scientific programme will include sessions of tremendous clinical implications with high academic standards of perfusion for students and practicing perfusionists.

New devices and concept are being introduced daily all around the world forcing us to keep up every minute and adapt our practice accordingly

I once again welcome you all in the "Hitech City of Pearls of India at Hyderabad" in February 2015.

Regards

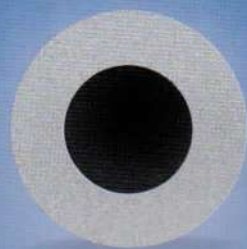
V.SURYA NARAYANA

Scientific Committee

ISECTCON 2015

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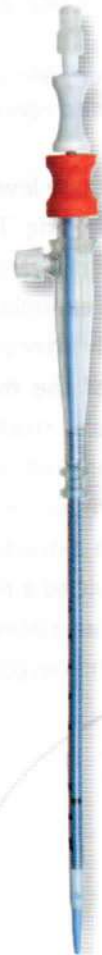
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COMPARING THE LACTATE LEVELS AND OXYGEN DEMAND ON AN ISCHEMIC HEART A RETROSPECTIVE STUDY

Mr. Gideon Bheri, Mr. Oliver G. Bell, Mr. Prathik Machado, Dr. R. Gallo, Dr. Reda H Armed Forces Hospital Southern Region K.S.A

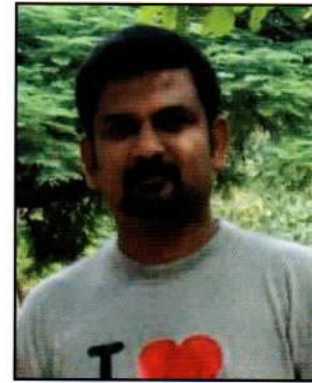
Study of the lactate levels extracted from an ischemic myocardium and the oxygen demand during the aortic cross clamping. The total number of patients considered for the study was fifty. Method Mode of cardioplegia delivery was antegrade using 14fr Cardioplegia cannula and retrograde using a 13fr Coronary sinus cannula. The sample where taken from each of the cannulae to calculate the baseline and respectively after every 30min of administration of Cardioplegia to study the oxygen consumption and demand of the myocardium and increasing lactate levels. The PO₂ of these samples where differentiated and studied. The study considered both using Histidine Tryptophan Ketoglutarate (HTK) solution and conventional potassium rich blood cardioplegia (Plegiosol). Result The result showed even after administration of cardioplegia every 20-30 min there is metabolic activity in the myocardium resulting in the extraction of oxygen from the cardioplegia and rise in the lactate levels. Conclusion Our result provided a new data concerning the oxygen demand in an ischemic myocardium on aortic cross clamp. Thus raising a question whether hypothermic blood cardioplegia satisfies the myocardial preservation and oxygen demand during ischemic time.



APPROACH TO COMPREHENDING THE DYNAMICS OF EXTRACORPOREAL CIRCULATION - WHERE DO WE STAND ?

Suresh Babu Robert, Pradeepkumar Pillai, Yehia Mohamed Karaly, Nayyer Rafiq Siddiqi, Obaid Al Jassim Dubai Health Authority, Dubai Hospital

The practice of Extracorporeal circulation has undergone several refinements over the last six decades. From advances in disposables/equipments used in ECC to innovations in real time monitoring of ECC practiced today, Perfusionists around the world are evolving themselves and their practice to achieve Goal directed perfusion. The presentation highlights certain parameters which are considered as yardsticks for optimal perfusion. It analyses their significance in understanding the dynamics of ECC and attempts to establish a sequential link between the parameters such that intervention / correction of one parameter can positively influence the others. These clinical markers are discussed in detail in the presentation. The presentation concludes highlighting the clinical experience gained through incorporating these parameters by the Perfusion team in Dubai Health Authority, Dubai Hospital, in their journey towards Goal Directed Perfusion.



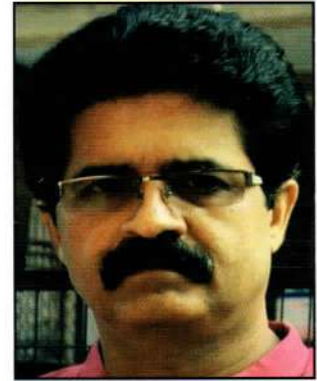
EXPERIENCE WITH THE MINIATURIZED EXTRACORPOREAL CIRCUIT (MECC) FOR MINIMALLY INVASIVE CARDIAC SURGERIES (MICS)

*Senthil kumaran Dhanakotti, Drisya Paul, Deepa V, Dr.Sathyaki.P.Nambala,
Dr.Raghavendra .c, Dr.Dharmesh.R. Agarwal
Apollo Hospitals,Banglore.*

Objectives Experience with the miniaturized extracorporeal circuit (MECC) for minimally invasive cardiac surgeries (MICS) in where we require emergency CPB, electively the MECC system is for MICS valve and high risk MICS CABG cases in our hospital Introduction Experience accumulated for almost 7 decades through a huge number of cardiac procedure performed under extra corporeal circulation(ECC) worldwide has contributed to development of the cardio pulmonary bypass(CPB), In order to reduce the side effects associated with standard conventional extra corporeal circuit(ECC) we used new concept called Miniaturized extracorporeal circulation (MECC) based on the idea of a closed oxygenator system which avoid contact of blood and air, Miniaturized extracorporeal circulation (MECC) for minimally invasive cardiac surgeries (MICS) is better alternative for conventional cardio pulmonary bypass(CPB) regarding perioperative morbidity, use of blood and blood products and completeness revascularization. Materiel and methods Patient underwent minimally invasive cardiac surgery (MICSCABG)with, Miniaturized extracorporeal circuit, MECC is the closed system components include a membrane oxygenator (Quadrox D, Maquet Gemany), a centrifugal pump(Rota flow maquet) preconnected Bioline tubing (Maquet) and arterial and venous cannula, In a retrospective observation study perioperative outcome post operative clinical course of all patients operated with MECC. Conclusion The MECC until now is stabilized concept and become alterative for ECC in emergent MICS CABG and elective MICS valve cases in our hospital, the use of MECC system lead to excellent outcome in emergency, reduce hemolysis, hemodilution, inflammation and myocardial damage. Beating-heart revascularization with electively the MECC system is for high risk MICS CABG cases give us good result. (bhMECC)Further experiments and investigations have to be done to draw definite conclusion

IDEAL M U F CIRCUIT

*Ramesh K K , Shailender Soni , Linu Vishwanath , Dr. KS Iyer
Fortis Escotrs Heart Hospital*



This circuit is used in our institute. By adapting this method we were able to transfer the concentrated blood to patient, leaving "ONLY" crystalloid fluid in the entire CPB circuit. We predominantly use this technique in all types of cases (Neonatal, infant, pediatric and adult). By doing so we achieved the following: High Hb/Hct before decannulation. Balanced Lactate, Potassium, Sodium and creatinine. Less bleeding after CPB. Faster closing and shifting from OT. Lesser blood and blood product requirement.

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MECC FOR MICS CABG A CASE REPORT

*Hari Bramha K**, *Pasam Gopal Naidu***, *Dr.Anand H Subrahmanyam****,
*Dr.Bharat Dubey****, *Dr.Manoj SP****, *Dr.Srinivas Dhulipala*****
 BGS Global Hospital, Bangalore.

Introduction: Miniaturized Extracorporeal Circuit (MECC) is becoming increasingly common in adult cardiac surgical procedures . By reducing tubing length and the number of components in the CPB circuit, the MECC is believed to reduce the systemic inflammatory response, hemodilution and allogeneic blood transfusion. The implications of this would promote a faster patient recovery . Currently MICS CABG on beating heart is becoming popular over conventional CABG. MECC benefits patients who have LVH, severe LV dysfunction, morbidly obese and those who cannot tolerate single lung ventilation

Materials & Methods : MECC Circuit included Medtronic Centrifugal pump, BPX 80 Bio Pump, Flow probe, Maquet adult Oxygenator and 3/8 Arterial and Venous lines. Minimal circuit length was used with conventional prime. Y adaptor kept in arterial and venous lines separately to fill or empty the heart at any given point of time. Percutaneous Rt.femoral arterial (17fr biomedicus) and Rt.femoral venous (24 fr Edwards) cannulation was done after heparinisation. Air tight connections secured in venous line. ACT was maintained at 350-400sec. Extra precautions were taken to reduce the bleeding. Continuous vigilance was observed.

Conclusion : MECC for MICS CABG can be used effectively for performing multi vessel bypass without causing hemodynamic compromise . Moreover MECC is able to reduce the extra corporeal surface area and priming volume leading to reduced inflammatory response, this in turn helps in better outcomes after MICS CABG using this method.

UMBILICAL CORD BLOOD AS PRIME FOR CARDIOPULMONARY BYPASS – CASE REPORT

Raghunath kolla, M. Jyothi, G. Naveen kumar, Dr. Tapan Dash, Dr. B. Anand
Care hospital, Banjarahills,Hyderabad.



One of the applications of Umbilical cord blood (UCB) in cardiac surgery is priming of cardio pulmonary bypass circuit in emergency situations for the patient care.

Diagnosis before the birth of baby revealed the baby requires the correction of TAPVC. So we planned for surgical correction immediate after birth. Since the baby's blood grouping is not done we planned to use the UCB as a prime for the CPB circuit in order to maintain the minimum HTC required, so we collected the UCB and proceeded the CPB to correct the TAPVC.

Details regarding the procedure and all will be discussed in the presentation.

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PRE BYPASS ULTRAFILTRATION

Jisha.K.John, Lavanya Sekhar
Frontier Lifeline, Dr.K.M.Cherian Heart Foundation, Chennai

Blood prime is necessary for paediatric cardiopulmonary bypass to avoid hemodilution. However addition of banked blood to pump prime may elevate prime potassium, glucose, bradykinin, citrate and lactate levels. This may be deleterious especially to the neonates, whose blood volume is often less than the priming volume. However, to normalize the electrolyte balance and also to reduce the inflammatory mediators prebypass ultrafiltrations is used. This technique has proved to reduce all these levels and also eliminates the chances of hypotension which is commonly seen during initiation of cardiopulmonary bypass in pediatrics. It also reduces the incidence of post-operative edema, attenuated cardiac impairment, as it reduces the citrate levels. Use of old banked blood is usually not accepted in pediatrics as the levels of citrate, potassium, lactate and bradykinin is very high. Getting fresh blood always is under limitation. Prebypass ultrafiltration to some extent helps us to overcome this problem. The technique of prebypass ultrafiltration and a brief discussion about its uses will be discussed during the presentation.



USE OF CARDIOPULMONARY BYPASS IN TRACHEAL SURGERY

Sridhar k, Kameshwar Rao GVN, Nagaraju A, Mohan VVK, Arijeeth Saxena, Amaresh Rao M, Mishra RC & Kumar RV
Nizam's Institute of Medical Sciences, Hyderabad, TS

INTRODUCTION: Use of Cardiopulmonary bypass has diversified to non-cardiac surgery as well. Its use is well defined in tracheal surgery. We present a unique case of Tracheal tumor excision using CPB .

CASE REPORT: 38 year old female with symptoms of progressive dyspnea and orthopnoea since six months, on evaluation was found to have tracheal obstruction. CT scan revealed a tumour in trachea just above the carina occluding 95% of the lumen.

PROCEDURE: Patient was initiated on femoro-femoral bypass using local anesthesia in 45° reclining position as she could not be intubated. Following bypass, she was put in supine position and then anesthetized for surgery but not ventilated. Tracheal resection and end to end anastomosis was done after due mobilization. Patient was then ventilated and weaned off femoro-femoral CPB.

DISCUSSION:

1. The use and institution of CPB under local anesthesia,
2. Management of awake patient on CPB
3. The effects of change in posture on venous drainage through femoral access
4. Maintenance of oxygenation at sub-optimal flows without ventilation

CONCLUSION: Use of CPB in tracheal surgery are discussed.



MANAGING OBESE PATIENTS ON CPB - A " LEAN " MODUS OPERANDI

*Suresh Babu Robert, Pradeepkumar Pillai, Yehia Mohamed Karaly,
Nayer Rafiq Siddiqi, Obaid Al Jassim
Dubai Health Authority, Dubai Hospital*

We employ wide range of perfusion protocols from new born to adult.however,is there a specific protocol for obese patients ? These patients are not to be considered as big adult ; rather to be viewed in a diffrent perspective. It is time to redraw the circle, as for as the obese patients are concerned in relationship with conduct of perfusion. The presentation highlights articulation of refinements in current practice of cpb in obese patients,such as calculation of blood flow rates, cardioplegia dosing and other modalities. It concludes with clinical experience of perfusion team in dubai health authority,dubai hospital.

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Cardiopulmonary Products

The advertisement features a vertical banner on the left with the text "Cardiopulmonary Products". The main content area displays five NIPRO medical devices: a Heart-lung Machine, a BRIZIO Membrane Oxygenator, a UNIQUE Cardioplegia System, a VITAL Membrane Oxygenator, and a VACCUM Control Valve. Each device is accompanied by its name and a brief description. The background of the advertisement is a blue-tinted image of a surgical team performing an operation.



EVOLVING A CUSTOMISED INDIGENOUS LOW-COST ECMO " EXPERIENCE WITH 7 CASES"

*LavanyaSekhar, Anto Sahayaraj, Kotturathu Mammen Cherian
Frontier Lifeline, Dr.K.M.Cherian Heart Foundation, Chennai*

ECMO is a life-saving support system which is unfortunately, out of the reach of most of the deserving patients of the developing world. The aim of our study was to optimize the circuit to achieve a reduction in cost and hence, make ECMO affordable to our patients.

Methods & Results: Need for ECMO cost reduction has led us to evolve a cost-effective circuit. A customized ECMO circuit was developed, by assembling the individual components and using conventional centrifugal pump head. The low-cost ECMO circuit was used in 7 patients post-cardiotomy and myocarditis. There were no major adverse events related to the ECMO circuit and we successfully weaned four off them out of which one is yet to get discharged.

Conclusion: While ready-made current ECMO circuits are good, they are prohibitively expensive for the average person in our country, denying them of this treatment modality. Evolving a customized circuit had led to the reduction in the initial cost by almost 70%, making this life-saving affordable to the average patient of the developing world.



**PREVENTION AND MANAGEMENT OF HIGH LACTATE LEVEL DURING PRIMING,
CONDUCT OF BYPASS IN PAEDIATRIC PATIENTS OUR EXPERIENCE.**

*Saravana Perumal.O.M, K.Srijayanthi, S.Kokila, Priyanshupriya, Dr.T.Periyasamy, Dr.Sivamuthukumar, Dr.Ramkumar, Prof.Mahesh Vakkamudi, Prof.Ranjith Karthikeyan.
Sri Ramachandra University, Porur, Chennai.*

Introduction: To evaluate changes in blood lactate levels in priming solutions and its influence in various stages of CPB and its post operative outcomes in pediatric patients

Materials and methods: 25 paediatric patients who undergo repair of congenital heart defects using CPB at Sri Ramachandra Hospital would be under the study. Samples were taken at following stages
1. Before CPB (baseline during priming) 2. After initiation of CPB 3. Aortic cross clamp and cardioplegia administration 4. During rewarming 5. After termination of CPB 6. ICU at 24 hrs and 48 hrs.

Dicussion: In this study, various priming protocols were analyzed to bring down the pre bypass lactate levels, during conduct of bypass ABG samples were taken at regular intervals to maintain the lactate levels The details of CPB conduction, the intra operative findings and its management were analyzed. After termination of CPB, the lactate levels were analyzed in relation to morbidity and mortality.

Conclusion: Increase in lactate occurs during CPB, this may be an early indicator of patient's outcome But increase in lactate can be controlled during priming the circuit Lactate can be used as a marker to access the adequacy of perfusion. Peak lactate level =? (morbidity and mortality rate).



VENOUS RESERVOIR CHANGEOUT DURING EMERGENCY CARDIOPULMONARY BYPASS

*Mr. John Peter Patrick .S Ccp(Ind), , Dr. Kishor Joshi, , Dr. Sameer Goyal,
Gbh American Hospital , Udaipur, Rajasthan*

Cardiopulmonary bypass from its genesis has facilitated greater advances in technical procedures in the field of cardiac surgery. However, it has not come without its own complication risks and previous near misses which have been reported with regard to various technical aspects of the cardiopulmonary bypass(CPB) circuit.

Case Report - A 65 yr old male patient planned to undergo off-pump coronary artery bypass was put on emergency cardiopulmonary bypass(CPB) just after opening the pericardium to prevent death due to exsanguination, following heavy blood loss due to Left Ventricular rupture which was not diagnosed preoperatively. Just after few minutes of initiation of CPB the Hard-Shell Venous Reservoir failed and blood started overflowing from the reservoir which was changed. We present a case of a failed Hard-Shell Venous Reservoir and reservoir changeout during emergency cardiopulmonary bypass and discuss the real-life aspects to managing this complication without added risk to the patient. Result - Successful changeout of Hard-Shell Venous Reservoir during emergency cardiopulmonary bypass .

Conclusion - ALWAYS BE ALERT Key words: Left Ventricular rupture; emergency; cardiopulmonary bypass; change out; Venous Reservoir.



MANAGEMENT OF CPB AND TCA ON A HIT PATIENT UNDERGOING A PULMONARY THROMBO ENDARTERECTOMY SURGERY-A CASE PRESENTATION.

*Ajay K J , PVS Prakash, Sunil J .Mekala J, Alwin Siby, Maria Magdaline, Cousigan, Dr Julius Punnen, Dr Hema Nair
Narayana Healt, Bangalore.*

OBJECTIVE: To report the successful management of CPB and TCA on a case of pulmonary Thrombo endarterectomy patient having heprin induced thrombocytopenia .We report a case of a 50 year old female weighing 64 KG diagnosed to have chronic pulmonary thromboembolism with severe RV dysfunction and severe PAH having HIT Heparin induced thrombocytopenia(HIT) is the development of thrombocytopenia due to the administration of various forms heparin. HIT is predisposed to thrombosis, the abnormal formation of blood clots inside a blood vessel by the formation of abnormal antibodies that activate platelets. Diagnosis of HIT includes blood test,quantitative heparin assay. Pulmonary Thrombo Endartectomy surgery requires DHCA and stoppage of circulation . we used bivalurudin as an anticoagulant but the stagnancy for the blood anywhere in the circuit leads to thrombosis. TCA is very difficult and challenging.

Methods and materials: Routine CPB was established with Bilivaruding as an alternative anticoagulant .Patient was cooled to 18 deg centigrade using full flows and vasodilators. ACT was maintained at appropriate levels. During TCA certain modifications were made in the flows to avoid stagnancy in the circuit. Intermittent short duration TCA was performed to remove the pulmonary clots. Patient was rewarmed and came of CPB uneventfully. MUF was done. Patient had a smooth recovery and was discharged from the hospital on 8th post operative day.

Conclusion:The successful outcome, challenges involved in going on TCA and the techniques of avoiding stagnancy throughout the surgery and the modifications required in delivering Cardioplegia will be discussed in the presentation



VENTRICULAR FIBROMA RARE CASE SCENARIO

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Cardiac fibroma is a rare, Benign tumor that occurs chiefly in children and rarely in adults. Most fibromas occur in the Ventricles and may reach a very large size that complicates surgical removal. Primary Cardiac Tumours are rare entities, occurring with a lifetime incidence of 0.0017% to 0.02%. Out of this in which Benign stakes by 75% in which 50% are Myxomas, 20% are Rhabdomyomas and Fibroma have a very minimal incidence in the remaining 5%. In this case, we successfully operated on a 3 year old child diagnosed of Right Ventricular Fibroma. Case Description: A 3 year old child, presented with complaint of fever, easy fatigability, chest pain since 2 Months. Echo findings showed Large Right Ventricular Myxoma / Rhabdomyoma / Fibroma attached to RV free wall measuring 7 cms, Moderate RVOT, No significant inflow obstruction, Good biventricular function. Lab investigations was done and she had heavy growth of mixed flora in the Urine Culture and Sensitivity test. She was admitted and planned for surgery the next consequent day. Standard central cannulation was done and patient was drifted to 32°C. CPB time was 137 mins with a X-Clamp time of 92 mins. There were no problems during weaning from CPB just that Right Ventricular filling was adequate enough. Patient was hemodynamically stable, extubated in the ITU and shifted towards the consequent day. Post-op Echo findings had no residual tumour, No residual Mass in RV, No RVOT, Good LV and RV function, LVEF: 60%, No pleural / pericardial effusion.

Discussion: This case illustrates the entire excision of the tumour is helpful and should be done if possible. We also need to have a clear and proper interaction with the surgeon during weaning from CPB to know the adequate filling of the Right Ventricle. Studies also show that there is no further growth after the entire excision of the tumour.



DEL NIDO VERSUS ST. THOMAS CARDIOPLEGIA IN ADULT CARDIAC SURGERY REQUIRING LONG ARREST TIME : SAFETY AND OPERATIVE ADVANTAGES

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The del Nido cardioplegia (dNC) was developed for use in the pediatric population to address the inability of immature myocardium to tolerate high levels of intracellular calcium following cardiac surgery. The reported use of del Nido cardioplegia in the adult population is limited. Our aim in this study is to determine if dNC can be used safely in adult patients undergoing cardiac surgery who requires prolonged arrest time, and to compare the safety and operative advantages of it to conventional St. Thomas cardioplegia (STC). Methods Eighty patients who underwent double valve replacement (aortic and mitral) for regurgitant lesions were included in our study with 40 patients in each arm. Patients were divided into two groups based on cardioplegia strategy used: St. Thomas (ST, n= 40) and del Nido cardioplegia (DN, n=40). The results were analysed and the endpoints included cross-clamp time, cardiopulmonary bypass time (CPB), number of defibrillations needed for return of circulation and post-operative events which includes prolonged ventilator requirement (>24 hours), arrhythmias, heart block, acute renal failure, reoperation and death. Results groups were well matched for age, BMI and gender. Significantly fewer doses of cardioplegia were administered per case in dNC cohort and fewer defibrillations after reperfusion were required in the dNC cohort. There was no difference in post-operative events between the groups. There was a decrease in CPB times in the dNC cohort as compared to STC group.

Conclusion: The del Nido cardioplegia appears to be equally as safe as St. Thomas cardioplegia and may confer increased myocardial protection through less need for defibrillation. del Nido cardioplegia requires fewer cardioplegia doses, and thus causing less operative interruption and CPB time.



HTK- CUSTODIAL FOR MYOCARDIAL PROTECTION FOR PATIENTS UNDERGOING ADULT CARDIAC SURGERY : A SINGLRE CENTRE EXPERIENCE

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Introduction : There has been a lot of published literature for Histidine-tryptophan-ketoglutarate (HTK-Custodiol) cardioplegic solution from western countries but not much of literature is available from india regarding the same. At our centre we have been using the custodial cardioplgia for more than 5 years so reviewed our data over last 3 years for the same.

Material and methods: A total of 42 patients were identified. The primary outcome was 30 day mortality along with need for inotropes and post operative low cardiac output syndrome, post-operative arrhythmias, new onset renal and hepatic dysfunction, re-exploration and icu stay and hospital stay.

Results: Ten patients underwent emergency surgery and 32 patients had elective surgery. Mean CPB time was 190 minutes and mean clamp time was 150 minutes. Eleven patients had pre-operative renal dysfunction and 8 patients had moderate and 3 had severe left ventricular dysfunction. Mean pre-operative euroscore was 3.72%. There was one mortality and 4 patients had post operative low cardiac output syndrome. No patient required post-operative IABP support or extended CPB support. There was no new onset renal or hepatic dysfunction or stroke. Four patients had post-operative atrial fibrillation. Mean ICU stay was 101 hrs.

Conclusion: Custodial cardioplegia can be used as a safe myocardial protection strategy in patients undergoing adult cardiac procedures with expected prolonged ischaemia time though longer prospective and randomized controlled trials are needed.



SINGLE DOSE AMINOACID ENRICHED CRYSTALLOID CARDIOPLEGIA-OUR EXPERIENCE OF 100 CASES.

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Aminoacids play a central role as source of acetyl-CoA and their ability to produce non-oxidative ATP production. This ability of aminoacids is now widely appreciated as a cardioprotective substrate in recent formulae of cardioplegia. Custodial[®]-HTK solution which is widely used as single dose cardioplegia contains histidine and tryptophan. However the benefits of other aminoacids cannot be underestimated. These aminoacids not only have the effect of prolonging the cardioplegia duration but also act as metabolic substrates during cardiac ischemia.

Methods: In this study freshly prepared crystalloid cardioplegia with all available aminoacids was used as single dose cardioplegia during 100 open heart surgeries.60 patients underwent CABG(Coronary artery bypass graft),Mitral valve replacement was done in 13 patients, AVR in 4,DVR in 7,ASD in 9,VSD 1 patient.6 patient had surgeries for other lesions of heart.

Results: Aortic cross clamp time was Max.=3hours 20min and Min.=38 min. Troponin T levels were measured on all post-op patients at 0,12 HOURS,24 HOURS OF SURGERY AND PRE-OP Ejection fraction was compared with post-op EF at the time of discharge on first follow-up and 3 months.

CONCLUSION: Single dose aminoacid enriched cardioplegia was found to be a good non-repeatable and an effective metabolic substrate for deriving energy in an ischemic heart.



MODIFIED CARDIOLPEGIC SOLUTION

Saurav Sengupta

Desun Hospital & Heart Institution, Kolkata

During CPB hearts are particularly vulnerable to ischemia-reperfusion injury. In adult cardiac surgery and especially minimally invasive valve surgery require uniformity. Whereas shorter aortic cross-clamp and bypass times increased myocardial protection. Our objective was to determine that our cardioplegia solution (mCP) which has a different chemical composition than traditional cardioplegia (tCP) and requires less frequent dosing with safe and operative advantages included cost effective. Methods: All patients of 2012 - 2014 with a body surface area of $\sim 1.3\text{m}^2$ - 1.5m^2 undergoing first-time, cardiac surgery were randomized to either the tCP or the mCP group. We retrospectively reviewed the patients and all surgeries were performed by the same surgeon. All data included- cross-clamp time, cardiopulmonary bypass time (CPB), number of defibrillations needed for return of circulation, post-surgical hospital length of stay, and post-operative events. Techniques & Composition will be discussed. Result: 176 patients were included in our study with 88 patients in each group. The groups were well matched for age, BSA (1.3m^2 - 1.5m^2) and gender. Patient characteristics and operative parameters were equal for patients in both groups. Patients in the mCP group required significantly lower total volume & Lower Numbers of cardioplegia. Some of significantly fewer defibrillations required in the tCP Group. But there were no differences in cross-clamp time, bypass time, postoperative complication rate, or patient outcomes between groups.

Conclusion: mCP are to be equally as safe as tCP and may confer increased myocardial protection through less need for defibrillation. mCP cardioplegia use in an adult, solution requires lower total and retrograde cardioplegia volumes in order to achieve adequate myocardial protection.



SINGLE DOSE OF DEL NIDO CARDIOPLEGIA STRATEGY IS THE (BEST)“SOLUTION”

*Shishir Turner, Anil Kumar Dharmapuram, Nagarajan Ramadoss,
Nanda Kishore Kumar V, Narsimulu Mantri, IM Rao
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Objective: Del Nido Cardioplegia solutions provides a depolarized hyperkalemic arrest in the addition of lidocaine may limit intracellular calcium influx. Single dose of cardioplegia may offer best myocardial protection over multiple doses of cold blood cardioplegia.

Methods: Total 120 patients receiving Del Nido solutions were included in the study from the period Jan 2014 to May 2014. The Study group was divided into three groups, cross clamp time < 60 min (group I), cross clamp time < 90 min (Group II), and cross clamp time > 90 min (group III). The coronary sinus saturation, lactate were compared between the three groups. Further Ventilation hours, LOS, inotrops score were compared between the del nido group and a retrospective cohort of patients who had received St Thomas solution prior to this study period.

Result: The weight range 2.4 kgs - 30 kgs (mean 7.9 kgs), Age range various from 7 days- 9 yrs. The Lactate and coronary sinus blood saturation values were comparable between both the groups. the lactate level found In group I 2.9 ± 1.3 , in group II 2.4 ± 0.8 , and group III 3.0 ± 1.0 . The ventilation hours, LOS and inotropic score were also comparable between the Del Nido group and St. Thomas solution group.

Conclusion: Del Nido cardioplegia using single dose technique provides good myocardial protection in Congenital Heart Surgery is a viable alternative to multiple doses. And post op recovery found faster comparative to other cardioplegic solutions.



RETROSPECTIVE STUDY OF BLOOD CARDIOPLEGIA VERSUS CUSTODIAL WITH CARDIAC MARKERS

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The aim of the study was to compare the efficacy of Custodial to standard 4:1 blood cardioplegia in adult cardiac cases.

Method: This was a single center retrospective study of a collective data from January 2014 till November 2014. We used comparison between the Custodial HTK solution and the standard Blood Cardioplegia using cardiac markers Troponine I and Creatinine Phosphokinase MB (CPKMB) as the main indicators. The blood sample where collected before the surgery, after Aortic cross clamping and in the Post operative phase and sent to the lab to determine the values.

Result : The total number of cases included in the study was 165 out of which 75 cases used Custodial and 90 cases used Blood cardioplegia. The Patient having mortality are being excluded in this study. The average cardiopulmonary bypass time for custodial and blood cardioplegia where $165 \hat{A}\pm 30$ minutes and $140 \hat{A}\pm 37$ minutes. And Aortic cross clamp time for custodial and blood cardioplegia where $106 \hat{A}\pm 32$ minutes and $98 \hat{A}\pm 39$ minutes. The cardiac markers in case of the Custodial Solution took a longer time to return back to the normal range than in the blood cardioplegia.

Conclusion: Despite results proving Custodial being a better preservative and giving a longer ischemic time there was prolonged increase in the cardiac markers in the post operative phase according to our study.



EFFICACY OF DEL NIDO CARDIOPLEGIA DELIVERY USING AN INDIAN DELIVERY SYSTEM (KOLEA CHAMBER) A PROSPECTIVE ANALYSIS IN NEONATAL AND PEDIATRIC SURGERIES

Ms. Pooja R Shetty, Mr. P V S Prakash, Mr. Sunil Mekala, Ms. .Maria, Mr. Ramakrishna, Dr.Pradeep Kaushik and Dr. Prabhatha Rashmi Narayana Health, Bangalore

Objective: To discuss the efficacy and delivery of DelNido Cardioplegia using an Indian Cardioplegic Delivery System in neonatal and pediatric cardiac surgeries
Introduction : Del-Nido cardioplegia with its longer time of arrest lasting up to 60-70 minutes has become popular in many centers because of its superior myocardial protection. Its reverse ratio of 4 parts of crystalloid and 1 Part of blood and the addition of Lidocaine prevents the intra cellular calcium influx and prevents reperfusion injury. It offers an alternative myocardial protection strategy to multi dose cold blood cardioplegia..

Materials and methods: We retrospectively reviewed 150 neonatal and pediatric congenital cardiac surgeries in which we used Del Nido cardioplegia and delivered it using Kole chamber between September 2014 to December 2014 . This was used exclusively by a single surgeon and the preoperative and postoperative data were reviewed. Only those cases with longer cross clamp time were included in the study. The demographic data, spontaneous rhythm after X clamp release, inotropic requirements, TEE studies, Ventilatory requirements and Post Op ICU stay will be analysed and discussed. The ease of use, cooling of cardioplegic solution and the circuit will also be explained.

Conclusion : Del Nido delivery using an Indian System is cost effective and efficient as the cooling of the cardioplegic solution is much superior and technically simple to use.



MYOCARDIAL PROTECTION IN PATIENTS RECEIVING RETROGRADE WITH ANTEGRADE CARDIOPLEGIA OR ANTEGRADE CARDIOPLEGIA ALONE: A COMPARATIVE STUDY

*Ms. Greeshma George, Ms. B. Bagavathi, Mr. Lakshmi pathi. T, Dr. Sanjay Theodore, Dr. Srinivas. K
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Myocardial ischemia is metabolic phenomenon that occurs in patients undergoing open heart surgeries like Coronary Artery Bypass Grafting and Valvular heart surgeries due to interruption of coronary blood flow during aortic cross clamp and reperfusion after aortic cross clamp release. These effects manifest as hemodynamic instability, arrhythmias, higher doses of inotropes, difficulties in weaning from CPB and chances to use IABP. This study examined the efficacy and safety of Retrograde with Antegrade Cardioplegia comparison with Antegrade approach in valvular surgeries.

Methods: The effects of Retrograde with Antegrade and Antegrade delivery of Cardioplegia were evaluated and compared in 48 patients. The patients were randomly separated into two groups: the Retrograde with Antegrade group (n=24) and the Antegrade group (n=24). Cardiac energy metabolism was monitored by evaluation of coronary sinus lactate levels. Blood samples were taken from Coronary Sinus at predetermined times. Sample 1: Soon after cannulation, before institution of CPB Sample 2: On removal of aortic cross clamp Results: There was an increase of the coronary sinus lactate levels during aortic cross clamp period in both groups. The rise in lactate levels was lower in the Retrograde group than Antegrade group.

Conclusion: Based on this study we conclude that Retrograde delivery of a cardioplegic solution in combination with Antegrade delivery to be an effective and safe technique for myocardial preservation. This technique provides more even cooling of the myocardium, less need for post operative inotropic support.



INITIAL EXPERIENCE WITH EMERGENCY VA-ECMO IN CARADIOGENIC SHOCK

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Extra corporeal membrane oxygenation is a lifesaving procedure used in cardiogenic shock with pulmonary edema patients emergency condition our initial experience. Procedure A total of 9 patients (8 male, 1 female) underwent VA-ECMO support during the first year of the ECLS program at PSCCH. 7 of these patients (aged 41-56, mean 49) were cannulated as an emergency in the cardiac catheterization lab because of profound cardiogenic shock. 6 patients presented with cardiogenic shock due to STEMI and 1 suffered a left main dissection during angiography. 4 patients were cannulated during CPR. All 7 then underwent revascularization (6 by PCI and 1 by CABG). All 7 patients were cannulated percutaneously by seldinger technique via femoral artery and vein and connected to the maquet cardiohelp system. Pump flows of 3.7, 4.8 (mean 4.3 liters/min were achieved [predicted cardiopulmonary bypass flows were 4.3, 5.3 (mean 4.6) liters/min]. The 4 patients who received CPR were cooled to 34 degree centigrade for 24hrs while the others were maintained normothermic. VA-ECMO was maintained for 121 hrs.

Results: All 7 pts were successfully weaned from ECMO [1pt required a second period of VA-ECMO]. All pts survived beyond 30 days and 6 have been discharged. 1 pt sustained neurological damage and died three months later. 2 pts required CRRT but recovered normal renal function. Vascular problems were experienced in 4 pts. 1pt had a DVT and 3 suffered limb ischemia. In 2 cases this was managed by device removal and in the third a distal perfusion catheter was placed. All patients were decannulated surgically with patch closure of the femoral artery. 1 patient required more complex vascular repair.

Conclusion: VA-ECMO is an effective technique which allows complex revascularization and subsequent haemodynamic support in patients with profound cardiogenic shock.



ECMO SUPPORT FOR A NEONATE AFTER TAKEUCHI REPAIR UNABLE TO WEAN OFF AFTER SURGERY A CASE PRESENTATION

*Ms. Malini Nair, Mr. P.V.S Prakash, Mr. Sunil .J. Mekala, Ms. Lavanya, Mr. Nizamuddin, Mr. Kebin Chako, Dr. Chinnaswamy Reddy, Dr Apoorva, Dr. Rajesh Hegde
Narayana Health, Bangalore*

OBJECTIVE: To report a case of ALCAPA repair unable to wean off bypass and needed ECMO support for six days, its management and successful wean off. **INTRODUCTION** ALCAPA (Bland-White Garland syndrome) is one of the rare congenital disease in neonates with a high mortality due to the LV dysfunction occurring because of hypoxic blood supplied to the coronary artery. Even after surgical repair, weaning off bypass becomes a difficult task due to the LV dysfunction We report a case of a 2 month year old female baby weighing 3.6 kg, diagnosed to have ALCAPA, with severe LV dysfunction, moderate to severe mitral regurgitation and ejection fraction of 25% who needed ECMO support after surgical repair.

Materials and methods: CPB conducted using affinity pixie and Neo-B circuit with 8 Fr biomedicus aortic cannulae and two 12 Fr (rt) RMI cannulas for SVC and IVC . Procedure completed and baby rewarmed to 35 deg C. Attempts of weaning off failed. CPB reestablished twice due to high LA pressures and low arterial pressures .so was converted to ECMO. Patient put on veno- arterial ECMO using 902 lilliput oxygenator . ECMO continued for 6 days in ITU. Haemodynamic, electrolyte and blood parameters were monitored and managed continuously. Improvement in ECG with good ejections and pressures were observed on 5th POD. Echocardiography showed improved LV Function. ECMO was sussesfully weaned off on the 6th POD.

Conclusion: ECMO was used as a means of ventricular support during this critical post operative period resulting in a favorable outcome. The reasons for putting the baby on ECMO, its management and successful wean off will be discussed in the presentation



REDO HEART TRANSPLANT FOR SEVERE TRICUSPID REGURGITATION FOLLOWING ORTHOTOPIC HEART TRANSPLANT

Mr Syam Prasad K P, Mr Geo Varghese Peter, Mrs Christina subhashini.

Tricuspid regurgitation is the commonest valve abnormality following orthotopic heart transplant. Although the clinical course of TR is heterogeneous, hemodynamically significant regurgitation generally leads to progressive right-heart dysfunction and symptoms. We describe a patient who developed severe tricuspid regurgitation eight months after successful heart transplant. He had sudden cardiac arrest needing prolonged cardiopulmonary resuscitation and ventilatory and dialysis support thereafter. In view of poor hemodynamic status, he subsequently underwent redo transplantation. After redo transplant, he had a stable postoperative course and now nine months down the course has good biventricular function. This case is unique in that it is the first reported successful redo transplant in the country and one of the few occasions where a redo transplant had to be done for post transplant tricuspid regurgitation.

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ECMO: THE GAME OF COAGULATION AND ANTICOAGULATION

*Ms Ritu Airan, Rajeev Gupta, Alok, Prof.Sandeep Cauhan, Prof.Balram Airan
All India Institute of Medical Sciences, New Delhi*

Case Report: A 2 year old female, weighing 7.7kg underwent surgical procedure for arterial switch operation, but was unable to wean of CPB, was put on veno-arterial ECMO with minimal ventilator support, shifted to ICU. ECMO circuit: component consideration were based on AIIMS protocol.

On Day 1: complication started, Collapse of the bladder and central venous pressure started decreasing from 12-14 mmHg to 7-8mmHg indicating loss of volume.

On Day 2: After the bleeding complication have been addressed, there was again the collapse of the bladder but this time the central venous pressure raised to 20-22mmHg. Patient was taken for surgical re-exploration for the diagnoses of poor venous drainage. It was observed that there was a collection of blood in the chest and small clot formation on the tip of venous cannula, so there was an urgent need for discontinuation of the ECMO temporarily with the return of ventilator support, before reinitiating the ECMO careful monitoring of the clot in the circuit was done. Thoroughly managed all the parameters for coagulation and bleeding. This complication of poor venous drainage was an example of secondary complication due to the bleeding and thrombosis.

Discussion: The most common cause of the inadequate return is hypovolemic, increased intrathoracic pressures. This complication may lead to deleterious complication of air embolism. ECMO activates the coagulation cascade. ECMO remains the game of coagulation and anticoagulation. Goal is to maintain balance, to minimize bleeding and clotting. Only the quantities and ratios of anticoagulants and procoagulants vary in the tug of war between clotting and bleeding. The incidence of bleeding and clotting during the run of ECMO as per ELSO are 20-25% and 15-20% respectively.

Conclusion: Almost all the complications are manageable with the advancement of technology; vigilant monitoring and prompt action can prevent complications and make ECMO run successfully.



ECMO TANSPORT AND SUPPORT FOR ARDS IN H1N1 A CASE PRESENTATION.

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Mekala, Mr.Parthibhan, Mr.Coushigan, Mr.Rwishi, Dr.Jacob Varghese, Dr.Varun Shetty, Dr.Vimal.
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INTRODUCTION: To report a case of retrieval of an ARDS patient found to have H1N1 needing ECMO support and management INTRODUCTION Acute lung injury and Adult respiratory distress syndrome (ARDS) have been the most devastating complications of this pathogen. Influenza A (H1N1) can arise in serious forms within 60 to 80% of cases a fulminant acute respiratory distress syndrome (ARDS) "malignant and fulminant influenza" in subjects without any comorbidity, which makes the gravity and the fear of this influenza. We present a case of a previously healthy 28 year-old man who succumbed to H1N1-associated ARDS. In this focused review, we discuss brief on pathophysiologic peculiarities and management of acute lung injury/ARDS related to H1N1 infection by ECMO. Results will be discussed later.

METHODS AND MATERIALS : ECMO initiated using Maquet PLS Bioline coated circuit, Rota flow with 18 Fr RMI Internal Jugular cannulae and 22 Fr (st) RMI cannulas for Right Femoral Vein. Retrieved from a hospital located 40 kms away from our Institute. In the ICU haemodynamic, electrolyte and blood parameters were monitored and managed continuously. Improvement in lung function on the 20th day in ECMO. Complications of cardiac arrest and reverted ,hemothorax noted. Right Lung is fibrosed. Results will be discussed.

CONCLUSION: ECMO is a usefull and a life saving tool for Lung support for medical management in ARDS patient.



CURRENT PROBLEMS IN EXTRA CORPOREAL MEMBRANE OXYGENATION

Rajesh Yadav, Anju Singh, Gaurav Sharma, Raju jha, Yogesh Solanki, Yogendra, Chauhan, Dr. Sandeep Chauhan Dr. Balram Airan.
All India Institute of Medical Sciences New Delhi

Introduction: The indication for perioperative use of extracorporeal oxygenation (ECMO) in cardiac surgery have been increasing with the advancement in the understanding of pathophysiology of cardiac disease and their treatment & in technology. There are so many things because of them ECMO does not run, for a long time in the ICU. Being a perfusionist ECMO technically should not be fail. Some problems regarding to ECMO in the ICU, We have been faced in our hospital previously.

A common mechanical complication in ECMO include clot / air in circuit, oxygenator failure/ leakage, loss of occlusion, pump or heat exchanger malfunction, tubing / circuit disruption, problems associated with cannula placement and removal. Patients-related medical problems are bleeding, Neurological injury which may include (intracranial Haemorrhage, sinus thrombosis cerebral infraction & seizures), GI haemorrhage, ischemic watershed infarction, Hypoxic-ischemic encephalopathy, Pneumothorax & pulmonary hemorrhagic, decreased platelet count, unexplained coma and Brain death. Fatal sepsis may occur when the large catheters inserted in the neck provide fertile field for infection. Renal complication (Oliguria, capillary leak syndrome, fluid retention) and haemolysis are also common problems.

The most common complication in ECMO is bleeding. This may be due to the Heparin that is given to prevent clotting of the blood. Sometimes this can lead to internal bleeding. The most serious place in which bleeding may occur is in the brain. How much activated clotting time need to maintain during ECMO will be discussed at venue.



EVOLUTION OF THE EXTRACORPOREAL LIFE SUPPORT CIRCUITRY

*Alok Kumar, Byas Kumar, S.C.Yadav, Prof. Sandeep Chauhan, Prof. A. K. Bisoi, Prof. Balram Airan
All India Institute of Medical Sciences, New Delhi*

The indications of peri-operative use of extracorporeal membrane oxygenation (ECMO) in pediatric cardiac surgery have been increasing with the advancements in the understanding of pathophysiology of cardiac diseases and their treatment and in technology. The indications for ECMO support in children with congenital heart disease are well defined and range from use of peri-operative cardiopulmonary support to its use for management of failure to wean from CPB to use after cardiopulmonary resuscitation¹. Modifications of ECMO circuit led to the development of integrated ECMO cardiopulmonary bypass (CPB) circuit (2005) at author's institute. Recently, the outcome was analyzed with reference to the use Integrated ECMO-CPB and time of initiation². The authors reported the significantly improved survival rate with the use of Integrated ECMO-CPB and early time of intervention.

Despite having significantly improved survival rate with the modified Integrated ECMO-CPB circuit, the use of Integrated ECMO-CPB circuit was drastically reduced because of non availability of silicon rubber membrane oxygenator over a period of last two years. Further modification of the circuit was required in the Integrated ECMO-CPB circuit after the development of Polymethylenepentene (PMP) as a better alternative for ECMO for the extracorporeal life support (ECLS).

Evolution of the extracorporeal life support circuitry using a Polymethylenepentene (PMP) oxygenator was a perfect alternative to the earlier silicone rubber membrane which was used for the Integrated ECMO-CPB circuit. This has lead to an increase in the number of patients undergoing cardiac surgery with ECMO support.

We present the modification in the Integrated ECMO-CPB circuit with of Polymethylenepentene (PMP), centrifugal pump & without bladder and present our recent experiences with the new Integrated ECMO-CPB circuit.

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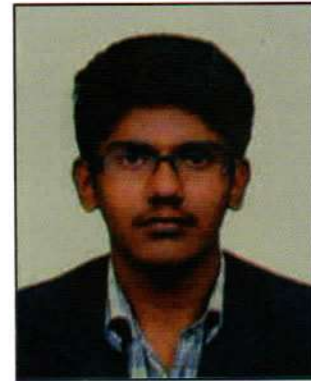
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EXTRA CORPOREAL CIRCULATION (ECC) : ADVANCED USE IN INTRA PERITONEAL MALIGNANCY

***Mukta Tiwari, Satish kumar Choudhary, Jitendra Singh, Dr.Sundeep Jain
Fortis Escorts Hospital, Jaipur***

The role of ECC in providing cardiovascular support has been historically outlined in broad terms, but is continually being redefined as trend in patient care and treatment are updated as in case of CRS with hyperthermic intraperitoneal chemotherapy (HIPEC). Case presentation-. A 69 years old male and 40 years old female were treated with HIPEC at our center for peritoneal metastasis. In both cases, CRS was done. At the end of the procedure, four outflow catheters and the one inflow catheter were placed through the abdominal wall. One temperature probe was inserted into abdominal cavity for temperature monitoring. The abdomen was left open with a plastic sheet sutured to its edges and slit incision was made in the center of the plastic sheet to allow the surgeon to access all intra-abdominal surface and to manually control the fluid distribution. The hyperthermic perfusion with Mitomycin C and Doxorubicin was carried out for ninety minutes using two cardiopulmonary bypass pumps with heating unit (Sarns). Two liters of normal saline containing cytotoxic drugs were heated up to 41. 70 C and infused at 1 l/min into the abdominal cavity. After the hyperthermic perfusion reconstructive procedures were performed. Urine output of more than 400cc/hour was maintained. Both patients were monitored for complications associated with intraperitoneal hyperthermia. Conclusion: CRS with HIPEC is a promising therapeutic option in malignancies that have spread to the peritoneal surfaces requiring specialized surgical and chemotherapy techniques can be treated with acceptable morbidity and mortality.



TIPS TO PREVENT ACCIDENTS ON CPB

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Kovai medical center hospital.*

Introduction:Now a days accidents are during CPB,but it is most likely to occur during emergency setup of CPB. Either the case is elective or emergency those accidents can be prevented by following a protocol for preparation of ECC and counter checking with pre-CPB checklist.

Common accidents and their possible causes.

Keywords:

Stepwise assembling.

Clear idea on each technique you follow

Perform drills for various trouble shooting methods.

Here we would like to include some tips to prevent accidents by organising our self by making protocols. checklist and other preventive measures to be followed during assembling.

Our assembling protocol

Our pre CPB ckecklist protocol

Conclusion: The purpose is to create a new method for evaluating quality care of the perfusionist to patients by preventing most common accidents during CPB procedures.



DOES THE BASE PRIME IN PAEDIATRIC CARDIAC SURGERY AFFECT THE PERFUSION OR THE PERFUSIONIST?

*Rajkamal M, Shukla V, Manohar H, Shankar M, Gnanamuthu Brd.
CMC, Vellore*

INTRODUCTION:One of the challenges in paediatric cardiac perfusion is that the circulating blood volume is low and the hemodilution needs to be precise and balanced. Use of the conventional prime of Ringer's lactate solution often results in a low hemoglobin levels and elevated serum lactate levels. So there is a continued search for a better solution.

AIM OF THE STUDY:To prove the effectiveness of Sterofundin ISO* (Braun medicals private limited, Germany) as an alternative base prime to the commonly used standard Ringer lactate solution along with blood to prime the circuits.

METHODS:Fifty consecutive children of either sex aged between 1 to 7 years undergoing cardiac surgery were considered for the study. Group A consisting of 25 children received Sterofundin* as the base prime along with blood. Group B received lactated Ringer's solution and blood for priming.

The hemoglobin, pao₂, paco₂ and serum lactate levels on pump were measured. Associated morbidity in the immediate post-operative period attributable to the prime was studied and conclusions obtained.

CONCLUSION:There was no mortality or morbidity in either group. However, patients who received Sterofundin* had a higher post-operative hemoglobin and a lower serum lactate levels. We conclude that Sterofundin* may be a safer and better prime when compared to the standard Ringer's lactate solution. However, a larger cohort study will be necessary to draw a definite conclusion.



**TO RAP OR NOT TO RAP ? THAT IS THE QUESTION??.
THE IMPACT OF BLOOD CONSERVATION STRATEGY UPON TRANSFUSION PRACTICE IN CABG
IN A TERTIARY CARE HOSPITAL**

*Dharini.S, Shukla V, Manohar H, Shankar M, Gnanamuthu Brd, Raj S, Ramprassath Ms
CMC, Vellore*

BACKGROUND:With the increased awareness of blood borne infections, lack of donors, increased cost, Jehovah witness patients and allergic reactions, greater efforts are being continuously made to perform open heart procedures without blood transfusions.

But Does the blood conservation strategy (BCS) really prove efficacious in avoiding transfusion? This becomes the ultimate question to the cardio thoracic team.

AIM:To determine the impact blood conservation strategy had in avoiding transfusions in the immediate post-operative period after cardiac surgery.

METHODS: Fifty patients of either sex aged between 40 to 60 years undergoing CABG surgery were considered for the study. They were randomly divided into two groups, group A (n= 25) received Retrograde autologous priming (RAP) as a BCS, while the other group B (n=25) did not have RAP.

The postoperative hemoglobin, and requirement of transfusion in the first 24 hours were compared and conclusions obtained

RESULT: In patients whom RAP was done, there was lesser transfusion requirement on pump and but post-operative transfusion requirement was higher than in patients whom RAP was not done.

CONCLUSION: Based on the results of the study we devised a Blood conservation strategy protocol, which is strictly adhered to in our institution, after THIS EVERYTHING IS FANTASTIC..... the details of which will be presented along with the paper.



PERFUSION ACCIDENTS AND DISASTERS

*Lavanya Sekhar, Kotturathu Mammen Cherian
Frontier Lifeline, Dr.K.M.Cherian Heart Foundation, Chennai*

A Through knowledge of perfusion accidents may help us not only to anticipate but also reduce the risk of these accidents and help us in quick identification and to minimize the response time towards these accident. A poster with 136 perfusion accidents may help us to recall and revise the perfusion disasters.

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MODIFIED BLOOD SALVAGE TECHNIQUE FOR OFF PUMP AORTIC ANEURYSM SURGERIES

*Sreehari, P V S. Prakash, Sunil J Mekala, Ramakrishna, Rakesh and Parthiban
Narayana Health Bangalore*

OBJECTIVE: To design circuit which can be used to salvage the shed blood in off pump aortic aneurysms surgeries where there is an expected amount of blood loss. **INTRODUCTION** During aortic aneurysms surgeries there will be a large amount of blood loss. Usage of cell saver is not affordable for all hospitals. To overcome this situation we have developed a new circuit which is more effective and affordable.

MATERIALS AND METHODS: We have developed a new circuit which can be used as an alternative to cell saver. This can be assembled and can be primed easily. This circuit consists of PVC tubing, polycarbonate connectors, reservoir, hemofilter, blood bag, and BT set. The circuit design and priming techniques will be presented in the poster.

CONCLUSION: A simple cost effective and easy to prime circuit designed by our perfusion team. It is use full in small centers where there is no cell saver will be presented and discussed.



MACHINE PERFUSION IN ORGAN PROCUREMENT FOR TRANSPLANTATION-USING OXYGENATOR AND PUMP

*Ms.Saranya raj R.S / Mr.Mathavan.P /Ms.Annie Esther / Dr. Saichandran B.VJawaharlal
Institute Of Postgraduate Medical Education And Research (JIPMER)*

Objective: One of the major breakthroughs was the development of organ preservation methods. It is well known that better preservation can be accomplished by replicating the natural environment of an organ. Cold flush preservation has become the standard means of organ preservation due to its simplicity and cost effectiveness. The limitations of preserving organs by cold storage include the limited time for which it can be stored and the lack of a method for assessing whether the organ will function properly after transplantation. Therefore, the potential for cold storage may be approaching its limit, and we need to consider continuous machine perfusion using oxygenator as a possible means to expand the horizons of organ preservation in the future. Continuous perfusion provides a supply of metabolic substrates and removes byproducts, thereby mimicking the normal circulation. Continuous machine perfusion also offers the attractive feature of providing a means to assess organ viability before transplantation; this can be done by studying the perfusion characteristics (hemodynamics) of the organ and by analyzing the perfusate. The process of continuous machine perfusion using oxygenator and simplification of this process, has been detailed in the poster presentation.



**FROM PUMP TECHNICIANS TO QUALIFIED PERFUSIONISTS TO ECMO MANAGERS!
WHAT TAKES YOU THERE????**

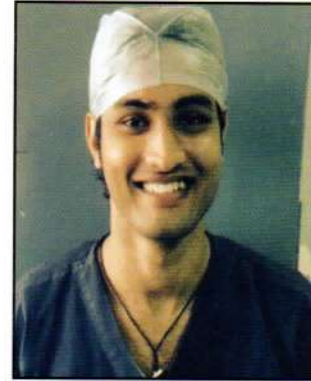
*Dharini.S, Shukla V, Manohar H, Shankar M,
Department Of CTVS, CMC & Hospital, Vellore, Tamilnadu*

Introduction: There are many challenges of perfusion in India such as 1. the cost and availability of hardware is an important issue and 2. there is a limited availability of modern monitoring facilities.3. The controls on the decision-making on the conduct of bypass .4.Changing clinical demands. 5.The Diversification of perfusion related works.6. Moreover undue stress and overwork.

To fix this kind of an issue we need perfusion training and perfusionist education which Must become dynamic, Must become a continuous interaction between technology and physiology ,Must become more scientifically oriented Must. Include new promising therapies and should Aim to ensure a high professional level for all perfusionists.

How To Fix :This is possible by Qualified perfusion courses , Interactive in house programs , and practical skill with wet labs. The perfusion association plays an important role and serves as an asset in bringing up talents to reach high places.

Conclusion:Thus perfusion science is a multi-disciplinary task which is to be handled properly and efficiently to reach high grades.



MULTIPURPOSE CIRCUIT DESIGN FOR ECMO, CONVERSION TO ROUTINE CPB AND MINIMALLY INVASIVE SURGERIES

Sree Hari, P.V.S.Prakash, Sunil M J, Ramakrishna, Parthiban, Rakesh, Treesy Raju, Josna Narayana Health, Bangalore

OBJECTIVE: To design a circuit which can be primed quickly for Emergency ECMO and can be of multipurpose one to use in minimally invasive bypass surgeries and can be converted to routine cardio pulmonary bypass. **INTRODUCTION** Cardiac OTs and Intensive care units presents with sudden cardiac arrests and emergencies requiring ECMOs at very short notices. It is a challenge for perfusionist to assemble and prime the circuit quickly. With importance given to reduction in priming volume and reduction in exposure of blood to foreign surface Miniaturized Extracorporeal Circuits (MECC) has gained popularity. Commercially available circuits are expensive.

MATERIALS AND METHODS: At our institution we have designed a simple circuit which can be used for ECMOs and miniaturized extracorporeal circuit . The same circuit can be converted into routine cardio pulmonary bypass circuit. It can be assembled and primed rapidly. PVC tubings and polycarbonate connectors are used. The circuit design and priming techniques will be presented in the poster.

CONCLUSION : A simple cost effective multipurpose circuit designed by our perfusion team will be presented and discussed.



HEART AND LUNG TRANSPLANT AND RETRIEVAL - THE ROLE OF PERFUSIONIST AND PROTOCOLS OF OUR INSTITUTE

Alwin Siby , P.V.S.Prakash, Sunil. J, Mekala, Nizamudhin, Ajay , Lavanya, Cousigan Dr.Julius PunnenNarayana Health Bangalore

Objective : To present our institute protocols, equipments and check list for harvesting the Heart and Lungs and transporting it safely to the OT. **Introduction :** Perfusionist plays an important role in safely retrieving the heart and lungs after harvesting the organs from the donor and preserving it. The preparation starts much earlier. Ensuring the availability of necessary drugs, procuring ice cubes for packing the organs, taking custodial solutions and necessary cardioplegic cannulas and safely transporting the harvested organs to the OT requires protocols and check lists to ensure uneventfull retrievals.

Materials and Methods : Ice Making machine, Polythene covers, Large Thermostatic Basket, Pressure Bags, Cardioplegic Cannulas, HTK solutions. The perfusionist who is on call for organ retrieval carries a check list for all the required items . The systems followed in our Institue from the time of receiving the call for organ retrieval to safely transporting the Heart in the packed ice slush basket to the OT will be discussed.

Conclusion : With proper planning and protocols the Heart harvesting can be done smoothly and safely. The poster will depict the equipment checklist, mechanism of delivery of cardioplegia in the donor heart, packing the heart in ice slush and transportation.



A NOVEL CPB TECHNIQUE IN A 3 MONTH OLD INFANT WHO DEVELOPED PSEUDOANEURYSM FOLLOWING TRUNCUS ARTERIOSUS REPAIR.

K.Srijayanthi S, Kokila, Priyanshupriya, Saravana Perumal.O.M, Dr.T.Periyasamy, Dr.V.Rajesh, Dr.Sivamuthukumar, Prof.Mahesh, Dr.Ranjith Karthikeyan.. Sri Ramachandra University, Porur, Chennai

Introduction: Ascending aortic aneurysm is rare in infants with very few cases reported in literature, Once ascending aortic pseudoaneurysm is diagnosed, the procedure should be done as early as possible because there is a risk of rupture, We describe successful repair using an alternative cannulation technique.

Case Report: We describe a 2.8 Kg infant that developed mycotic pseudoaneurysm of the ascending aorta following repair of type 2 truncus arteriosus.

Discussion: Neck vessels are commonly used for peripheral cannulation in infants. Since pseudoaneurysm is in close proximity to innominate artery, we decided against dissecting this vessel for cannulation. Common carotid artery was another option, But we felt it too small to allow adequate sized cannula for this infant. Hence we directly cannulated the Inferior vena cava and Descending aorta retroperitoneally with good venous drainage and flow.

Conclusion: The importance of peripheral cannulation and institution of CPB prior to Redo sternotomy and also the precautionary measures to be taken, possible complications that could be encountered will be presented.



THE RESURGENCE OF HEART TRANSPLANT IN INDIA

Renjith CR, DR Rajesh M Ramankutty
Caritas Hospital, Kottayam, Kerala

RESURGENCE OF HEART TRANSPLANT IN INDIA, P K sen performed the first heart transplant in India in February 1968, months after the first attempt of heart transplant in the world made by Christian Bernard in Dec 1967. The organ transplant bill was passed in Indian parliament in May 1994 which cleared the way for organ harvest from brain dead patients. Successively Dr Venugopal and his team performed the first successful heart transplant on August 3, 1994. After an initial flurry of activity, enthusiasam waned. A second wave in mid 2000s led to a resurgence in heart transplant in India. Heart failure is a major health concern worldwide. India witnesses 2 million new cases every year with at least third of them requiring advanced therapy to survive. The reasons that can be attributed to the recent resurgence in heart transplant are the following. Patients requiring heart transplant is increasing day by day. Awareness of organ donation is improving in the society. We have the facilities, trained specialists and infrastructure to go the distance. Better immune suppression therapies giving good outcomes after transplant. The role of government agencies in coordinating organ donation, like KNOS in Kerala and TNOS Tamilnadu. Increasing miniaturisation of mechanical devices and stem cell therapy are potential therapies that hold promise for future. They will have to show equivalence in achieving similar outcomes to heart transplant. Until that happens heart transplant will remain an important mode of treatment for patients with end stage heart failure.



New development in ECMO practice in Arterial switch operation at AIIMS

*Mr. Suresh Chand Yadav , Raju Jha ,Sandeep Chauhan, A.K. Bisoi, Balram Airan
All India institute of Medical Sciences, New Delhi*

Background- Till the late 1990's in India it looked very difficult to perform arterial switch operation in the children having d-TGA with intact inter ventricular septum.

Introduction- Even with early diagnosis of d-TGA there are still a subset of children with d-TGA who are detected late and present for arterial switch operation with borderline left ventricular function. Such cases are a challenge for the cardiac team. In past we have devised a modified ECMO circuit for such cases which can be used intra operatively as cardiopulmonary bypass .Recent advancement in the practice had been changed to centrifugal pump and newer oxygenator which are assembled in a very short time in ICU.

Conclusion- In past the practice of ECMO was not simple ,technically it took long time to establish the support for the patient which increase the morbidity rather the newer technique decreases the time for installation of circuit and reduce the critical period and lead the patient towards the life.

EFFECT OF MODIFIED ULTRAFILTRATION IN HIGH RISK PATIENTS UNDERGOING CARDIOPULMONARY BYPASS IN NEONANTS AND PAEDITRICS.

*Arun kumar, Rajesh Yadav, Anju Solanki, Y.S. Chauhan, Lokendra Kumar, Dr. Balram Airan.
Department of CTVS, All India Institute of Medical Science, New Delhi, India.*

ExtraCorporeal Circulation leads to a patient's blood haemodilution, anticoagulation, non pulsatile blood flow and exposure of blood components to synthetic surface under non physiologic conditions Cardiopulmonary Bypass (CPB) triggers a systemic inflammatory response syndrome (SIRS). Which results in pulmonary dysfunction, tissue edema and low cardiac output which leads to increase in morbidity and mortality as associated with CPB in Neonates and Pediatrics.

The Modified Ultrafiltration (MUF) set up could increase the complexity of the CPB circuit and increase the risk of cavitation, air embolism, persistent systemic hypotension, sometime decrease in temperature, arrhythmia and prolong stay in operating room.

MUF performed after completion of Cardiopulmonary Bypass which removes or minimize the harmful effect of CPB, low molecular weight Inflammatory mediators and achieves ideal hematocrit enhancing oxygen delivery to tissue.

The MUF technique allows filtration between the patient and the remaining content of the CPB circuit including venous reservoir. An ultrafiltration is mediated in the CPB circuit between the aortic arterial line and the venous cannula which is placed in right atrium. After weaned off CPB, the blood removed from patient via aortic arterial line and fed into right atrium of the patient through ultrafilter. Blood flows through ultrafilter approximately around 150-250 ml/min. A constant right and left arterial pressure is maintained achieving continuous haemodynamic stability in the patient. Ultrafiltration is carried out with the end point being either 10-30 mins or achieve ideal haematocrit value approximately 35-40 or filtrate amount upto 300-800 ml.

MUF offers few major advantages to minimize or even to remove the fluid overload, tissue injury, inflammatory mediators. It reduces the postoperative blood loss, less blood transfusion, faster recovery in systolic blood pressure, decrease in time of extubation, short ICU stay, possible to remove inflammatory mediators. This leads to improvement in pulmonary, cardiac and cerebral function.

MUF reduces significant amount of cytokines which are associated with capillary leak syndrome and some deleterious vasoactive substances. It is observed that filtrate contains myocardial depressant factor, tumor necrosis factor, low molecular weight inflammatory mediators and various other cytokines and interleukins.

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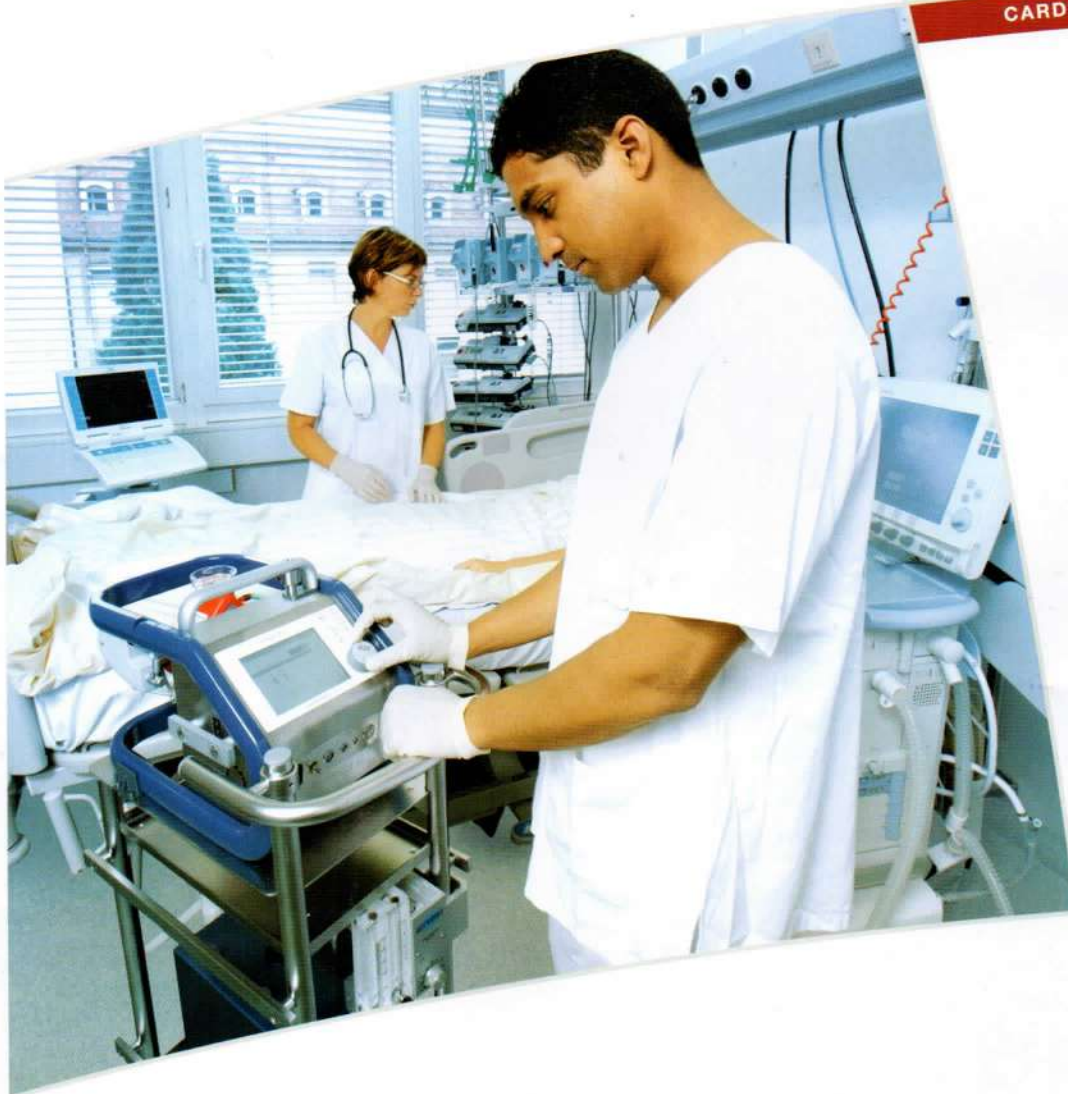
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