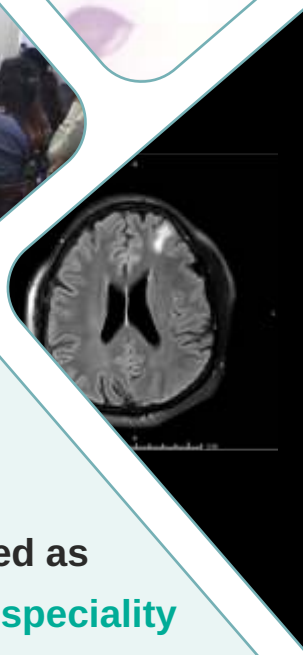
LILAVATI HOSPITAL MEDICAL TIMES



Recognised as
Best Multispeciality Hospital – Critical Care of the Year 2019
by Prime Time
7th Global Healthcare Excellence Awards & Summit 2019

Lilavati Hospital and Research Centre

More than Healthcare, Human Care

NABH Accredited Healthcare Provider

Contents

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From COO's Desk

We are pleased to share yet another informative edition of our quarterly magazine - Lilavati Hospital Medical Times (LHMT). We are thankful to the readers for their overwhelming response and appreciation for our earlier editions. In this edition also; we are publishing interesting case reports and studies from the therapeutic & diagnostic side of the hospital.

Lilavati Hospital and Research Centre believes in & follows the motto "More than Healthcare, Human Care". This is a patient and doctors friendly hospital and is unique in having a large panel of highly competent and qualified consultants who are renowned in their fields of speciality as patients are referred not only from within the country but also abroad. Many of our renowned consultants are with us since the inception of our hospital. Consultants, nurses and other care givers go beyond their call of duty to make a significant difference in the patients' lives.

In keeping with the trends of expansion in Healthcare Industry, Lilavati is expanding, acquiring latest equipment and technology which is the best in the world. We have 3 Tesla MRI, 256 Slice CT Scan, PET CT Scan, Gamma Camera, the latest Philips Azurion Cathlab, Digital Mammography,3D Laproscopic & Neuro Operating microscope etc. The Pathology department is fully automated so is the Radiology department with Radiology & Lab information systems. A Pneumatic tube system has been established connecting all wards & departments for sending blood samples, medicines, documents etc.

We run a very vibrant teaching programme and have post graduate curriculum of 9 basic specialities and super specialization in 06 specialities with highly competent teachers. In 2017; Hospital was conferred with "Centre for Excellence" in teaching for DNB Programme by Association of National Board Accredited Institutions (ANBAI) .At any time we have about 100 post graduate students in the hospital including fellowship courses under MUHS, Nashik. Recently 3 of our consultants have been honoured by ANBAI as 'The Distinguished NBE Teachers' in recognition for ongoing commitment and dedicated teaching.

In order to ensure that the entire system is process driven and we follow international standards; we have been pursuing various Accreditations. Hospital is NABH Accredited since 2011. Further; recently NABH has also accredited our Blood Bank and Institutional Ethics Committee.

The hospital has steadily grown over a period of time to be rated amongst the Top 10 in this country and remain in the top 3 in this city & state. The most recent one is top rankings in the prestigious All India Critical Care Hospital Ranking Survey 2019 – No. 1 in Mumbai & Western Region and amongst Top 10 hospitals nationally in various specialities. Also received the "Best Multispeciality Hospital – Critical Care of the Year 2019' by Prime Time 7th Global Healthcare Excellence Awards & Summit 2019.

While we are proud of the various accolades which we have achieved as an institution, we are also proud of the numerous responsibilities which we have shouldered towards the less privileged section of the society over a period of time. We continue to serve the economically weaker section of the society by earmarking 20% of our beds for them. Treatment to them includes high end surgeries like coronary bypass surgeries, congenital heart surgeries, joint replacement, spine and neurosurgeries. In the recent past three successful Liver Transplants were carried out and we have now received sanction for Heart Transplant. Our Home Sample collection service is also functioning well.

On behalf of the entire team; I once again thank you for your interest in LHMT and for taking the time to learn about us. My best wishes to all of you.

Lt. Gen. (Dr.) V. Ravishankar, VSM
Chief Operating Officer
Consultant – CVTS
MS (General Surgery), DNB (General Surgery), MCh.(Cardiothoracic Surgery)

Editorial

It is indeed a pleasure to write my first editorial for the Lilavati Hospital Medical Times (LHMT) and I am thankful to Lt. Gen. Dr. Ravishankar - Chief Operating Officer, for this opportunity knowing fully well that I have the able editorial team working seamlessly with me to make this Magazine an academic delight.

We have constituted a magnificent editorial team across the specialties to ensure adequate representation of the various fields to highlight the fabulous work done in our hospital. The enthusiasm was palpable in the conference room with many ideas discussed and accepted. In our very first meeting we made several changes & recommendations and shall implement them all in a staggered manner. I promise you a new improved journal from our next foray in the last quarter of this year.

We realized that as one of the leading tertiary hospital in the community we will want to navigate our way towards converting this magazine into an accredited Journal of Lilavati Hospital and Research Centre (JOL for short) ! We have made several amendments in existing contents of LHMT and decided to reach out to many more organizations not only in the country but outside as well to highlight the great work done by our consultants in the hospital.

Case reports are our star and have the features to bring out excellent medical/surgical work in our hospital besides our special spot the diagnosis as well as the review article on Role of Surgery in Borderline Resectable Pancreatic Cancer.

We also realized that we at the editorial board are voracious readers and hence we have created a site called guidelines speak that will give links to excellent data for different specialties for a quick reference on a myriad of topics.

Please read this magazine cover to cover to maximally utilize the academic feast within it and enjoy this publication. However, do give us a feedback with criticism and/ or suggestions to make us better- after all we are here to empower you with more knowledge, the more we share the more we learn!

Here's wishing you happy fruitful reading and knowledge assimilation

Dr. Abhay A. Bhave
Chief Editor, Consultant - Hematology (MD, FRCPA)

Overview: Lilavati Hospital & Research Centre

Late Shri Kirtilal Mehta

Late Smt. Lilavati K. Mehta

Lilavati Kirtilal Mehta Medical Trust

Lilavati Hospital and Research Centre is run and managed by Public Charitable Trust - Lilavati Kirtilal Mehta Medical Trust which was formed in 1978. The Trust was started by late Shri Kirtilal Manilal Mehta. The Trust has engaged in innumerable charitable endeavors across India.

The Lilavati Kirtilal Mehta Medical Trust is being managed and administered by Board of Trustees:

Shri Prabodh K. Mehta	Shri Nanik Rupani
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Principal Advisor to the Board of Trustees and
Lilavati Hospital & Research Centre
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Lilavati Hospital And Research Centre

Late Shri Vijay Mehta wished to fulfill his parents desire to build a world-class hospital where everyone in need for relief from disease and suffering come in with a certainty to receive the best possible medical care. His passion, attention to details and perseverance resulted in iconic healthcare landmark called **Lilavati Hospital**.

Lilavati Hospital & Research Centre is a premier multispecialty tertiary care hospital located in the heart of Mumbai, close to the domestic and the international airport. It encompasses modern healthcare facilities and state of art technology dedicatedly supported by committed staff.

Lilavati Hospital has focused its operation on providing quality care with a human touch; which truly reflects the essence of its motto, “More than Healthcare, Human Care”. Being a centre of medical excellence where technology meets international norms and standard, the hospital has got what it takes to be a pioneering quality healthcare institute that is also one of the most sought after and patient friendly hospital.

Mission: *To provide affordable healthcare of international standard with human care*
Motto: *More than Healthcare, Human Care*

Highlights

- 323 bedded hospital including 77 intensive care beds
- 12 state-of-the-art well equipped operation theatres
- Full-fledged Dental & Dermo cosmetology clinic
- State of art PET – SPECT CT department
- Lilavati Hospital is recently equipped with Coronary GRAFT Patency Flowmeter which is first of its kind in India. This imaging system is used in Cardiac surgery to assess GRAFT flow / perfusion in coronary bypass surgery.
- The hospital has added Intraoperative Nerve Monitoring system which enables surgeons to identify, confirm and monitor motor nerve function of the patients which helps to reduce the risk of nerve damage during various operative surgeries.
- The hospital has upgraded its ENT department by adding a top-of-the line surgical operating microscope to carry out various microsurgeries under high magnification. The microscope electronics allows the surgeon to electronically control object focusing, magnification,illumination, surgical recording, etc.
- All days round the clock OPD Pathology and Radiology investigations without any Emergency charges.
- ICU Emergency charges after 8pm are kept at par with the day time and additional charges are withdrawn.
- More than 300 consultants and manpower of nearly 1,800.
- Hospital attends to around 400 In-patients and Out-patients daily.
- Modern Cathlabs having specialized SICU & ICCU with highly trained cardiac care medical staff
- Lilavati Kirtilal Mehta Medical trust is an approved research organization by Ministry of Science & Technology having all modern facilities necessary for conducting research

Lilavati Kirtilal Mehta Medical Trust Research Centre

The Lilavati Kirtilal Mehta Medical Trust Research Centre is a Scientific and Industrial Research Organization approved by Ministry of Science and Technology (Govt. of India). The Research Centre under guidelines of Dept. of Science & Technology works in close collaboration in evaluating and developing technologies for better healthcare to the sick people. The research centre has undertaken multidisciplinary researches in the fields of Cardiology, Radiology, Cerebrovascular Diseases (Stroke), Ophthalmology, Chest Medicine, Nuclear Medicine, Pathology, Oncology, Orthopedics etc., to cite a few. One of the important aim of the research centre is to establish community based epidemiological researches in cerebrovascular disease in stroke. As a policy, Drug and Device Trials are not undertaken at the Research Centre.

Review Article

Role Of Surgery In Borderline Resectable Pancreatic Cancer

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Historically, PDAC used to present in an advanced stage and less than 20% patients could undergo surgical treatment. This was also a time with paucity of advanced imaging techniques and newer chemotherapeutic agents, lack of evidence on outcomes of vascular involvement and surgeon inexperience in centers apart from a select few across the world.

Over the last 3 decades with advent of CT, MRI and EUS & their ability to give better vascular anatomy, better local staging of PDAC is possible. PET-CT and staging laparoscopy have proved to have a good accuracy for distant spread and are invaluable for reducing the number of patients undergoing non-therapeutic laparotomies. Due to early diagnosis made possible by CT/MRI, wider availability and application of chemotherapy and radiation therapy and increasingly aggressive surgical management including vascular resections survival rates have significantly improved. What was once a death sentence is now increasingly seen as a treatable disease and the nihilism surrounding PDAC is turning into an optimistic outlook. Despite these advances the rate of curative radical surgery has not increased beyond 35-40% over the last 10 years even at high-volume centers.

Treatment of PDAC is largely dictated by NCCN guidelines. To summarize these guidelines the whole decision regarding surgery rests on the involvement of vessels in the vicinity of pancreas, viz. SMV/PV, SMA, common hepatic artery and the celiac axis, depending upon the location of the tumor. Tumors without any vascular involvement or distant metastasis undergo radical surgery. Those with distant metastasis irrespective of the local disease status are not candidates for any radical surgery and are offered palliative treatment options including chemotherapy, pain management, biliary stenting, etc. If the metastatic disease is found after laparotomy for radical surgery these patients may be offered a palliative surgical bypass procedure. This leaves a large proportion of patients of PDAC having local vascular involvement of various degrees. Involvement of SMA is not considered as an upfront "resectable" disease and these patients are generally referred for chemotherapy. If after chemotherapy the vascular involvement is resolved, these patients can undergo radical surgery but the percentage of such patients is not high. Involvement of SMV with or without Portal vein (PV) is not a contraindication for surgery as long as venous involvement is reconstructible and the 1st jejunal vein is not involved. SMV/PV involvement $<180^{o}$ without wall irregularity is classified as "resectable" disease and these patients undergo upfront radical surgery in the form of pancreaticoduodenectomy or distal pancreatectomy.

If SMV/PV involvement is $\geq 180^{o}$ or there is irregularity of the venous wall these tumors are called "Borderline Resectable". The treatment for borderline resectable tumors arising from the head of pancreas is pancreaticoduodenectomy with resection and reconstruction of the involved venous segment. In selected patients neoadjuvant chemotherapy is administered followed by radical surgery in those who respond to chemotherapy. The evidence is divided between these two approaches with most studies showing <50% patients responding to neoadjuvant chemotherapy and undergoing surgery. In addition the survival rates of those who undergo surgery after chemotherapy and those who undergo upfront surgery are not significantly different. Hence, most centers take patients with borderline resectable disease with SMV/PV involvement for direct surgery as per the availability of expertise. Neoadjuvant chemotherapy based protocols are still part of clinical trials, and have not gained widespread acceptance.

Prior to beginning the resection an artery-first approach is recommended to rule out involvement of SMA which would either make it an unresectable disease or would give better results with neoadjuvant therapy. Once SMA involvement is ruled out, the extent of SMV/PV involvement is assessed. The involved segment is to be resected only after adequate proximal and distal control over PV and the jejunal/ileal branches. There are various methods of reconstruction of resected segments of SMV or PV.

Lateral resections require either primary closure or a patch closure. Up to 4cm length of resected segment can be primarily reconstructed with adequate mobilization. If resection of this length doesn't leave a distal reconstructible SMV then the jejunal tributary can be safely ligated provided the diameter of the ileal vein is ≥1.5 times the diameter of SMA. Beyond 4cm use of an interposition graft is recommended. Grafts most commonly used include great saphenous vein (GSV), iliac vein, internal jugular vein and Polytetrafluoroethylene (PTFE). Splenic vein and/or Inferior mesenteric vein may require reimplantation into SMV/PV.

These complex surgical resections and reconstructions are best performed by vascular surgeons or hepatopancreatobiliary surgeons with considerable experience in vascular reconstruction after a multi-modality discussion accurate assessment of the vascular involvement and careful planning on a high resolution thin slice CT with multiplanar reconstruction. At our centre from 2014-2018, 413 cases of pancreatic head or periampullary malignancies have been diagnosed. Out of these 126 patients have undergone Whipple's pancreaticoduodenectomy which is 30.5% of the total diagnosed cases. Rest of the cases were either metastatic at the time of presentation did not respond to neoadjuvant chemotherapy or were found to be inoperable at the time of exploration. 13 cases out of 126 underwent vascular resection and reconstruction most commonly SMV. There has been no early mortality reported related to the vascular resection and survival rates have been comparable to those cases which did not require vascular resection and reconstruction.

CONCLUSION

Treatment of PDAC has evolved with time, and radical surgery offers the only real chance of a cure. Early diagnosis and accurate staging have pushed the boundaries of surgery, and more and more aggressive surgeries are being performed for PDAC. Vascular involvement should not be viewed as the end of the road as a large proportion of these patients are still candidates for radical surgery with vascular resection and reconstruction, albeit after careful planning and availability of surgical expertise.

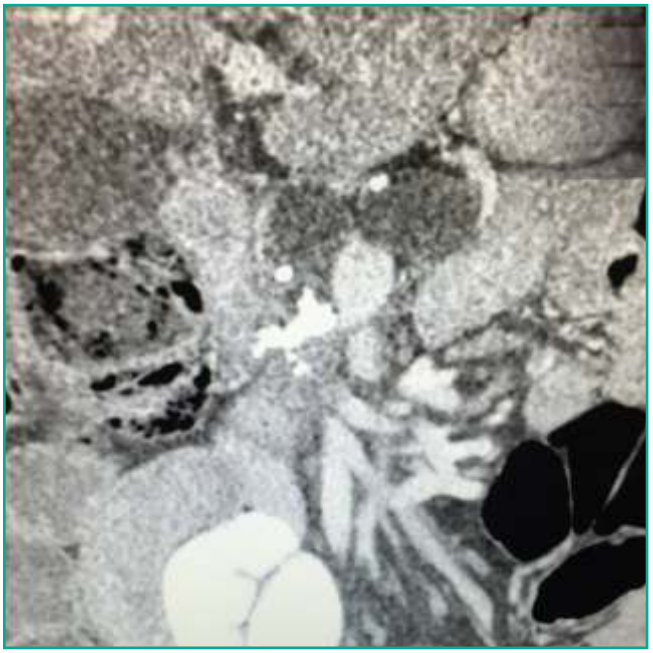

Fig. 1 - SMV narrowed by the tumour head of pancreas

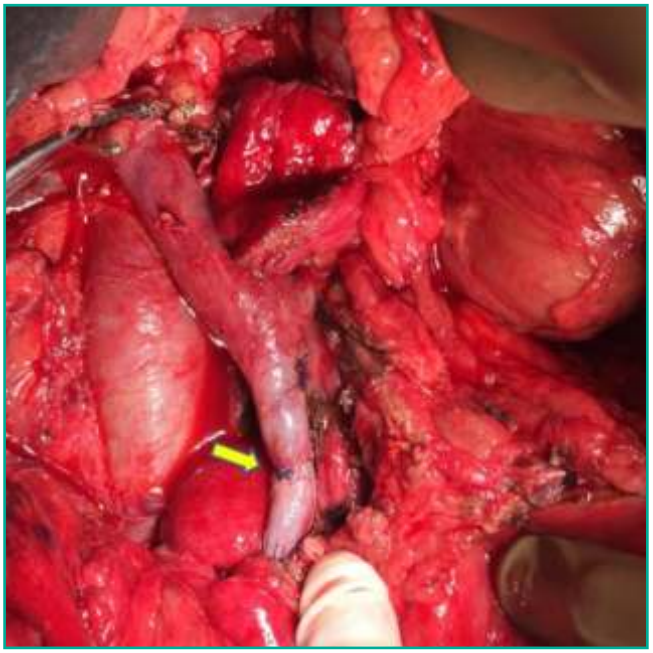

Fig. 2 - Completed reconstruction of the SMV (yellow arrow)

Case Report: Cardiovascular and Thoracic Surgery

A Rare Case Of Successful Surgical Repair Of Isolated Anomalous Drainage Of Inferior Vena Cava Into Left Atrium

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ABSTRACT

Drainage of inferior vena cava to left atrium is rare cardiac anomaly. It has been reported in isolation or in association with other cardiac defects. We report a case of successful surgical repair using pericardial patch and rerouting inferior vena cava to right atrium.

Key words: Inferior vena cava, left atrium, right atrium, Eustachian valve, atrial septal defect.

INTRODUCTION

Drainage of the inferior vena cava to the left atrium is a rare congenital cardiac anomaly that leads to a right-to-left shunt without any other cardiovascular abnormalities. Only a few patients have been reported in the literature [1,2,3,4], but only three cases having been reported of isolated inferior vena cava to left atrium are successfully corrected[5,6,7]. We report a case of 15 yrs old boy with inferior vena cava draining anomalously into left atrium documented with pre-operative transthoracic echocardiography, cardiac catheterization and CT. Surgically successful diversion of inferior vena cava into RA done by creating baffle of pericardial patch.

CASE REPORT

A 15 yrs old boy showed significant dyspnoea on exertion and cyanosis since age of 8yrs. Clubbing of fingers and toes were also seen. Echocardiography showed anomalous IVC draining into left atrium. Patient was advised surgery and referred to tertiary care centre.

Due to unavailability of funds he approached the hospital for operative intervention at the age of 15 yrs. On physical examination showed height of 140 cms and weight of 45 Kg.

Peripheral pulse in both upper & lower limbs were symmetrical and of normal volume. Oxygen saturation recorded was 80% at rest and fell 70-76% during exercising and increased to 90% with oxygen. ABG (room air) showed PO2-50 mm of Hg, saturation 83% and no acidosis, Hb of 19 mg/dl and Hct of 63%. Cardiovascular system examination showed normal heart sounds and no murmur. Respiratory system examination showed bilaterally equal air entry without added sounds. Abdominal examination showed no hepatosplenomegaly. Chest X-Ray and 12-lead ECG were normal, Echocardiography showed connection of the inferior vena cava to the left atrium with bubble passing directly through preserved Eustachian valve into the left atrium, no atrial septal defect, dilated IVC, no RWMA, EF-60%.

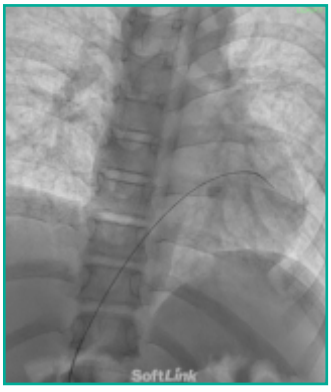
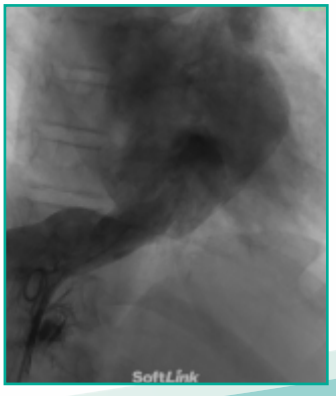


Figure 1- Angiography - Femoral vein cannulised guide wire passed through inferior vena cava goes to left atrium

Figure 2 Angiography - Injection of contrast medium from the inferior vena cava showed only the left heart chambers and aorta whereas the right ventricular or pulmonary artery were not represented. It confirms inferior vena cava draining into left atrium.



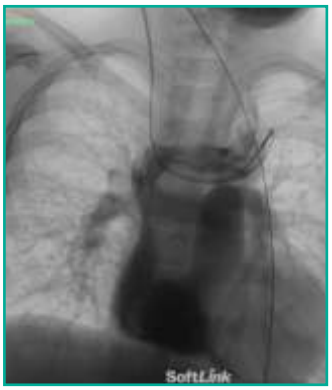


Figure 3. Angiography - Injection of contrast medium from Innominate artery was draining to RSVC, RA, RV and pulmonary circulation. Although size of RA & RV are relatively small. There was no interconnection between right and left side of heart. PAP pressure was 25/10 mm of Hg, RA pressure was 3mm of Hg.

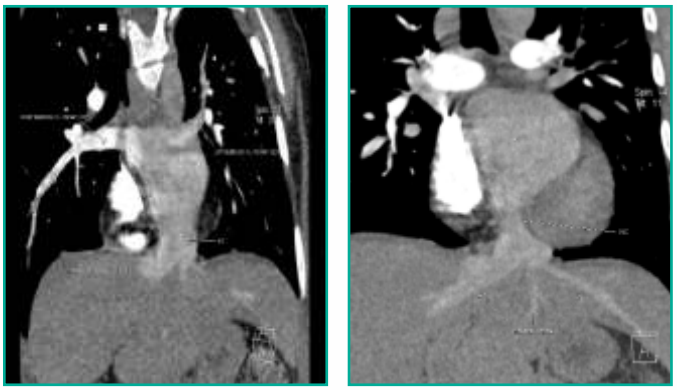


Figure 4. HRCT Chest with pulmonary angiography- Pre-operative images. Anomalous drainage of inferior vena cava into the left atrium is seen with prominent azygous vein.

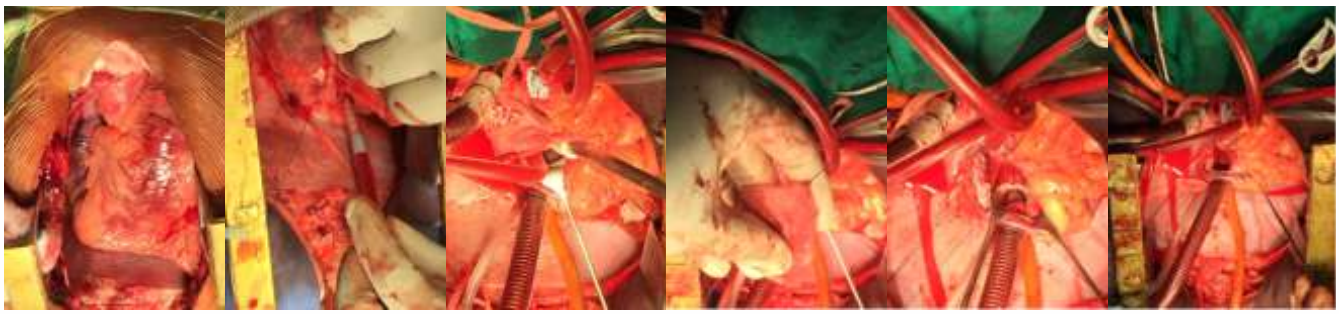
INTRAOPERATIVE NOTES

Conventional midline sternotomy was done. Pericardial patch was prepared. On examination, right sided SVC was draining into RA, RA size was small. Lower end of RA was blind.IVC was moderately large size and draining posteriorly into LA. There was an adequate length of IVC above diaphragm to allow IVC cannulation.

After heparinization, aortic and SVC cannulation done. Patient was put on partial bypass to facilitate IVC canulation. IVC was isolated with umbilical tape and cannulised with 30G cannula. CPB initiated, aortic clamp applied and cardioplegia was given (delnido). Right atrium opened, SVC was normally draining to RA, IVC end was blind, rudimentary Eustachian valve was present, no coronary sinus opening in RA and no ASD was seen. Inter atrial septum was opened at the lower end of septum. IVC was draining completely into LA cavity.LA cavity was seen with four pulmonary veins, normal mitral apparatus, IVC draining between septum and lower pulmonary vein outline.

IVC was diverted in the right atrium by creating a baffle of pericardial patch and interatrial septum. Baffle was post to IVC on LA wall inferiorly and interatrial septum superiorly. Small opening in septum was kept to decompress small size RA.

Procedure ended uneventfully. Post CPB: Heart activity returned to normal. Single lead Ventricular pacing inserted. Post-operative course was uneventful. Day after patient was extubated. Room air saturation remains 82 %, can be probably explained by presence of aortopulmonary collaterals. Patient was discharged on tenth day with room air saturation of 92%.



a *b* *c* *d* *e* *f*

Figure 5 Intraoperative pictures a. lower end of RA blind. b. moderate size IVC going posteriorly. c. Aortic and SVC cannulation on partial CPB, Pericardial patch prepared. d. Aortic and bicaval cannulation on CPB, RA opened. e. Through excised interatrial septum pericardial patch sutured to right of IVC opening on LA wall.f. Diversion of IVC into RA over oval patch.

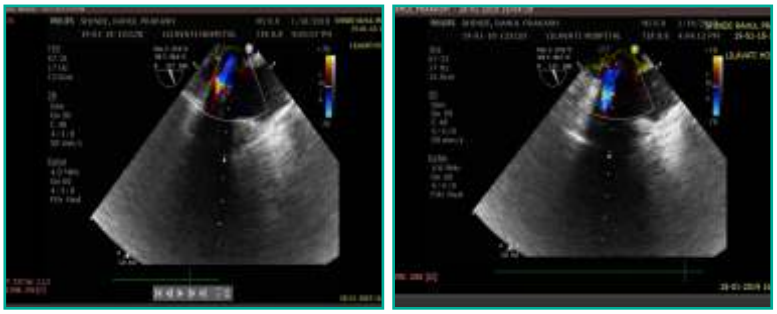


Figure 6 Intra operative Trans oesophageal echocardiography- Bicaval view demonstrating the SVC connected to RA, IVC in abnormal location, pericardial patch diverting IVC opening into RA, small opening in interatrial septum and both atria separated by inter atrial septum and pericardial patch.

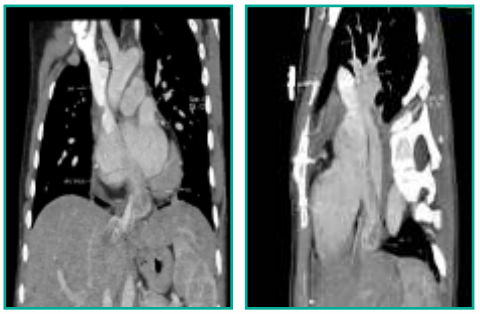


Figure 7 Post-operative CT chest with contrast: The anastomosis site appears normal with smooth flow of IV contrast of suprahepatic, IVC draining into the right atrium.

DISCUSSION

Inferior vena cava draining to left atrium is rare anomaly one of known congenital cardiac defects.[1-4] Gardner D.L. et al 1954, reported first case of female of 32 yrs. IVC was draining into LA as autopsy finding. These findings are questionable as the "specimen was only heart" and histopathology of posteromedial part of left atrium was suggestive of "atrial myocardium and not venous tissue"[2]

Embryologically, Left atrium develops from primitive atria. A bud called primordial pulmonary trunk comes out from dorsal aspect of left sided primitive atrium from which smooth part of left atrium and four pulmonary veins develops and trabeculated part and auricle develops from primitive atria. Inferior vena cava develops from right viteline vein. On dorsal side of primitive atria lies sinus venosus. Sinus venosus gives common cardinal veins on either sides which divides as anterior and posterior cardinal veins. Both sided umbilical veins and viteline veins drain into sinus venosus. In course of development both umbilical and left viteline vein degenerates, left common cardinal vein reduces to coronary sinus. Due to volume overload body of sinus venosus and right common cardinal develops into smooth part of right atrium and superior vena cava respectively, right venosus valve reduces in size and becomes crista terminalis,the valve of IVC (Eustachian valve) and the valve of coronary sinus (thebesian valves), and left venosus valve fuses with atrial septum.[1] If the right sinus venosus valve persists and fuses with superior part of the secundum septum, the IVC will drain into LA.This case belongs to this subtype.[3-4]

This entity is different from a low inferior vena cava secundum ASD where prominent Eustachian valve can result in shunting of blood from IVC to a LA. If surgeon mistakenly consider Eustachian valve as inferior ASD rim and he may iatrogenicaly divert IVC blood to LA upon ASD closure causing cyanosis.[9-12].

Echocardiography with agitated saline contrast and cardiac catheterization by injecting contrast from lower limb which drains into LA confirms diagnosis. CT contrast angiography[13] and MRI [15] firmly establishes diagnosis.

Regarding surgical repair, RA was opened and lower interatrial septum was excised. IVC was diverted in the right atrium by creating a baffle of pericardial patch and interatrial septum: Baffle was post to IVC on LA wall inferiorly and interatrial septum superiorly. Small opening in septum was kept to decompress small size RA. Only two cases have been reported in literature.[5-6] Another case was reported where similar surgical exercise carried out with ASD patch closure.[14]

Another case of IVC draining in between two layers of interatrial septum to LA. On CPB, upper half of left border of IVC was sutured to interatrial septum leaving 2.5 cm opening of IVC draining to RA. Post-operative cyanosis did not improve, on investigation, found multiple pulmonary arteriovenous fistule leading to thrombo-embolic complication sepsis. Patient died on 47th post op day.[7]

A similar case in association with total anomalous pulmonary venous drainage reported. Open surgical repair on deep hypothermic total circulatory arrest (16*C), pulmonary veins attached to left atrium and ASD closed. At 3 yrs. of age, patient became symptomatic. Cardiac catheterisation showed IVC draining to left atrium. Redo surgery done. Interatrial septum excised and patch inserted to divert inferior vena cava opening to right atrium. Author states that it could be isolated functional drai nage of inferior vena cava to left atrium or iatrogenic by incorporating Eustachian valve in ASD repair.[8]

CONCLUSION

We present a rare congenital malformation involving anomalous drainage of the IVC into the LA. A high level of clinical suspicion in otherwise unexplained cyanosis and detailed imaging of the abnormal drainage anatomy can lead to accurate diagnosis and successful surgical treatment.

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Case Report: Cardiovascular and Thoracic Surgery

Anaesthetic Management Of Absent Pulmonary Valve Syndrome: Our Experience

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ABSTRACT:

Fallot type of absent pulmonary valve syndrome is a rare, making up 5%, of the the tetralogy of Fallot spectrum. This entity is observed in neonatal or infancy period. In these patients Pulmonary valve is severely dysplastic, rendering it both regurgitant and stenotic resulting in dilatation of main and branch pulmonary arteries and changes in intrapulmonary segmental vasculature. This can cause compression of trachea and bronchi leading clinical picture similar to obstructive airway disease. Anaesthesia management of these infants involve careful airway and ventilatory management to prevent respiratory acidosis, leading to changes in pulmonary vascular resistance which can be detrimental. We are reporting successful management of a case of 4 years old child who presented with severe airway obstruction with emphysematous changes in left and collapse and consolidation in right side of lung. Child underwent VSD repair and valved homograph conduit from RVOT to branch pulmonary arteries with arterioplasty. Our aim is to share the perioperative airway management of this child as very few cases are reported in literature.

Words: absent pulmonary valve syndrome, Tetralogy of fallot, congenital heart disease, tracheobronchomalacia

INTRODUCTION:

Tetralogy of Fallot with absent pulmonary valve (TOF APV) is a rare variant of TOF occurring in approximately 2-6% patients with TOF. Pulmonary valve is severely dysplastic, rendering it both regurgitant and stenotic. In utero, free to and fro flow between pulmonary artery and right ventricle results in dilatation of main and branch pulmonary arteries and changes in intrapulmonary segmental vasculature. At birth in most severe form this results in extrinsic compression of the distal trachea and proximal bronchi associated with trcheobronchomalacia.Smaller intraparenchymal airways are also obstructed by abnormal branching of segmental pulmonary arteries. The compression of intrapulmonary bronchi from distended highly pulsatile vessels results in air trapping and lung hyperinflation, with an alveolar gas exchange pattern similar to that seen in obstructive lung disease. This can results in varying degrees of airway symptoms including respiratory failure in neonatal period. Good airway management is very important, as even short period of airway obstruction/hypoventilation my result in hypoxemia. Sudden change in ventilation pattern, PaO2, PaCO2, or pH affects pulmonary vascular resistance, which can lead to detrimental effect on shunt magnitude, cardiovascular function and hemodynamic. Hence prompt control of airway ventilation is required for optimal pulmonary blood flow in these patients.

CASE REPORT:

4 yrs old female child weighing 8.9 kg presented with history as narrated by mother high grade intermittent fever associated with chills and rigors since 4 -5 days, dry cough and running nose since past 15 days, dyspnoea on exertion NYHA grade 2, and failure to thrive. No history of cyanotic spells.

She was full term born child of non-consanguineous marriage with birth weight of 2.8 kg. Parents gave history of forehead sweating and suck rest suck cycle since the age of one month. Child had repeated respiratory tract infection, treated on OPD basis. At age of 4 patient developed bronchopneumonia and was hospitalised for 15 days, treated with oxygen, nasal CPAP, antibiotics, steroids.

On examination the child had poor growth with weight of 8.9 kg (<3 rd. percentile), height89 cm (<3 rd. percentile) and BSA was 0.48 m2. Her heart rate was 126-140/min,BP 90/72 mm of Hg,respiratory rate of 45-50 /min. Room air oxygen saturation of 98%.

Cardiovascular system examination showed precordial bulge. Continuous pan systolic murmur on left sternal border with early diastolic murmur in left 3 and 4 left ICS, second heart sound single was heard on auscultation.

Respiratory system examination showed bilateral wheezing, rhonchi and crepitation, intercostal and sub costal retraction present. Per abdomen examination showed liver was enlarged.no peripheral oedema was present.

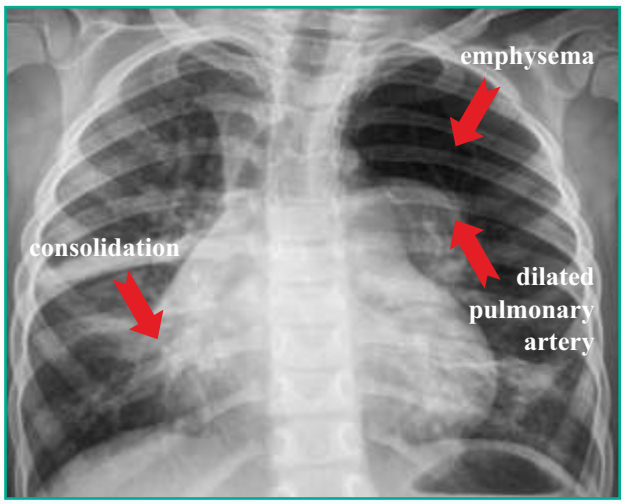


Fig No 1: Chest X-Ray revealed moderately enlarged heart with massive dilated left and right pulmonary arteries & proximal main pulmonary artery aneurysmal. Right pulmonary vascular marking more prominent than left. Hyperinflation of left upper lobe and left lower lobe atelectasis.

Electrocardiogram showed normal sinus rhythm, rate 140 per minute and right axis deviation suggestive of right ventricular hypertrophy.

A 2D Doppler Echocardiographic finding suggestive of moderately large sub aortic VSD of 10 mm with bidirectional shunt, overriding aorta with mild aortic regurgitation, pulmonary valve absent, annulus size 15 mm(z score +- 1.47)severe infundibular and annular pulmonary stenosis, pulmonary gradient of70 mm of hg,moderate pulmonary regurgitation. Grossly dilated branch pulmonary arteries, right pulmonary artery 27 mm (z score +_7.5)left pulmonary artery 28 mm (z score+-8.4)main pulmonary artery29mm(z score+-5.4)with normal relationship of great arteries, no PDA, RVH present, mild AR, left sided aortic arch, No coarctation of aorta, coronary arteries are normal, confirmed diagnosis of TOF with absent pulmonary valve syndrome.

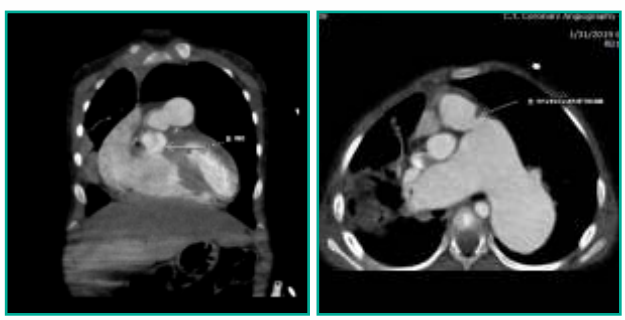


Fig No 2 ***CT Scan Heart:*** *Suggestive of ventricular septal defect, hypertrophy right ventricular wall with infundibular stenosis.*

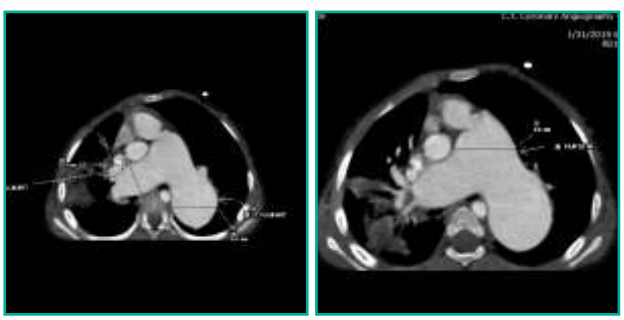


Fig No.3: ***CT Scan Heart:*** *The pulmonary trunk with right and left pulmonary artery dilated. Main pulmonary artery 4.1 cm ,right pulmonary artery 2.4 cm left pulmonary artery 3.4 cm,overriding of aorta with sub aortic membranous VSD, No aortopulmonay collaterals seen, no thrombosis seen in lumen pulmonary artery.*

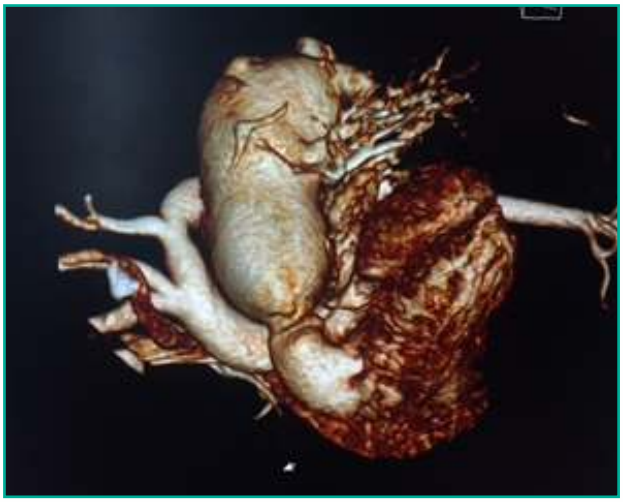


Fig No.4a: ***CT Heart Angiography:*** *shows RVOT obstruction, pulmonary stenosis and dilated central pulmonary and branch arteries.*

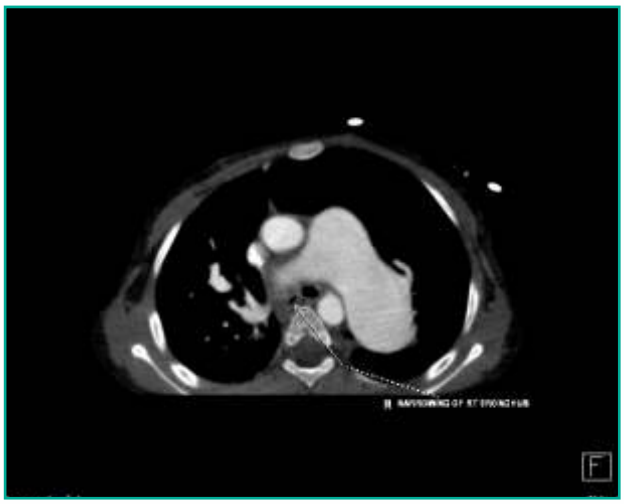


Fig No 5 CT heart axial plane: There is narrowing of both main bronchi with right more than left secondary to external compression by dilated main pulmonary artery was seen. Trachea was normal.

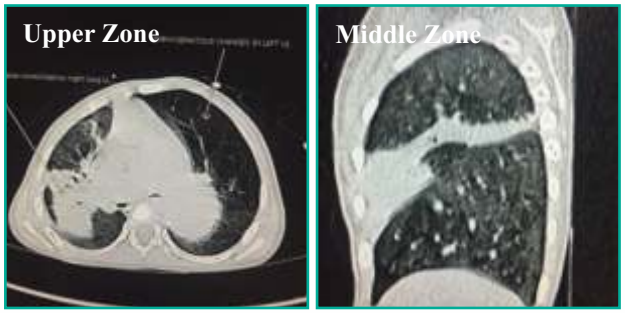


Fig no 4b ***CT Lung:*** *Emphysematous changes in the left lung, atelectasis seen in the anterior segment of the upper lobe and middle lobe of right lung and anterior segment of lower lobe of the left lung. Pulmonary oligemia seen involving the upper lobe of left lung, mild mosaic attenuation seen in right lung field.*

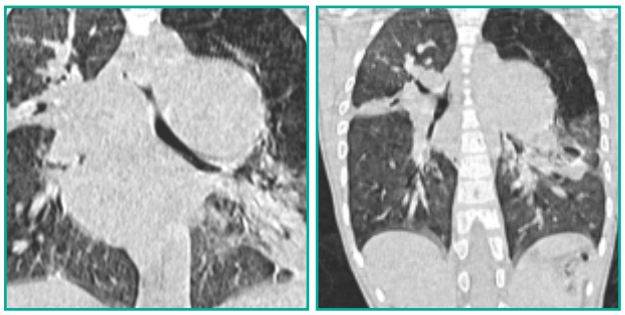


Fig No 6 CT chest coronal plane showed obstruction of right middle and lower bronchi and left main bronchus partially obstructed.

Fig No 7: CT 3D reconstructed image -Airbronchgram- Shows Right bronchus completely obstructed and left bronchus partially obstructed.

Patient was taken for total correction of Fallot's tetralogy with valved homograft conduit with branch pulmonary artery reduction after confirming adequate NPO and consent from parents.

Child was sedated with syrup Trichlofos 4.5 ml 50 mg/kg orally as premedication half an hour prior to surgery and intravenous fluids were started at 20 ml per hour 4 hrs. after securing intravenous access.

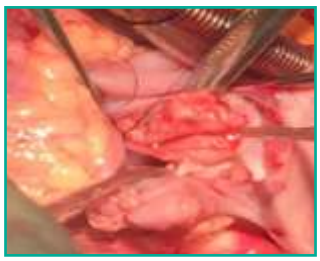
On arrival to operation theatre, pulse oximeter, ECG leads, and blood pressure cuff were applied. Heart rate 158 /min, NBP was 115/72 mm of Hg, SPO2 was 98% were noted.

Intravenous induction was done using ketamine 20 mg and atracurium 5 mg after premeditating with glycopyrolate 10 mcgm /kg, dexona 4.5 mg, midazolam o.o1 mg/kg, fentanyl 2 mcgm/ kg.Child was ventilated with 100 % oxygen and 1 % sevoflurane using JACKSON-REE circuit. After 3 minutes patient was intubated with 5 .0 no portex cuff endotracheal tube using video laryngoscope. Air entry was absent on left upper zone, lower zone was getting ventilated so under vision ETT was withdrawn checking left upper zone air entry. To our surprise ETT was completely out of glottis and still there was no air entry to left upper zone. Patient was re- intubated and same sequence was followed of withdrawal of ETT to find air entry on left upper zone but failed. Finally, under videolaryngoscopic vision ETT was kept adjusting vocal cord marker at vocal cords and accepted absence of air entry on left upper zone as saturation was always maintained at 100% and decided to proceed further. Child was Ventilated using pressure control mode with inspiratory pressure of 21 cm of H2O delivered tidal volume was 100-110 ml, peep of 5 cm of H2Orespiratory rate of 24 per minute, FGF rate 2 litres. A 22 g vygon cannula was placed in right femoral artery for ABP monitoring. A 5.5 F 8 cm triple lumen central venous pressure monitoring line was placed in right internal jugular vein. Additional 22 g peripheral vein was placed in left antecubital vein. ETco2 of 30 and spo2 100% was maintained at throughout pre bypass period. Arterial blood gas analysis post induction, on FiO2 .5, has pH-7.37, P02 -266 mm of Hg, Pco2-36.5 mm of Hg, SaO2- 99%. Hb -11.1 mg/dl, hct –33 lactate –6.3mg/dl, sugar -190 mg/dl, Na -131, k+-3.9.ACT was 91 seconds.

Anaesthesia was maintained on fentanyl 2mcgm/kg/hr.midazolam-0.05 mg /kg/hr. and artacurium 0.5 mg /kg/hr. infusion with air oxygen mixture, Fi O2 0.5.and sevoflurane .5 – 2%.

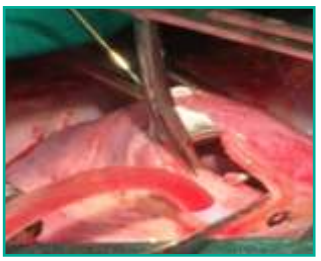
Prior to CPB, 400 units/kg heparin was given, ACT was 562 seconds. After heparinization normothermic cardio pulmonary bypass was established temperature 32-34*C,100 cc blood was used to prime CPB,Injection methylprednisolone 250 mg, NaHCO3 20 cc and manitol 20% -20 cc,3000 units of heparin were added to prime. After aorta was cross clamped, Cardioplegia solution at 4 *C temperature,300 cc with 8 meq K+given at 200cc/ min rate at 120 mm of Hg pressure.CPB flow rate of 2.4 -2.6-3.0 l/m2.On pump haematocrit was maintained at 26-28%,SpO2 was maintained at 97-98%,ACT between 430 – 480 seconds. During CPB another 50 cc blood added.Hemofiltrate of 1000 cc and MUF of 150 cc were taken out.

The closure of VSD through RA with pericardial patch, infundibular resection, and central pulmonary artery replaced with 18 G CONTEGRA valved conduit (Medtronic), aneurysmal pulmonary arteries were resected and refashioned. Temporary pacing wires inserted. Chest was closed using three drains, one mediastinal and 2 pleural.

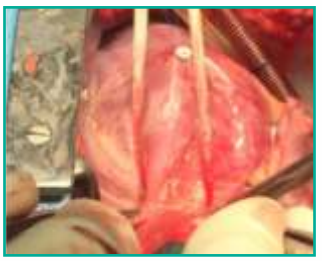


VSD patch closure

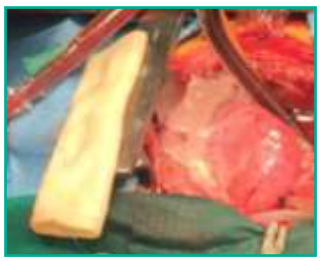
Infundibuloplasty



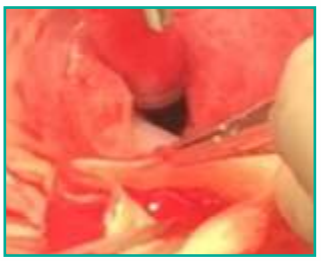
Rudimentary pulomonary valve excision



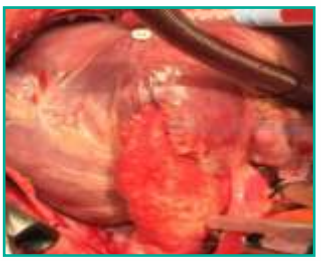
Isolated dilated pulomonary artery before excision



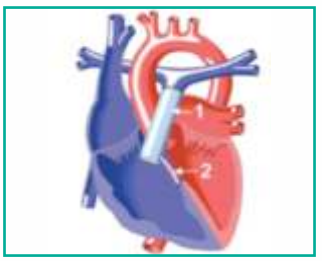
Homograft Contegra 18G



Sutured to RVOT



Final Homograft



RVOT to pulmonary artery conduit with VSD closure

Total pump time was 195 minutes, aortic cross clamp time was 95 minutes.Nitroglycerine infusion was started for rewarming.

Patient came off CPB with inotropic support of dopamine 10 mcgm/kg/min, adrenaline 0.05 mcgm/kg/min infusion. Initially heart was paced at 100 per minute over next 30 minute. Heart developed its own intrinsic sinus rhythm of 110 -120 per minute. Pacemaker was kept on demand mode of 90 per minute. Protamine 175 mg given to reverse effect of heparin. There was an episode of desaturation, aortic line blood colour was dark and no saturation displayed on monitor. Patient was hand ventilated using J-R circuit and 100% oxygen with hand held PEEP. SpO2 improved to 96%.Arterial blood gas analysis showed pH of 7.38, pCO2 53.1, pO2 -70.7 mm of Hg, Hb of 6.4 mg/dl and haematocrit of 19%, lactate of 46 mg/dl. Patient was ventilated with100 % oxygen, PIP 18 and PEEP of 6 with TV of 90-100 per breath.

Platelets 100 cc, fresh frozen plasma 300 cc, crystalloid 150 cc and packed cells 270 cc were given, urine output of 400 ml plus bed wet. Blood loss of 250 cc.

In ICU heart rate was 124/min,BP was 110/60 mm of hg,Spo2- 99% on PRVC,RR- 30 /min,PIP-22, PEEP- 6, TV- 100 cc, Fio2 - 80%, Hb -12.6 mg/dl

Arterial blood gas analysis showed pH 7.45, Po2 -235 mm of Hg, Pco2 45, lactate -2.1

Fibrinogen level was 328 mg/dl

Post op echocardiography showed reduced LV function25%, good RV function, conduit seen in situ, and no leak across operated VSD. Jerky septum which is restricted, thin rim of pericardial effusion.

On PO day 4 T-Piece trial was given but patient developed respiratory distress so ventilation continued. Bronchoscopy done on PO5 showed significant collapsibility of distal 1/3 rd. of trachea and right middle bronchus, left bronchus partially obstructed, secretions were cleared.

PO day 8 episode of desaturation, ETT changed, x-ray chest showed bilateral pneumothorax, ICD bilaterally inserted.PO10 tracheostomy was done under general anaesthesia. Child was gradually weaned off along with budecort, duolin & mesana nebulizer, De -cannulation was done on PO16 with good phonation.

Child had fever on post op day 2, meropenam, vancomycin, colistin, fluconazole added.POD18 child again had high grade fever, central line showed sphingomonas and candida parapsilosis, peripheral line showed candida parapsilosis and tracheal secretion showed pseudomonas. Meropenam and colistin started as per antibiotic sensitivity report for 14 days. Patient discharged on day 41.she received 50 cc blood and one FFP in post op period. On discharge 2-D echo showed no residual problem, EF- 45%.

DISCUSSION:

Embryo logically, heart is tube like structure, venous channels lead flow in, and arterial trunk provides flow out. Distal portion of tube becomes bulbous cordis (ventricle), proximal portion becomes truncus arteriosus(great arteries). During 5-6 weeks of foetal development aortopulmonary septum of truncus arteriosus usually completes a clockwise 180 * rotation enables division for aorta and pulmonary tree, creates great arteries and aortopulmonary septum.Malrotation of aortopulmonaryseptum may cause tetralogy of fallot. Septum pulled anteriorly &superiorly cause aorta to be large& rotated, overrides the ventricular trabecular septum and misalignment contributes to a right ventricle outflow tract obstruction. Failure in development of ductus arteriosus may result in an absent pulmonary valve due to increased blood flow in the right side of heart results in dilatation of central and branch pulmonary arteries [1,2].

Anatomically, there is large aorta overriding misaligned VSD with infundibular trabecular misalignment leading obstructed right ventricular outflow tract. The right ventricular mass become similar to LV. Functionally, absent pulmonary valve and dilated pulmonary valve annulus leads to unrestricted flow to pulmonary artery causing aneurysmal central pulmonary artery and dilated branches. These vessels compress lower one third of trachea and right and left main stem bronchi [3].

Instead of having single segmental pulmonary arteries, they found turfs of arteries that entwine and compress the intrapulmonary bronchi leading to severe respiratory compromise. There is reduction in number of alveoli.Pulmonary branching pattern resemble birch tree normally in case of absent pulmonary valve it resembles to weeping willow [4].

Physiologically, dilated arteries in utero affects normal development of hilar bronchi leading to bronchmalacia and tracheomalacia and affects ventilation. Respiratory distress in neonates and infants requires early ventilatory support and associated with longer post-operative ventilator requirements and mortality. Airway compression leads to areas of emphysema and atelectasis, and are prone to recurrent respiratory tract infections causing reactive airway disease [5].

Ventilation perfusion mismatch occurs due to intracardiac left to right shunting at ventricular level and intrapulmonary shunting

due areas of atelectasis , hyperinflation or due to pneumothorax or pneumonia leading to hypoxia and hypercarbia, ultimately respiratory failure may occur. There may be minimal response to bronchodilators and respiratory toilet [6].

In absent pulmonary valve syndrome, aneurysmal pulmonary arteries and left to right shunting or bidirectional shunting across large VSD is hallmark of these condition. Presence of significant tricuspid regurgitation also increase risk of heart failure [7].

PFT would be important tool in case of ventilated neonates to know airway resistance, compliance, flow volume chart and FRC. Patient studied at different levels of PEEP showed improvement in tidal volume and reduced obstruction at PEEP>10 cm of H2O [8].

Olprinone infusion may be useful in the TOF/APV cases predisposed to right ventricular failure [9].

Our patient was evaluated preoperatively by echocardiography, chest x ray and CT with angiography. Since child was not intubated preoperatively we did not do cardiac catheterization, bronchoscopy or PFT [6].

A 3 month old child with respiratory compromise was intubated awake in prone position than placed supine for surgery, airway was maintained with gentle hyperinflation of lung using PEEP of 10 cm of h2O.Pmax of 30 cm of H2Owith bilateral air entry, accepting saturation> 90%.This is the first case reported of airway management of APVS [10].

A neonate who was intubated and ventilated preoperatively, was intolerant of the supine position and needed emergent sternotomy to relieve airway compression when placed supine for surgery [11].

In our patient, post muscle relaxant there was increase in airway resistance. Airway was maintained with PIP of 21 and 5 cm of H2O PEEP and TVe 100-110mlfor 9 kg child. Strayer et al studied 13 patients over 6 yrs., all were intubated in supine position, 5 were mechanically ventilated preoperatively, and two required > 30 cm of H2O airway pressure to ventilate both lungs

Insertion of valved homograft will reduce pulsatality within reconstructed pulmonary arteries and possibly diminish compression on bronchi as well as chances of right heart failure post operatively. Thus valved homograft is more valuable in patients with severe respiratory compromise [12,13,14].

Alternatively either pulmonary artery reduction plasty or the Lecompte manoeuvre can relieve proximal airway compression, without a significantly different risk of pulmonary artery re- intervention between techniques [15].

Absent pulmonary valve syndrome neonate who underwent surgery at 2 weeks with modified homologous aortic homograft with monocusp pulmonary valve who developed severe respiratory compromise at 5 months of age both bronchus were stented endobrochialy successfully [16].

31 yr old absent pulmonary valve syndrome underwent surgical repair. VSD closed, anterior plication of pulmonary artery and Edward paramount bio prosthetic 23 mm pulmonary valve implantation was done successfully [17].

Jock man et al studied 44 patients over period of 20 years retrospectively between 1995-2014.16 patients required ventilation preoperatively, including 11 neonates. All intubations were in supine position, received muscle relaxant before intubation after confirming ability to bag mask ventilate with positive pressor.The patient who was challenging to mask ventilate had improvement of peak airway pressures once endotracheal tube was secured . Post operatively, 9 patients required re-intubation for respiratory insufficiency.no patient required ECMO support.5 required tracheostomy and one required lobectomy. Mortality was 9%, all required mechanical ventilation preoperatively, and had genetic syndrome, 1 year survival was 89.3%.limitation of study is that missing data's, and incomplete records and their reliability. While intraoperative issues including airway obstruction, ventilation abnormalities, and hemodynamic changes may have occurred and may not have been reflected accurately [18].

CONCLUSION:

Absent pulmonary vale syndrome will present with variety of respiratory problems due to aneurysmal central and branch pulmonary arteries compressing distal trachea and main bronchi in utero, like emphysema, atelectasis, and reactive airway disease along with pulsatile mechanical compression leading to tracheobronchomalacia. Aneurysmal segmental and sub segmental turf of arteries compressing bronchioles and reduced number of alveoli adds to respiratory problems. These patients present with respiratory failure in neonatal period. Respiratory issues itself can contribute to 75% of surgical mortality. Optimising ventilation to prevent hypoxia, hypercarbia, acidosis which may lead to hemodynamic instability by altering pulmonary vascular resistance without causing barotrauma to lungs is key to successful management. In this case, Presser support ventilation keeping peak airway presser at 27 mm of hg {pip of 21 and peep of 6} was to key to successful management of this case.

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mid-day

12-HR SURGERY GIVES HOPE TO 4-YR-OLD AFTER LIFT HORROR SEVERS WRIST

YOU'VE GOT TO HAND IT TO BRAVE NAIRA!

Inside story of how Lilavati doctors worked all night to re-attach child's hand that was severed in an elevator accident at her Ulhasnagar home

RUPSA CHAKRABORTY

ON June 15, Naira Purswani, 4, was playing near her home in Ulhasnagar when a recorded voice from the elevator, asking for the door to be shut, caught her attention. As she tried to shut it, her right hand got stuck in the door and was clipped off at the wrist as the lift ascended, ending up on the fourth floor. But, a team of specialists at Lilavati hospital successfully reattached her hand in a 12-hour surgery in the middle of the night. » P02

(From left) The ace team of Dr Samir Madhukar Kumta, Dr Leena Jain, Dr Neha Jain and Dr V Ravishankar, who managed to save Naira's hand. PIC/ATUL KAMBLE

A brave Naira Purswani strikes a cheerful pose after the surgery

'Since it was the dominant hand of a small child, we decided to go all out to save the limb, although the chances of survival looked bleak' Samir Kumta, surgeon

'We were in so much trauma that we forgot about the missing hand. When a neighbour told us to carry it to the hospital, we started searching for it. Another neighbour found it on the fourth floor' Kanishka Purswani, Naira's mother

Negligence: BMC offers ₹50K to man

Day after this paper's exposé of how a tree that was being cut fell on a biker and broke his leg, BMC offers him a pittance

Felled tree breaks biker's leg at Sion

mid-day's July 13 report

ANURAG KAMBLE

THE BMC has finally woken up to the plight of Chatkopar resident Zaki Mohammed Nabi Sheikh — over a week after a tree being cut irresponsibly crushed his right leg — and promised him compensation. Following mid-day's July 13 report, 'Felled tree breaks biker's leg at Sion,' the P North ward has ensured a proposal to sanction ₹50,000 as financial aid for Sheikh's medical treatment, which has already run up a bill of over ₹3 lakh. BMC has also levied a fine of the same amount on the guilty contractor. » P05

₹2.5L Medical expense Sheikh has incurred so far for broken leg

02 CITY

mid-day Saturday, July 20, 2019 | www.mid-day.com | twitter.com/mid_day | epaper.mid-day.com

All hands on deck to save 4-year-old's severed limb

Continued from page 01

NAIRA was playing outside her second-floor home in Ulhasnagar when the incident occurred. She went to the lift door to shut it after hearing the announcement and as soon as her hand reached the inner door, the lift began to move as it was called to the fourth floor. By then, Naira's hand had gotten stuck in the gap between the doors, and the moving elevator pulled it off her arm, leaving her in a pool of blood.

"We were not at home on the day of the incident, so when my mother-in-law called, we thought it might be a minor injury, until we saw her condition. Her right wrist was missing and she was reeling in pain while her clothes were completely drenched in blood," said Kanishka Purswani, her mother.

Where's the hand?

In the ensuing chaos to get medical treatment for Naira, her parents forgot about the missing wrist, until a neighbour enquired about it and suggested they carry the severed part to the hospital. "We were in so much trauma that we had forgotten about the missing wrist. We began looking for it after our neighbour asked us to carry it to the hospital. Another neighbour found it attached in the gap between the grill on the fourth floor," added Kanishka. They packed it in a plastic bag and rushed Naira to a private hospital in Thane.

Sadly, since it was late at night by the time they arrived at the hospital, there were no specialists present to attend to Naira. However, the hospital informed Lilavati hospital about her condition and asked them to call their specialists without wasting any time. "Thankfully, the hospital also kept the hand in a box with ice, which helped with its preservation until they reached us," said Dr V Ravishankar, chief operating officer, Lilavati hospital.

Specialists begin surgery

The Purswanis reached Lilavati hospital around 11.30 pm and by midnight, Naira was wheeled into the operation theatre for the surgery, where a group of specialist orthopedic and plastic surgeons awaited her.

Dr Samir Madhukar Kumta, consultant plastic and reconstruction micro surgeon at the hospital, who headed the team, told mid-day, "She had an unfavourable amputation, where all vital structures like nerves, blood vessels and muscles were avulsed distant to the site of the wrist separation from the rest of her forearm. Since it was the dominant hand of a small child, we decided to go all out to save the limb, although the chances of survival looked bleak because of the severe damage to the avulsed structures."

The situation ceased to remain as bleak at the end of a gruelling 12-hour surgery, when the team managed to save her hand. Naira is the youngest patient to undergo a hand replant at the hospital. The surgery was extremely complicated as it required fixing the bone, joining tendons that move the thumb and fingers, joining major nerves that carry sensations from the hand and transmit signals from the brain to the various muscles in the hand, as well as joining major arteries and veins to restore blood supply to the hand.

"Joining these structures in a child is very challenging and requires the use of an operating microscope and a team of surgeons experienced in microsurgery," informed Dr Leena Jain, consultant plastic and reconstruction micro surgeon at the hospital, adding, "After this superhuman effort, the hand was successfully replanted. Since a circular band of skin around the wrist was badly damaged and needed to be removed, she needed a cover of skin and soft tissue for this area. That surgery was deferred for a later date, after we were sure that the hand had survived." Dr Sudhir Warrier, a consultant orthopaedic and hand surgeon helped attach the bone to the severed hand.

"This was also a very challenging and delicate super microsurgical procedure, which required the joining of blood vessels smaller than 1 mm in diameter, using sutures finer than hair and special instruments," added Dr Jain.

Microsurgery is a sub-specialty of plastic surgery which utilises an advanced microscope and specialised precision tools to magnify and link small blood vessels. Under the microscope at Lilavati, the experts linked the tiny arteries, nerves, tendons and veins of Naira to her the hand.

Cold and blue

The reattached hand was doing well for the first seven days, but on the eighth day, it turned cold and blue. The nursing team immediately informed doctors and the child was taken for surgery again. During the operation, the veins on the back of her hand were found to be blocked. They had been severely damaged at the time of the injury and a clot had formed inside them, blocking the flow of blood. The veins were repaired once again by using additional veins from her leg. Subsequently, Naira went through another major microsurgical procedure, where muscle from her thigh was taken and transferred to the wrist to cover the area of skin and soft tissue loss.

"When her wrist was brought to the hospital, it was pale, but after the operation, it became viable [turned pink] which helped us understand that the surgery was successful," said Dr Jain. While Naira recovers, the hospital, under its in-house Save the Girl Child scheme is trying to provide a concession. The discounted medical bill is over ₹10 lakh, of which the Purswanis have paid ₹5 lakh.

Ashok Purswani, Naira's father, who works at a jewellery shop where he makes bangles, said, "We never imagined that the doctors would be able to attach the wrist. But now, she would be able to write again with her right hand. However, we know she would need a few more surgeries before that happens."

A team of specialists including (from left) Dr Samir Madhukar Kumta, Dr Leena Jain, Dr Neha Jain and Dr V Ravishankar performed a 12-hour surgery to save Naira's hand. PIC/ATUL KAMBLE

'Joining these structures in a child is very challenging and requires the use of an operating microscope and a team of surgeons experienced in microsurgery' Dr Leena Jain, consultant plastic and reconstruction micro surgeon at the hospital

Case Report: MRI

Role Of Advanced MRI Imaging In Diagnosis Of Intracranial Ring Enhancing Lesions : MR Spectroscopy

Dr. Adish Talwadker, 2nd year resident, Radio-diagnosis.
Dr. Ashlesha Udare, MD, D.N.B, ESR Fellow, Consultant - MRI

CASE REPORT:

A 37 yrs old male presented with history of fever since few days and dizziness, headache & left-sided weakness on admission.

Multiplanar MRI of the brain was performed using T1 weighted spin echo, T2 weighted turbo spin echo & turbo FLAIR sequences. Perfusion studies of the brain were performed after intravenous injection of gadolinium- DTPA using EPI sequences. Single voxel spectroscopy and chemical shift imaging were performed through the enhancing lesion using short TE (35 ms) and long TE (144 ms) PRESS sequences. Post processing was performed using a dedicated spectroscopy software on Phillips Intellispace workstation. The spectra were of good quality with adequate water suppression.

It revealed a T1 and T2 hypointense ring enhancing lesion is seen in the left frontal white matter measuring approximately 7.8 x 8 mm. There is associated perilesional T2 and FLAIR hyperintensity, suggestive of white matter oedema (Fig. 1). Leptomeningeal enhancement was noted predominantly along bilateral parieto-occipital regions.

On short TE (35 ms) single-voxel spectroscopy,there is a elevated lipid peak noted in the left frontal lobe lesion (Fig. 2).

CSF analysis revealed findings suggestive of tuberculous meningitis. The patient was subsequently started on anti-TB therapy.

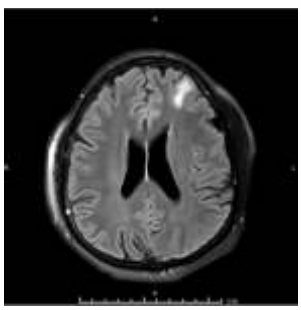
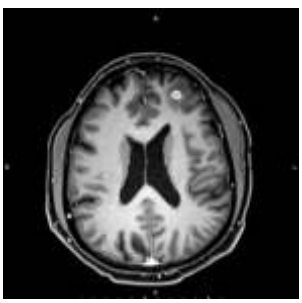


Fig.1 Axial FLAIR



T1W Post contrast Axial

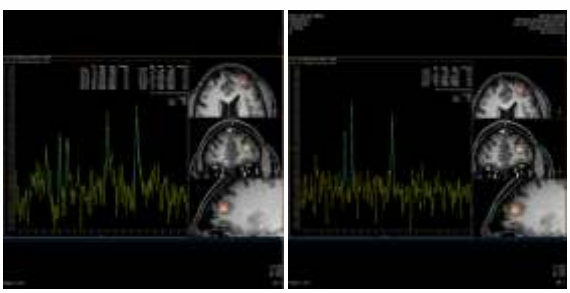


Fig:2 MR spectroscopy

DISCUSSION:

Intracranial tuberculosis occurs secondary to haematogenous spread from the focus of tuberculosis infection most commonly in the lungs. It accounts for 2-5% of patients with TB and 10% of those with HIV-TB co-infection. CNS TB can manifest either as diffuse involvement of CNS resulting in TB meningitis, or as a localized parenchymal infection resulting in tuberculosis granuloma or tuberculoma[1].

Contrast enhanced T1 weighted MRI images, usually demonstrate ring enhancement which may be either a single ring or multiple conglomerate rings. This type of enhancement is displayed by a wide range of disease conditions including both infectious and neoplastic ones. Magnetic Resonance Spectroscopy (MRS) is a noninvasive diagnostic test for measuring biochemical changes in the brain. MR spectroscopy analyzes molecules such as hydrogen ions or protons. There are several different products of metabolism that can be measured to differentiate various pathological processes. The frequency of these metabolites is plotted on a graph as peaks of varying height. By measuring each metabolite's frequency and comparing it to normal brain tissue the neuroradiologist can determine the type of tissue present.

Tuberculomas usually demonstrate large lipid peaks on MRS with increased choline levels and decreased levels of NAA and Cr. A Cho/Cr ratio of greater than 1 is typical of tuberculoma. Tuberculomas also demonstrate a prominent decrease in NAA/Cr ratio and slight decrease in NAA/Cho ratio. While neurocysticercosis demonstrate a combination of elevated levels of lactate, alanine, succinate and choline and reduced levels of NAA and creatine.

The major part of M. tuberculosis particularly its wall is known to contain lipids. The presence of a lipid peak can also be used to differentiate tubercular abscess from bacterial or fungal infection. However, the overall specificity of this finding is decreased given that lipids can also be seen in toxoplasmosis or malignant lesions such as lymphoma or glioblastoma (GBM) (Table 1).

Short TE (TE=35 ms)MRS has better resolution and signal-to-noise ratio as compared with long TE MRS[2] Batra and Tripathi[3] described long TE (TE = 135 ms) MRS findings and reported increase in Cho in addition to lipids in a number of cases.

Tuberculomas can be differentiated from malignant lesions by a significantly higher mean ratio of Cho/Cr noted in high-grade gliomas and metastasis cases. Although the presence of lipids is non-specific and can be present in high-grade gliomas and lymphomas its absence makes the diagnosis of tuberculoma less likely. Increased Cho is not uncommon in tuberculomas due to inflammatory cell reaction however, higher Cho/Cr ratios should favor malignancy over granuloma.

In conclusion, MR spectroscopy is an advanced non-invasive MR imaging technique that can be helpful in diagnosis of ring enhancing lesions in the brain.

	Tuberculoma	Neurocysti-cercosis	Pyogenic Abscess	Fungal Lesions
Lipid	↑↑	-	-	+/-
Lactate	+	+	+	+
Cytosolic Amino Acids*	-	-	+	+/-
Succinate	-	↑↑	+/-	-
Trehalose	-	-	-	↑↑

Table 1 : Characteristics of different ring enhancing lesions on MRS

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Case Report: Pathology

A Case Of Plasma Cell Leukemia

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INTRODUCTION:

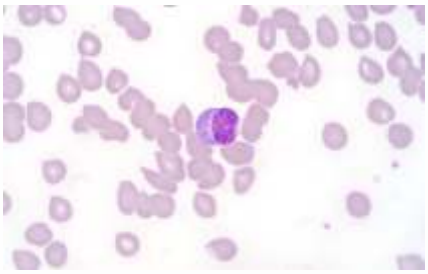
Plasma cell Leukemia is a rare haematological malignancy characterized by the presence of plasma cells circulating in the blood and is the most aggressive variant of plasma cell gammopathies.

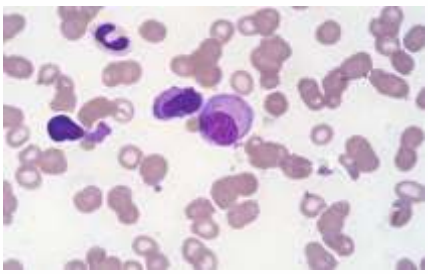
CASE REPORT:

A 69 yrs old man k/c/o of Multiple myeloma diagnosed in 2015 underwent induction chemotherapy followed by autologous marrow transplant and was in remission since 2016. Recently, he presented with fatigue in OPD and had the following lab investigations.

Hemogram:Hb:7.9 g/dl, Wbc:15150/cumm, Plt:51,000, Hct:2.5 CRP:38.11 Sr.Creatinine:1.41.

Peripheral blood smear examination showed Nucleated RBCs along with plasma cells(27%).





These findings were suggestive of Plasma cell Leukemia and he was advised Bone marrow studies with Immunophenotyping by flow cytometry for confirmation

Flow cytometry was done on peripheral blood sample which showed 40 % clonal plasma cells coexpressing CD38 , CD138,CD117 aberrant with lamda restriction. They were negative for CD19,CD27,CD45,CD20,CD56 and CD200.

These findings confirmed Plasma cell leukemia.

DISCUSSION :

The first case of plasma cell leukemia was recognized by Gluzinski and Reichenstein more than a century ago[1]. Plasma cell leukemia (PCL) is characterized as primary PCL at diagnosis or secondary PCL in patients with refractory myeloma. The diagnosis is based upon the percentage (>20%) or absolute number (> 2 X 109/l)of plasma cells in peripheral blood[2,3].The incidence of PCL ranges between 2% and 4% of multiple myeloma patients[4,5].Due to aggressive nature of the disease PCL is usually associated with poor prognosis. Patients are treated with bortezomib based regimens followed by preferably allogeneic stem cell transplantation once in remission wherever possible[6,7].

This patient developed tachycardia, tachypnoea and was admitted in intensive care unit in our hospital. He was treated with Bortezomib, cyclophosphamide, daratumumab and dexamethasone however, his lung function worsened and patient could not be salvaged.

Rapid deterioration in multiple myeloma patients should give rise to clinical suspicion of development of plasma cell leukemia as it needs aggressive therapy and has a poor outcome.

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Case Report: Pediatric Surgery

A GIST – Gastrointestinal Stromal Tumor in Children – In A GIST

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BACKGROUND

We report a case of acute onset gastrointestinal bleeding in a 3 yrs old male child and presenting a comprehensive review on gastrointestinal tumors (GIST) in children. Although the most common type of mesenchymal tumor in adult this is very rare in children especially in the first decade of life.

KEYWORDS

GIST, gastrointestinal stromal tumors, children

ABBREVIATIONS USED

GIST – Gastrointestinal stromal tumor

UGI – Upper gastrointestinal

aPPT – Activated partial thromboplastin time

βHCG – Beta human chorionic gonadotropin

CEA – Carcino embryonic antigen

CT scan – Computer tomography scan

MRI – Magnetic resonance imaging

FDG-PET – Flurodeoxy glucose-Positron emission tomography

EUS - Endosonography

INTRODUCTION

Gastrointestinal stromal tumors (GIST) are uncommon mesenchymal tumors that are typically described in adults but have been observed rarely in children. The cell of origin is speculated to be the interstitial cell of Cajal (ICC), a cell having neural and muscular attributes, which primarily functions as the pacemaker for muscular motility of the gastrointestinal tract. We are presenting a case of a 3 yrs old male with GIST masquerading as severe upper gastrointestinal bleeding. We also intend to highlight the available literature on pediatric GIST and trends in their management.

CASE REPORT

3 yrs old male child acute onset of fever lasting for 4 days followed by severe bout of hematemesis was referred due to sudden drop in hemoglobin for further investigation and management. The child also had two episodes of malena following which there was severe anemia with hemoglobin at 4.5 gm. %. This child was stabilized by blood transfusion along with FFP transfusion in view of deranged aPPT and taken up for upper GI endoscopy. He was found to have multiple superficial ulcers in the fundus and a 1.5 by 1.5 cm exophytic growth in the body of stomach near greater curvature with ulcer on top (Figure 1).There were no further episodes of bleeding seen. βHCG and CEA were negative. He was managed conservatively and is planned for a PET CT later to find out other possible lesions as stomach is a very rare site for GIST.

DISCUSSION

Mesenchymal tumors are a family of related tumors including those named plexosarcomas, leiomyoblastomas, leiomyosarcomas, GIST, gastrointestinal autonomic tumors (GANT) and gastrointestinal pacemaker cell tumor (GIPACT). GISTs were first described in 1941[1] but were initially considered to be a subset of leiomyosarcomas (LMS) because of their resemblance to smooth muscle[2].

According to the current histopathogenetic concept the cellular origin of GISTs is proposed to be the interstitial cell of Cajal (ICC) of myenteric plexus. This hypothesis is based on the fact that GIST cells and the ICC have similar morphological features and express both CD34 and KIT(CD117) a transmembrane tyrosine kinase-receptor protein[3]. Although GIST have been frequently described in adults, its occurrence in children is very rare. It is more frequently seen in female child than male with a ratio of 3:1. The most common site of GIST in children is in stomach. Other sites include small intestine, colon, and omentum[4]. The clinical presentation of GISTs is nonspecific and includes abdominal pain and upper gastrointestinal bleeding which may often result in severe (hypochromic, microcytic) anemia. They may also present with abdominal mass and with signs of metastasis such as palpable liver[5]. The liver is the most common site of metastatic spread but liver metastases are rarely seen at diagnosis. Similarly lymph node, peritoneal, or mesenteric metastases are infrequent at presentation but are typical sites of recurrence[6].

GIST usually have nodular growth pattern with ulceration which leads to acute or chronic bleeding[7].The presentation of familial or syndromic GIST is different than that of a sporadic GIST. The female preponderance seen in the sporadic variety is not seen and often involves small intestines with multiple tumors. Familial variety is also seen associated with neurofibromatosis -1. The syndromic and familial tumors are more aggressive and tend to have earlier metastasis and frequent recurrence[8]. The association of gastric leiomyosarcomas extra-adrenal paraganglioma and pulmonary chondroma a syndrome affecting mostly young females was first described in 1977 by J. Aidan Carney and subsequently termed Carney triad is infrequently associated with children[9].

Various modalities have been described for initial investigation of suspected GIST including an upper GI contrast study to see for any filling defects in the stomach. Further a CT scan and MRI may be helpful to define the extent of lesion and also useful in detecting any metastasis[10].

FDG-PET is more sensitive diagnostic tool and can be used in monitoring response to treatment[11].

Other modalities include endoscopy with or without a biopsy. The most accurate diagnostic modality is immune-histochemistry staining with positive for CD 117 and CD 34 and negative for desmin and S 100[12]. Endosonography (EUS) has also been utilized in detecting the sub mucosal growth of these tumors and in monitoring the size of these lesions. But this modality is more useful in adult cases than pediatric cases[13].

Unlike adult GIST management standard protocolized management of pediatric GIST is not available. The various modalities for management are complete wide local excision with tumor free margin which may be all that is required in most of the cases while partial or total gastrectomy and other radical resections should be restricted to large multiple tumors and cases of recurrence[14]. In case of small intestinal or colonic tumors wide excision or resection anastomosis may be required. Rarely hemi colectomy may be necessary[15].

These tumors are not chemo or radiosensitive. The response to chemotherapy is very poor[16].

The newer technique of targeted therapy has been into practice after the identification of tyrosine kinase receptors in these tumor cells. Imatinib mesylate is an oral protein tyrosine kinase inhibitor which is in use as targeted therapy in GIST and other CD 117 expressing tumors[17]. In case of liver metastasis wedge resection of liver can be safely performed[18]. With extensive metastasis at diagnosis with large tumor use of Imatinib mesylate and Sunitinib prior to resection has been helpful[19].These patients need longer follow up to check for recurrence of tumor especially in case of familial of syndromic variants[20].

SUMMARY

Although not commonly seen in pediatric age group, GIST demands great deal of attention for diagnosing and treating them. The differences between adult and pediatric GIST should be borne in mind while managing these cases as these may behave in a more aggressive manner in children and require further prospective monitoring of newly diagnosed children. Although surgical resection is considered the current standard of care the introduction of novel targeted therapeutics may be beneficial for patients with GISTs particularly those with recurrent metastatic disease.

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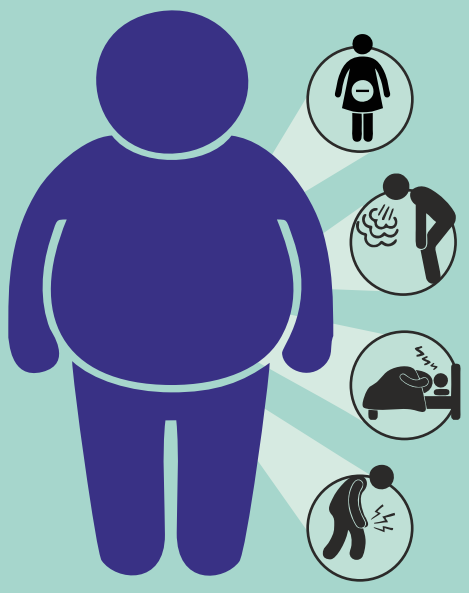
LIVER TRANSPLANT CLINIC

HIGHLIGHTS OF THE CLINIC

- Transplant Team's Cumulative Experience of Over 2500 Liver Transplants
- We perform Deceased Donor & Living Donor Liver Transplant
- Management of Jaundice, Acute Liver Failure & Chronic Liver Diseases
- Dedicated Liver Intensive Care Unit (LICU)
- State-of-the-Art Diagnostic & Therapeutic Facilities for Endoscopy and Liver / Bile Duct / Pancreatic Surgery

For appointment & details contact
Sr. Organ Transplant Coordinator
Call: +91-9769840408
Email: organtransplantcoordinator@lilavatihospital.com
OPD Days: Tues / Thurs / Sat • Time: 12:00 noon to 4:00 pm

ARE YOU TIRED OF DIET AND EXERCISE?



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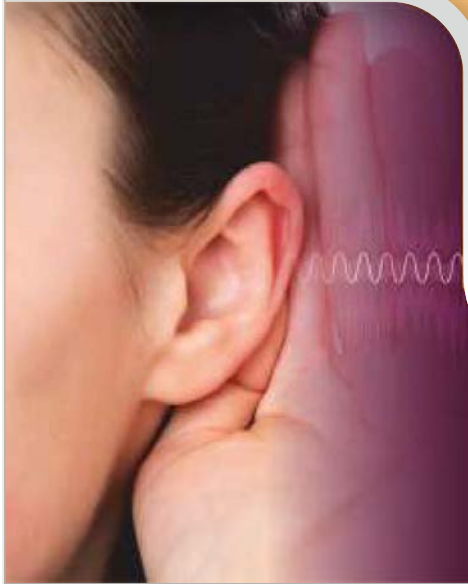
Lilavati Hospital's
Obesity and Bariatric Clinic

For Appointment Contact Our Expert
Dr. Shashank Shah
9766316734/ 9822026734

COCHLEAR IMPLANTS – A NEW REALITY FOR THE DEAF



Do you or your children have a hearing problem
Do you have adults in family who have lost their hearing ?

For severe deafness,
Cochlear Implants & Other Listening / Hearing Devices
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Case Report: Plastic Surgery

Near Total Thumb Amputation: A fair try before you Crucify

Dr. Neha Jain, Fellow – Plastic and Reconstructive Surgery
Dr. Leena Jain, Consultant – Plastic and Reconstructive Surgery

50 years old hypertensive, male patient, Mr. X, arrived from Nashik, referred by an orthopaedician for right thumb crush injury. He had a near total amputation of his dominant thumb as a result of getting crushed under the iron rod of the rickshaw he was travelling in.

Patient reached the casualty within 6 hours of the injury. Examination revealed near total amputation of the right thumb at the level of proximal part of shaft of proximal phalanx. The thumb was found hanging on a 3mm skin bridge along its dorsoradial aspect. There was loss of tissue from over the IPJ till about 5-6 cms proximal to it, measuring 4x2cms. Patient was counselled about the nature of injury, importance of thumb functionally, option of revascularization and chances of success in a crush-avulsion. Patient was determined to salvage the thumb and he consented for attempt to revascularization.

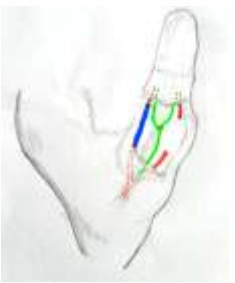
During surgery, the thumb was found to be highly contaminated with avulsion of both the digital arteries. Except the bridge of skin, all structures were cut and their ends were crushed. After a thorough debridement, all structures were identified on both the ends, under the microscope. A single axial Kwire was used to fix the proximal phalanx fracture. Dorsally the joint capsule and extensor expansion were repaired. Dorsal vein was identified over middle of shaft of metacarpal. On the volar aspect, flexor tendon was repaired. Single digital nerve identified proximally, hence the distal ends of both the digital nerves were sutured to this proximal end. Vein graft was harvested from volar aspect over the wrist and distal forearm. The ulnar digital artery was repaired with the interpositional vein graft using 10-0 ethilon. The thumb pinked up instantly with restoration of turgor. Dorsal venous arch was identified easily thereafter just below the proximal end of nail bed. Two of its branches were anastomosed to a " Y" shaped vein graft, such that there were two distal venous anastomoses and a single proximal venous anastomosis. Split skin graft was used to cover the vein graft and dorsal skin defect.

Post-operatively after about 24 hours, the thumb seemed to be cold and bluish in appearance. Vein graft seen under the skin graft, was found to be thrombosed indicating an arterial thrombus. Reexploration was done and arterial anastomosis revised. Circulation was restored. Post-operatively patient was heparinised maintaining a PTT of 2.5-3 times control. Patient had an episode of vasospasm on the 4th post-operative day, during which the thumb became pale with delayed capillary refill, however it resolved spontaneously. He was discharged after about 8 days and K wire was removed after 8 weeks. Currently patient is on physiotherapy to improve his thumb movements.

1. Right thumb near total amputation

2. Illustration of dorsal venous damage

3. Illustration of venous anastomoses with 'Y' shaped vein graft



4. Illustration of arterial anastomoses with vein graft and neurography

5. Post-op 8 weeks after a successful salvage

DISCUSSION:

Thumb contributes to 40% of hand function. Best salvage procedure of an amputated thumb is replantation. Crush avulsion injuries have damage over greater lengths of vessels and nerves unlike in a sharp injury where the extent of proximal damage is minimal. Most of these crush injuries invariably need vein grafts for arterial and venous anastomoses. Main technical challenge is anastomosis of small calibre distal vein segments whose diameter is less than 0.5mm. The single prong of a jeweller's forceps (microforceps) seems bigger than the lumen of the vein!

CONCLUSION:

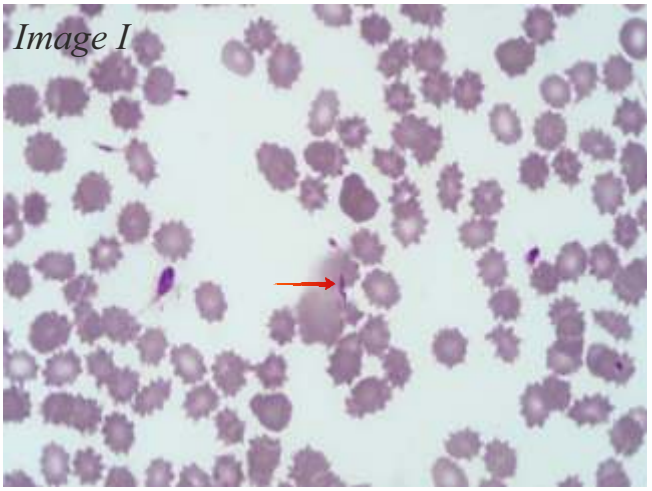
Best functional results after a devascularisation of a digit can be obtained with revascularization. An earnest attempt should be made to revascularise all such injuries of the digits especially of the thumb. Crush avulsion injuries can be revascularised successfully with usage of long lengths of vein grafts.

Most of these injuries invariably reach the hospital in the night. Determination of the surgical team to salvage such crushed digits is fundamental for a successful outcome. In crush injuries, on table thrombosis and vasospasm is a known feature and the anastomoses may need to be revised more than once on table. Having a team helps in avoiding mental fatigue.

Spot the Diagnosis

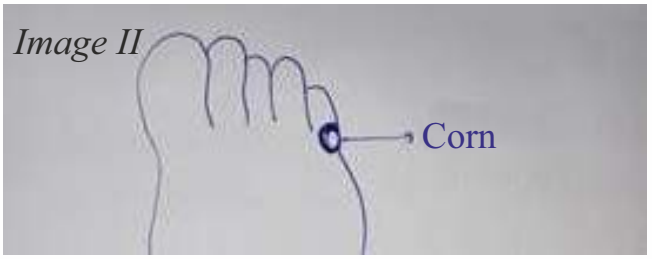
Case I: A 53 yrs old housemaker was admitted in our intensive care with complaints of jerky movements of limbs and slurring of speech. She gave no history of recent travel. Her hemogram findings were within normal limits. An image of the microscopic examination of blood smear is given below. What can be the diagnosis?

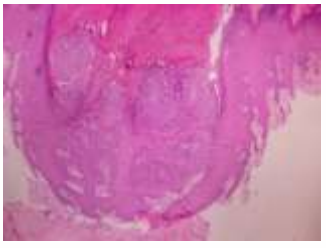
Dr. Sonam Joshi
DNB, Clinical Associate – Pathology



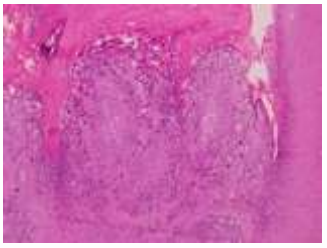
Case II: A 33 yrs old man presented with a corn on his foot since 6 months. He had removed it once, but it had recurred. Can you guess the diagnosis?

Dr. Prachi Nayak
Clinical Associate - Histopathology
Dr. Chandralekha Tampi
Consultant - Histopathology





Microscopy (H&E stain, 40x)
Proliferating epithelium under the corn



(H&E stain, 100x)
Inclusion bodies

Kindly email us your answers on medicaltimes@lilavatihospital.com

Guidelines Speak

This section highlights newer /updated guidelines published for better patient care and could be practice changing

1. Title : The Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3)
   Link: JAMA. 2016;315(8):801-810. doi:10.1001/jama.2016.0287
2. Title: Patient Blood Management Recommendations from the 2018 Frankfurt Consensus Conference
   Link: JAMA. 2019;321(10):983-997. doi:10.1001/jama.2019.0554

Corporate Outreach Programs

Health talk on Basic Life Support,
AED First Aid Training and Blood Borne Pathogens at
Honeywell Automation India Ltd

Blood donation camp at
Star & Zim Shipping Services India Pvt Ltd

Health Talk at Puratos Ingredients Pvt Ltd by
Dr. Rekha Agarwal on "Women's Problems and Solutions"

Health talk by Dr.Ritesh Agarwal for
Saksham Group on Thyroid and Hormonal Disorders

Few Honorable Mentions

- Dr. Prahlad Prabudesai, Consultant – Chest Medicine, Dr. Rajeev Redkar, Consultant – Pediatric Surgery and Dr. Rajesh Maniar, Consultant – Orthopedic Surgery were honoured as "The Distinguished NBE Teacher" in recognition for their ongoing commitments & dedicated teaching by Association of National Board Accredited Instituitons, Mahahrashtra, Gujarat, Goa region.
- Dr. Hemant Mehta, Consultant – Nephrology is awarded as "Heroes of AVATAR" for outstanding contribution in the field of Interventional Nephrology & won 3rd prize for podium presentation on "Central venous stenosis with total occlusion of central veins and no vascular access". Dr. Jhoomar, Junior Consultant – Nephrology and Dr. Bhagyashree, DNB resident – Nephrology won 2nd prize for poster presentation on "Clinical performance of two types of symmetrical tip long term hemodialysis catheters" and "Catheter related right atrial thrombus and its management" respectively at AVATAR (Association of Vascular Access & Interventional Renal Physicians) – 2019 , Interventional Nephrology Conference.
- Dr. Hrishikesh Pai, Consultant – IVF & Gynaecology is awarded with Honorary Fellow Ad Eundem of the College, FRCOG by the Royal College of Obstetricians and Gynaecologists for his exemplary academic and social work in the field of Infertility & Gynaecology.
- Prof Dr. Premanand Ramani, Consultant – Neurosurgery received Gomant Vibhushan Award – 2018 and was also conferred with "Saraswat Ratna Puraskar" by All India Saraswat Cultural Organisation on 20th July, 2019.
- Dr. Rajeev Redkar, Consultant – Pediatric Surgery has been elected as next President (President Elect) for MCIAPS (Maharashtra Chapter of Indian Association of Pediatric Surgeons).
- Dr. Falguni Shah, Consultant – Anesthesiology was one of the Editors and has authored a Chapter on "Awake Craniotomy" in NeuroAnesthesia Practical Tips Textbook.
- Doctors from Dept of Pediatric Surgery (Dr. Rajeev Redkar, Dr. Anant Bangar, Dr. Janani Krishnan, Dr. Vinod Raj, Dr. Swathi C, Dr. Shirin Joshi) have published article on "Role of Chemoports in Children with Hematological / Solid Tumor Malignancies - Technical Implications and Complications : An Institutional Experience " in Journal of Indian Association of Pediatric Surgeons.
- Doctors from Dept of Pediatric Surgery (Dr. Rajeev Redkar, Dr.Vinod Raj, Anant Bangar, Dr.Varun Hathiramani, Dr. Swathi Chigicherla, Dr.Shruti Tewari) have published article on "Role of ano rectal myomectomy in children with chronic refractory constipation" in African Journal of Paediatric Surgery.
- Dr.Vinod Raj DNB Resident – Pediatric Surgery won first prize in quiz competition at Pediatric Surgery Update conducted by Department of Pediatric Surgery, Maulana Azad Medical College. He presented paper on "Correlation between histopathology, liver function tests, TORCH titer and thyroid profile on outcome of biliary atresia patients post Kasai portoenterostomy" (Author : Dr. Rajeev Redkar , Co-investigators: Dr. Vinod Raj, Dr. Swathi Chigicherla, Dr. Shruti Tewari, Dr. Rahul Sharma, Dr. Shirin Joshi, Dr. C.S Tampi). This paper was adjudged as best paper at the 75th Annual conference of Bombay Medical Congress at INHS ASVINI.
- **Following publications were made by the Department of G.I Surgery**
  1. BMJ Case report on "Infrequent intrahepatic cystic neoplasm: dilemmas in diagnosis and management" by Dr. Dattaraj Budkule, Dr. Gunjan Desai, Dr. Prasad Pande, Dr. D. R. Kulkarni.
  2. BMJ Case report on "Intrapancreatic accessory spleen: an enigmatic activity" by Dr. Namita Chavan, Dr. Gunjan Desai, Dr. Chandralekha Tampi, Dr. Prasad Wagle.
  3. Review Article in Digestive Diseases on "Diagnosis and Management of Pancreatic Adenocarcinoma in the Background of Chronic Pancreatitis : Core Issue" by Dr. Rajvilas Narkhade, Dr. Gunjan Desai, Dr. Prasad Pande, Dr. Prasad Wagle.
- **Following publications were made by the Department of Cardiology**
  1. Diagnostic Potential of miRNAs and their Correlation with High Sensitivity Troponin-I Levels in ACS-NSTEMI Patients by Dr. Charan Reddy K V and Dr. Nitin S Gokhale
  2. Diagnosis and Management of Isolated Tricuspid Regurgitation: An Enigma by Dr. Charan Reddy K V, Dr. Prakash Sanzgiri, Dr.Vedanti Shingare and Dr.Vidya Suratkal

Educational Activities

Our doctors share their intellectual capital and expertise with others through CMEs using means like workshops, seminars, conferences, live telecast of procedures and surgeries, which they are performing. Our hospital has been accredited by Maharashtra Medical Council for conducting Continuing Professional Development (CPD).

No.	Topic	Department
1	Pharmacovigilance Workshop	Pharmacy
2	Anaesthesia for Cardiac patients coming for Non Cardiac Surgery	Anaesthesiology
3	G.I Update II: Jandice Management	G.I Surgery
4	Drug Resistant Tuberculosis	Chest Medicine
5	Pediatric Renal Replacement Therapy	Pediatrics
6	Kidney Health For Everyone Everywhere	Nephrology
7	NSSA- Prof.P.S.Ramani' s Annual Basic Course With Hands on Workshop.Topic:Cervical Spine, Theme: Pedicle Screw	Neurosurgery
8	Pediatric Respiratory	Paediatric Surgery

Drug Resistant Tuberculosis

Pediatric Renal Replacement Therapy

NSSA- Prof.P.S.Ramani' s Annual Basic Course With Hands on Workshop.Topic:Cervical Spine, Theme: Pedicle Screw

Pediatric Respiratory

Liver Transplant Clinic

Liver transplantation, the sole management option for end stage liver disease, is a complex procedure which needs a detailed knowledge ,exceptional skills and commitment on the part of each of the personnel involved to send the liver recipient and donor safely home. Our Liver Transplant Clinic is backed by an experienced team of Liver Transplant Doctors working in co-ordination with Hepatologist, Anaesthetist, Intensivist, Physiotherapist, nurses and technicians. Wide array of diseases like Liver, Pancreas & Biliary Tract are managed routinely. We do consultation & treatment for Medical & Surgical Jaundice, Chronic Hepatitis, Fatty Liver, Cirrhosis & Acute Liver Failure as well as Tumors involving Liver, Pancreas & Biliary Tract

At Lilavati hospital and Research Centre, we have recently performed below three liver transplant surgeries:
The first of these two cases was a 53 yrs old diabetic male patient with non-alcoholic fatty liver disease (NASH) related decompensated cirrhosis. He had four willing related donors which included his wife and daughters. The decompensation was in form of multiple episodes of ascites with spontaneous bacterial peritonitis and hepatic encephalopathy. His younger daughter was a match and donated 55% of her liver in this living related donor liver transplantation. The patient spent a few days in intensive care unit followed by isolation room during his recovery. The donor's recovery was uneventful and was discharged on 6th post-operative day. The recipient also recovered well. Both donor and recipient are doing well on follow-up at 3 months.

Our second patient, a daily wager was a case of decompensated chronic liver disease related to alcohol. He had no living donors but was fortunate to get a deceased donor liver. The surgery was performed through the night extending into early hours of morning. Since the liver was obtained from cadaver with inferior vena cava, it was implanted in recipient as a piggyback with no caval cross-clamping. His post-operative recovery was good and he is healthy and compliant on follow-up at 3 months.

The third patient was also suffering from NASH related cirrhosis at a young age. He had decompensation in form of ascites, spontaneous bacterial peritonitis, hepatorenal syndrome, hepatic encephalopathy and a history of fulminant hepatic failure in 2018. He did not have any suitable living donor in the family and was listed for a cadaveric donor organ. When a young 21 yrs old boy had an unfortunate brainstem death, his family expressed their wish to donate his organs. Liver and one kidney were transplanted in our hospital and one kidney and heart was sent to save lives of other recipients in another hospital. The liver recipient had a difficult hepatectomydue to massive caudate hypertrophy thereby requiring resection of inferior vena cava. The cadaver liver was implanted with inferior vena cava requiring end to endcavo-caval anastomosis. He recovered uneventfully and was discharged on post-op day 12. He is doing well at 1-month follow-up.

Feedback from one of our liver transplant patient Mr. Shaikh
Dr. Naimish Mehta is renowned liver transplant surgeon and I am lucky to have been operated by his team. As a human being; he is extremely down to earth and soft spoken. He had put in great efforts to convince me and my daughter (my donor) and made us comfortable throughout this life saving surgery. Dr. Mehta for me is the god sent angel and so is the entire team of Lilavati Hospital. Excellent and wonderful staff; highly knowledgeable and very friendly. The nurses and support staff showed utmost empathy. The pre & post-operative care provided to both of us was beyond our expectations. Also I would like to extend my gratitude to the entire management team of Lilavati Hospital for helping us throughout the administrative process.

Straight from the Heart - Patient Testimonials

Harkishan M Prabhaker
Lilavati Hospital is very well organised and has all the facilities that a patient would need. The doctors & the nursing staff and others are very positive & caring!

The entire staff, doctors & nurses takes good care of the patients. Proper medication is provided by doctors. Everything is provided here in a very systematic manner.
Sanket Sawant

Vishal Kumar Oraon
Efficiently handled all the healthcheckup tests with effective time management. Breakfast served was good. Overall had a nice experience!

I liked the professional & homely atmosphere; the excellent cafeteria for the attendant/relatives & the friendly nature of the entire staff!
Arunkumar Krishnan

Services Available

MEDICAL

Anesthesiology
Audiology and Speech Therapy
Cardiology
Chest Medicine
Chronic Pain Management
Dental
Dermo Cosmetology
Diabetology & Endocrinology
Gastroenterology
Diagnostics &Therapeutic Endoscopy
Haematology
Hair Transplant
Head and Migraine Clinic
Internal Medicine
Infectious Diseases
Lactation
Medical Oncology
Chemotherapy
Nephrology
Neurology
Psychiatry / Psychology / Neuropsychology
Physiotherapy
Pediatrics
Rheumatology
Sleep Medicine

SURGICAL

Bariatric Surgery
Cardiothoracic Surgery
Cochlear Implant Surgery
Colorectal Surgery
Diabetic Foot Surgery
Endocrine Surgery
ENT and Head & Neck Surgery
Gastro Intestinal Surgery
General Surgery
Gynecology, Obstetrics & IVF
Minimal Invasive Surgery
(Laproscopic Surgery)
Neuro Surgery
Onco Surgery
Ophthalmology
Orthopedics, Sports Medicine
Pediatric Surgery
Plastic & Reconstructive Surgery
Spine Surgery
Transplant: Cardiac, Corneal, Kidney & Liver
Urology, Andrology
Vascular Surgery

24 HRS IMAGING

CT Scan
Interventional Radiology
MRI
CATH Lab
Sonography
X-Ray

CRITICAL CARE

Intensive Care Unit (ICU)
Intensive Cardiac Care Unit (ICCU)
Neo-Natal Intensive Care Unit (NICU)
Paediatric Intensive Care Unit (PICU)
Paralysis & Stroke Unit
Surgical Intensive Care Unit (SICU)

DIAGNOSTICS

Audiometry
EEG / EMG
Health Check-up
BMD
Mammography
Non Invasive Cardiology
Nuclear Medicine
PET & SPECT CT Scan
Urodynamics

24 HRS LABORATORY SERVICES

Blood Bank
Histopathology
Microbiology
Pathology

OTHER 24 HRS SERVICES

Ambulance
Emergency
Pharmacy
Roshni Eye Bank

Benevolence

The social service wing of the hospital - SEWA serves to the health requirements of needy people. This department seeks to bridge the gap between the needy patients and the fast evolving medical technology. Various social activities such as free OPD, services to senior citizen, sending mobile vans to Adivasi areas to organize free health check-up camps, free camps are undertaken as an on-going process. The Roshni Eye Bank managed by Lilavati hospital is a well-equipped comprehensive centre for cornea removal, processing, storing, supplying and corneal transplantation.

Under this service Lilavati Hospital & Research Centre offers:

1. Free OPD
2. Health Check up Camps at Nana Nani Parks
3. Mobile Clinic
4. Roshni Eye Bank

BENEFICIARIES for F.Y 2018-2019	
Free OPD	18,991
Mobile Clinic	16,192

THANK YOU

Patrons for posing faith in your Trusted Healthcare Partner &
all our Doctors and Staff for making Lilavati Hospital
the preferred Healthcare Destination

Best Multispeciality Hospital – Critical Care of the Year 2019
by Prime Time
7th Global Healthcare Excellence Awards & Summit 2019

Ranked No.1 in Mumbai and Western Region & amongst Top 10 hospitals nationally in various specialities by All India Critical Care Hospital Ranking Survey 2019 published by The Times of India

Best Single Specialty Hospital – Cardiology of the year 2018
by Prime Time Global Healthcare Excellence Awards 2018

Winner of the prestigious
CNBC-TV18's INDIA HEALTHCARE & WELLNESS AWARDS
presented by ICICI Lombard
under the category
"CENTRE OF EXCELLENCE – ENDOCRINOLOGY"

Ranked Amongst Top 15 Best Hospitals
in India by THE WEEK
Hansa Best Hospitals Survey 2018

Trusted Hospital 2018
by Readers Digest

World Blaze

TOP 15 BEST HOSPITALS IN INDIA 2018

No.1 Single Location Multispecialty Hospital
in Mumbai

Important Telephone Numbers

Emergency / Casualty	**+91 22 2656 8063 / 2656 8064**
Admission Department	**+91 22 2656 8080 / 2656 8081**
	+91 22 2656 8082
AKD Counter	**+91 22 2656 8650 / 2656 8651**
Ambulance	**+91 97692 50010**
Billing - Inpatient	**+91 22 2675 1586**
Billing - OPD	**+91 22 2656 8052**
Blood Bank	**+91 22 2656 8215**
Blood Bank Medical Social Worker	**+91 22 2656 8214**
Cardiology	**+91 22 2656 8236**
Cath Lab	**+91 22 2656 8137**
Chemist	**+91 22 2675 1579 / 2675 1578**
CT Scan Department	**+91 22 2656 8044**
Dental	**+91 22 2656 8019 / 2656 8078**
Dermatology	**+91 22 2656 8020**
EMG / EEG	**+91 22 2656 8249**
Endoscopy	**+91 22 2656 8057**
ENT / Audiometry	**+91 22 2656 8232**
Health Check-up Appointment	**+91 22 2656 8354 / 2656 8355**
Hospital Board Line	**+91 22 6865 8000 / 6865 0600**
Hospital Fax	**+91 22 2640 7655**
IVF	**+91 22 2656 8226**
Medical Social Worker (SEWA)	**+91 22 2656 8361**
MRD	**+91 22 2656 8358 / 2656 8359**
MRI Department	**+91 22 2656 8066 / 2656 8067**
Nuclear Medicine / PET & SPECT CT	**+91 22 2656 8092**
OPD Appointment	**+91 22 2656 8050 / 2656 8051**
Ophthalmology	**+91 22 2656 8229**
Physiotherapy	**+91 22 2675 1536**
Central Report Dispatch Counter	**+91 22 2675 1620**
Sample Collection Room, Ground Floor	**+91 22 2656 8030**
TPA Cell	**+91 22 2656 8089**
TPA Fax	**+91 22 2640 5119**
Transplant Co-ordinator	**+91 22 2656 8362**
Urodynamics	**+91 22 2656 8021**
Visa Section	**+91 22 2656 8248 / 2656 8244**
X-Ray, Sonography Department	**+91 22 2656 8031**

Key Medical Equipments Installed In Recent Past

Equipment name	Department	Company
Cardiac CathLab System	CathLab	Philips BV – Netherlands
St.Jude Optis Mobile HD-OCT System	CathLab	St Jude Abbott USA
Radial Artery stabilization system	CathLab	Adept Medical - USA
Portable Ultrasound system	CathLab	GE Healthcare – USA
Digital Mammography system with Tomosynthesis	Radiology	Hologic Inc USA
Neuro Surgical 3D-HD Operating Microscope	Main OT	Carl Zeiss GmBH Germany
Harmonic Scalpel/Vessel Sealing device	Main OT	Johnson & Johnson – USA
High intensity operating Headlights	Main OT	Luxtec Inc – USA
Anesthesia Delivery system with ET control	Main OT	GE Healthcare – USA
Heart & Lung Machine with Heater Cooler	Main OT	Sorin – Germany
Image-1 HD Laproscopy Camera System	Main OT	Karl Storz GmBH – Germany
Craniotomy system	Main OT	Aesculap GmBH – Germany
3D-HD Laproscopy Camera System	ObyGyn OT	Karl Storz GmBH – Germany
Portable 2D-Echo System with TEE	Cardiology Lab	GE Healthcare – USA
7-Day Holter/Event Recorders	Cardiology Lab	Motara Inc – USA
Gene-Expert Tb/Molecular testing system	Molecular Lab	Cephied Inc – USA
190-series HD Flexible Endoscopy system	Endoscopy	Olympus Corporation – Japan
68-Channel Sleep Lab System	Sleep Lab	Philips Inc – USA
4-Channel EMG/EP System	Neurology	Nicolet Inc – USA
BERA (Brain stem evoked response) System	ENT OPD	GSI Audera – USA
Ultra Low temperature Plasma Freezer	Blood Bank	ThermoFisher – USA
Hand Held Fundus Camera	Opthal OPD	Carl Zeiss GmBH – Germany
Vein Finder Device	ICU/Wards	Accuvein – USA
Transport Ventilators	ICU/ICCU	ResMed – USA
Chest Compression Device	Emergency/ICCU	Schiller AG – Switzerland
Automated Ankle Brachial Index monitor	OPD	MESI Medical – Slovenia
WatchPAT Sleep Apnea testing unit	Sleep Lab	Itamar Medical – Israel
CoaguChek INR monitor	Floor Wards	Roche diagnostics

Doctors Associated with Lilavati Hospital

Andrology
Dr. Shah Rupin S.

Anaesthesiology
Dr. Baxi Vaibhavi
Dr. Budhakar Shashank
Dr. Gandhi Nisha
Dr. Gaiwal Sucheta
Dr. Gawankar Prakash
Dr. Kharwadkar Madhuri
Dr. Khatri Bhimsen
Dr. Kulkarni Satish K.
Dr. Mahajan Anjula
Dr. Mascarenhas Oswald
Dr. Kothari Namrata
Dr. Patil Prajakta
Dr. Shah Falguni
Dr. Waradkar Samidha

Audiology & Speech Therapy
Mr. Bhan Satyan
Ms. Gorawara Pooja
Ms. Parulkar Bakul

Bariatric Surgery
Dr. Shah Shashank

Blood Bank
Dr. Saraswat Shubhangi

Cardiovascular & Thoracic Surgery
Dr. Bhattacharya S.
Dr. Chaudhri Babar
Dr. Honnekeri Sandeep T.
Dr. Jaiswal O. H.
Dr. Joshi Suresh
Dr. Kumar Pavan
Dr. Mehra Arun P.
Dr. Nand Kumar
Dr. Pandey Kaushal
Dr. Rachmale G. N.
Dr. Ravishankar V.
Dr. Vichare Sanjeev

Cardiology
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Dr. Bang Vijay
Dr. Dargad Ramesh R.
Dr. Gokhale Nitin S.
Dr. Jhala Darshan
Dr. Kothari Snehal N.
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Dr. Mehan Vivek
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Dr. Menon Ajit R.
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Dr. Nabar Ashish
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Dr. Pinto Brian
Dr. Pinto Robin
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Dr. Rao Anand
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Dr. Samuel K. Mathew
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Dr. Shah Chetan
Dr. Suratkal Vidya
Dr. Vijan Suresh
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Dr. Vora Amit
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Dr. Mehta Sanjeev K.
Dr. Prabhudesai P. P.
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Dr. Rang Suresh V.

Colorectal Surgery
Dr. Chulani H. L.

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Dr. Deshpande Dilip
Dr. Gala Dhimant
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Dr. Khatavkar Arun
Dr. Kamdar Rajesh J.
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Dr. Mehta Nimesh
Dr. Oberai Chetan
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Diabetic Foot Surgery
Dr. Rege Tushar

Diabetology
Dr. Panikar Vijay

Diabetology & Endocrinology
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Ms. Mallapur Shruti
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