LILAVATI HOSPITAL
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Lilavati Hospital and Research Centre

More than Healthcare, Human Care

NABH Accredited Healthcare Provider

Contents

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Editorial

At the onset I would like to thank each one of you for the immense support extended for previous editions of Lilavati Hospital Medical Times (LHMT). With your participation we present to you yet another insightful issue of LHMT.

We all might agree that the level of Indian healthcare system varies from states and demographic segments within the population. Though this challenge is unique and complex it yet offers opportunity to all the healthcare professionals & institutes to largely contribute for better healthcare services across the country. This edition of LHMT offers insight into the new initiatives taken by our hospital and a variety of informative case reports presented by our experts in Cardiovascular and Thoracic Surgery, Pediatric Surgery, Pediatrics, Pain Management & Radiology.

Besides this we have shared our straight of the heart section that illustrates the appreciations received for our relentless efforts. We have also enclosed details of recent CMEs that are regularly conducted to spread information to the medicos who want to keep pace with the cutting edge technology and the latest medical techniques practiced.

I would be glad to receive any feedback from you which will help me in making LHMT event better. We all at Lilavati Hospital and Research Centre always strive to improve in all areas of life and I look forward for your involvement to a greater extend to broaden our reach to larger section of people and taking LHMT to the next possible level.

Dr. Sanjeev Mehta
Chief Editor

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:

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Principal Advisor to the Board of Trustees and
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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 300 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.

Lilavati Hospital Today

Lilavati Hospital is known for setting the trends for others to follow. Below mentioned few developments are testimony of this.

LILAVATI HOSPITAL Has Successfully Launched The

LIVER TRANSPLANT CLINIC

HIGHLIGHTS OF THE CLINIC

- Transplant Team's Cumulative Experience of Over 2000 Liver Transplants
- Modular Operation Theatres
- Dedicated Liver Intensive Care Unit (LICU)
- State-of-the-Art Diagnostics & Therapeutic Facilities
- Backed by Experienced & Well Trained Team

• Gastroenterology • Gastrosurgery • Anesthesiology • Critical Care • Technicians • Nurses

For appointments & details contact

Coordinator Liver Transplant Clinic:

Dr. P. V. Battalwar

Call: +91 9930359546 / 022-26568387 / 022-26568000 • Email: drpvbattalwar@lilavatihospital.com

Lilavati Hospital

introduces

HEART Failure Clinic

Offering Customized Patient Care

For all patients with **Heart Failure** with low or normal ejection fraction

For details contact:

022-26568354/8355

Heart Failure Clinic

Key Features

- Specialized biochemistry tests to ascertain prognosis, therapeutic modalities & long term implication on patient with heart failure.
- Well-equipped non-invasive Cardiology department.
- Team of dedicated well-qualified Cardiologists backed by Heart Failure co-ordinator.
- Customized patient care by trained heart failure rehabilitation team.
- Dedicated Dietician for standardized dietary regimen.
- Advance Electrophysiology, Endocrinology & Sleep lab with specialized consultants.

HYPERTENSION CLINIC

Objectives

- To standardize hypertension management
- Avoid misdiagnosis
- Avoid under and over treatment of hypertension
- Scientifically customize hypertension management

We Standardise
Hypertension Care with Global Guidelines

HYPERTENSION CLINIC

Remember, treating high BP early saves life

HAIR TRANSPLANT CLINIC

Salient Features

- All techniques of hair transplantation available under one roof : Follicular unit transplant using strip harvest (FUSS/FUT), Follicular unit extraction (FUE), non scalp donor harvest – body hair transplant (BHT).
- Apart from scalp; eyebrow, mustache and beard restoration are also done using hair transplantation.
- Camouflage treatments for thinning hair, scar concealing, eyebrow loss with Scalp Micro Pigmentation (SMP)
- Surgery performed by qualified and experienced Hair Restorative Surgeons having over 18 years of hair restoration experience.
- Safe & Evidence based approach.

FOOT AND ANKLE CLINIC

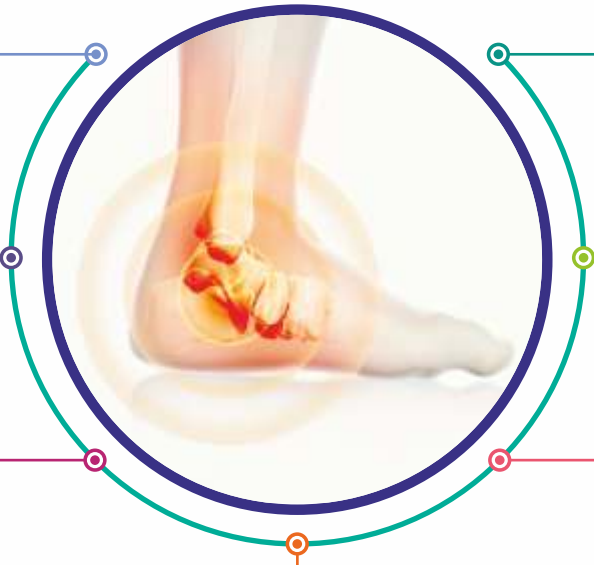
Services Offered

Detailed Examination

- Walking / Running Pattern
- Callosity (Hard Skins) / Ulcers
- Diabetic Foot

Footwear Correction

Specialized footwear consultation and individually customized insoles or specific footwear suggestion for foot biomechanic correction



Arthroscopic (Key hole surgery)

Ankle Pathology •
Heel •
Foot •

Fracture Fixation of Foot & Ankle

Fractures of small bones of feet are complex and need special expertise to enable early return to work.

Minimally Invasive Surgery

- Achilles Tendon Rupture
- Haglund's Syndrome

Fore Foot (Toe) Correction

Bunion •
Toe Deformity Correction •
(Claw, Hammer, Mallet or Crooked Toes)
Hallux Varus •

Foot Deformity Correction

• Flat Foot Correction • Cavus (High Arch) Foot Correction

* Arthroscopic and Minimally Invasive Surgery enables early return to work / sports

VARICOSE VEIN CLINIC

Facilities Available Under One Roof

Conventional surgical facilities

MR Venography

Venous Doppler

Cath lab facility

Sclerotherapy

Consultation by Vascular surgeon

Lasers

URODYNAMICS

Lilavati Hospital & Research Centre has installed the Urodynamics system from LABORIE Canada, a leading manufacturer in the field. The hospital now offers a complete set of Urodynamic studies at the new setup. Urodynamic studies provide extremely valuable diagnostic data for any of the bladder dysfunctions.

Typical Urodynamic testing consists of below:

- Uroflowmetry
- Filling Cystometry
- Pressure-flow study
- Urethral Pressure Profiles (UPP)
- Valsalva Leak Point Pressure (VLPP)
- Electromyography (EMG)

PNEUMATIC TUBE SYSTEM (PTS)

Our hospital has recently introduced the Pneumatic Tube System (PTS) to facilitate transportation of patient medicines and samples to various areas in the hospital whereby minimizing the delay in the services to the patients.

Key Features:

- It has RFID tracking system to ensure that the carrier dispatching patient samples is the same which arrives in the laboratory for testing.
- The system works on window based operating system whereby the location of the carrier can be easily monitored.
- Multiple carrier transportation for long distance and dedicated empty carrier return.
- Carrier sent & received reports can be generated with timings.

Novel Therapies for Diabetic Nephropathy

Dr. L. H Suratkal, MBBS, MD, DNB (Nephrology)

Diabetes mellitus (DM) remains the leading cause of morbidity and mortality in the world. It is estimated that the global prevalence of diabetic individuals will rise to 7.7% (439 million) in 2030.India will continue to remain the diabetes capital of the world with estimated 80 million afflicted. Diabetic nephropathy (DN) affects one-third of individuals with DM. It is the leading cause of end-stage renal disease worldwide and accounts for 42% of all patients on renal replacement therapy in the US.

CURRENT STANDARDS OF THERAPY:

The current standards of therapy for Diabetic nephropathy involve stringent control of blood pressure via RAS blockade and control of hyperglycemia.

Glycemic optimization

It is noted that isolated pancreatic transplantation in patients with DN has lead to histologic regression at 10 years follow-up. The DCCT (Diabetes Control and Complications Trial) in type 1 DM and the UKPDS (United Kingdom Prospective Diabetes Study) in type 2 DM showed benefits of tight glycemic control and extended observational data from the EDIC (Epidemiology of Diabetes Interventions and Complications) study on the original DCCT cohort clearly exhibited durability of early intensive diabetic regulation beyond 18 years. More recently the ADVANCE (Action in Diabetes and Vascular Disease: Preterax and diamicron Modified Release Controlled Evaluation) trial powered by 11140 type 2 DM patients showed benefits of intensive glycemic control in reducing both micro and macro-albuminuria and also showed a 65% reduction of ESRD. However these findings need to be taken with a pinch of salt as studies like ACCORD (Action to Control Cardiovascular Risk in Diabetes) and ADVANCE raised alarms of excessive mortality in the intensive therapy arm due to hypoglycemia.

BP control: RAS blockade

Stringent BP control with any agent retards the onset and progression of DN. Observational data from the UKPDS revealed that every 10mm Hg decrement in BP translated to a reduction of any diabetic related complication and death by 12% and 15 % resp. Post hoc analysis of the RENAAL (Reduction of Endpoints in NIDDM with the Angiotensin 2 Antagonist Losartan) trial revealed a 6.7% increased risk of ESRD or death for every 10 mmHg increment of systolic BP. RAS blockers like ARBs and ACEi are superior to other antihypertensive by virtue of their ability to reduce intraglomerular pressure and proteinuria by preferentially dilating the efferent arteriole. The MARVAL (Microalbuminuria Reduction with Valsartan) study demonstrated the superiority of valsartan to amlodipine in reduction of microalbuminuria.A sub study of IRMA-2 (Irbesartan in patients with type 2 diabetes and Microalbuminuria) trial demonstrated the

effect of RAS blockade in reverting microalbuminuria may persist even after withdrawal of the drug. Both the IDNT (Irbesartan Diabetic Nephropathy Trial) and the RENAAL study showed that adding RAS blockers to the treatment approach of DN slows its progression. Further manipulation of the renin-angiotensin-spironolactone axis has been attempted by combination of ACEi and ARBs, direct renin inhibitors (DRI) and ARBs and addition of mineralocorticoid antagonists (MRA). Enthusiasm for combination therapy is on the wane after the ONTARGET study and more recently the VA NEPHRON-D study. Initial enthusiasm for combination with DRI after the AVOID trial also died down after the premature termination of the ALTITUDE study. Though MRA (both nonselective like spironolactone and selective like eplerenone) may reduce proteinuria the jury is still out in its usage because of the increased risk of hyperkalaemia. FINERENONE a highly selective MRA has been found useful in reducing albuminuria without provoking hyperkalaemia in the ART-DN study

NOVEL THERAPEUTIC MODALITIES

Despite optimal RAS inhibition coupled with stringent BP and glucose control, patients still relentlessly progress to ESRD. Hence there is search for novel therapeutic modes which exploit the other pathways of intracellular signaling.

- **Pleotropic renoprotective effects of antidiabetic drugs beyond glycemic control**
  Inspite of experimental evidence, thiazolidines (TZD) or PPAR gamma agonists have showed varied results in clinical studies. In fact post hoc analysis of PROactive (Prospective Pioglitazone clinical Trial in Macro-vascular Events) noted a greater decline with pioglitazone. In addition there have been some safety concerns.DPP-4 inhibitors have shown promise in reducing albuminuria. Linagliptin is the most promising in this class. The ongoing CARMELINA study explores the cardiovascular and renal benefits of linagliptin .SGLT-2 inhibitors have demonstrated the ability to ameliorate the features of DN. In the EMPA-REG study empaglifozin was found to reduce cardiovascular morbidity and mortality .In the CANVAS study canaglifozin achieved similar results. The CANTATA-SU trial is the only published report of benefits of canaglifozin in renal endpoints. The ongoing CREDENCE trial should provide clear insights into the renoprotective efficacy of SGLT-2 inhibitors.

- **Promising molecules that have fallen by the wayside**
  Hemodynamic and metabolic factors, among which chronic hyperglycemia and dyslipidemia are assumed to play pivotal roles, interact to contribute to the development of DN. The production of advanced glycation end products activates polyol and the hexosamine pathways to stimulate the formation of protein kinase C. Mitochondrial overproduction of superoxide exacerbates oxidative stress and promotes inflammation and fibrosis, which induce both functional and structural injuries to the kidney. The novel therapeutic agents have tried to block these intracellular signaling.

- **Bardoxolone methyl,** an antioxidant inflammatory modulator was found to be beneficial in increasing the GFR in the BEAM trial. However the subsequent BEACON trial had to prematurely terminated due to safety concerns.

- **Sulodexide,** a purified mixture of sulfated glycosaminoglycan polysaccharides has been demonstrated in animal experiments to ameliorate DN. The Di.N.A.S.study demonstrated the ability of sulodexide to reduce albuminuria. However the Sun-MACRO study was terminated early because of a lack of benefit.

- **Perfenidone,** an antifibrotic agent has shown promise in animal experiments. Even in a small pilot study of 77 patients it was found capable of increasing the GFR when compared to placebo. However there have been no further trials in this molecule.

- **Ruboxistaurin,** a protein kinase c beta isoform inhibitor has been found useful in a pilot study of 123 patients in reducing albuminuria and maintaining stable renal function compared to placebo. However this was a small pilot study and small limited up period. Further studies are needed.

- **Vit D receptor activators,** was found to be useful for reducing albuminuria in the VITAL study, however very high doses were required.

- **Selective endothelin receptor antagonism** has been shown to ameliorate DN in animal experiments. However the ASCEND trial with avosentan had to be prematurely terminated due to adverse cardiovascular side effects including CCF and fluid overload. The SONAR study using a more selective ETA blocker atrasentan is underway.

- **DARA** (dual action receptor antagonist) .Molecules like sparsentan can block both AT_1 as well as ET receptors. In the DUET study sparsentan is being tested against irbesartan in FSGS. More studies are required in DN.

It is hoped that some of these novel molecules will fulfill the unmet needs of the current standards of therapy to prevent the inexorable march of diabetic nephropathy.

Research Report - Cardiology

A Study on Beyond Cardiac Troponins - The Road Ahead

Dr. Charan Reddy, MD, DNB, MBA, DNB trainee final year (Cardiology)
Dr. Nitin Gokhale, MD, DM (Cardiology)

Myocardial infarction (MI) remains the most common cause of morbidity and mortality in India. In clinical practice, MI diagnosis is based on electrocardiogram (ECG) findings and measurements of blood biomarkers, among which most widely used for myocardial damage/ischemia are high sensitive cardiac troponins (hs-cTns), hs-cTnI/T.[1] However, troponin assays suffer from the lack of specificity and delay in release into the circulation as often as >4 hrs after the ischemic event.[2,3] The dictum in cardiology says "time saved is muscle saved".Hence, there has been a concerted effort to investigate more specific biomarkers since the last decade.The emerging studies have demonstrated that microRNA based molecular methods hold a great promise for the early and accurate prediction of acute myocardial infarction (AMI) in non-ST-segment elevation myocardial infarction (NSTEMI) patients.

MiRNAs are small ~22 nucleotides long single-stranded non-coding RNAs able to down-regulate the expression of protein-coding genes, either through inhibition of the translation of target messenger RNAs or induction of their degradation.[1] In the heart, miRNAs are widely expressed and regulate multiple physiological and pathological pathways such as apoptosis, fibrosis or angiogenesis.[1] The discovery by Mitchell and co-workers that miRNAs are present and stable in the bloodstream triggered a wealth of investigations of their biomarker potential.[4] These novel molecules released from damaged heart muscle cells at first instance of myocardial ischemia (<1 hr).

Our hospital group has recently investigated the levels of two most cardiac specific miRNAs, miR-208a and miR-499 in the prediction of AMI in a small group of NSTEMI patients (n=60) admitted at our hospital. Normal healthy patients (n=10) were used as controls. The results were compared with high sensitive troponin-I (hs-cTnI) levels measured at the same time in the serum of same patients. The results indicated that these two miRNAs reached peak at about 1 hr after AMI, while hs-cTnI showed a peak only after 4 hrs (Fig-1), suggesting these miRNAs can be used as early predictive biomarkers for AMI than hs-cTnI.

Advantages:

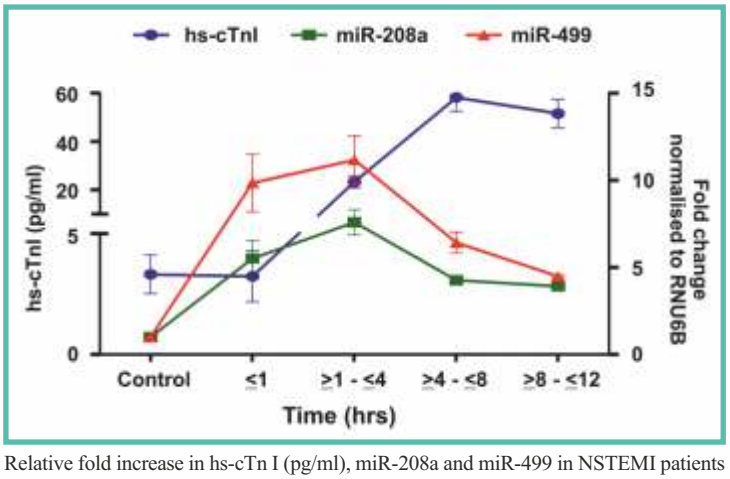
1. High sensitivity (>95%) and specificity (>99%)as compared to other biomarkers
2. Release faster into the blood circulation in measurable quantities than troponins (1 hr against 4 hrs)
3. Unlike troponins, repeated blood sampling is not required for miRNA quantification after admission.
4. Shorter stay in hospital/ emergency room

Disadvantages:

1. Currently the PCR based method is expensive and time consuming (2-3 hrs against 20 min).

Conclusion:

Future research would help in finding less expensive and faster miRNA detection methods. We believe miRNA based approach holds a great promise in the early prediction of ischemia in NSTEMI patients thereby saving countless lives.



Relative fold increase in hs-cTn I (pg/ml), miR-208a and miR-499 in NSTEMI patients presented to emergency department (ED) measured by qPCR within 1 hr or between 1-4, 4-8 or 8-12 hrs after onset of chest pain. Relative fold increase in miRNAs (miR-208a and miR-499) and hs-cTnI was peaked within 1-4 hrs and between 4-8 hrs respectively after the onset of chest pain. The values are mean ± SD of six observations from three independent experiments performed on three different days. Student "t" test and One-way ANOVA applied to compare the differences between control and patients.

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Destination Therapy with the Heartware HVAD ventricular assist device for systemic ventricular failure with transposition of the great arteries corrected by the Mustard Procedure

Dr. Babar B Chaudhri, MA, MD, FRCS (CTh)

Abstract

Systemic ventricular failure is a recognised late consequence of the atrial switch procedure for transposition of the great arteries. There is a significant population status post atrial switch. We report one such patient with a failing Mustard procedure who was treated by surgical implantation of a Heartware HVAD rotary blood pump into the systemic ventricle.

Introduction

Following atrial correction for transposition of the great arteries late systemic ventricular failure may occur[1,2]. The pumping chamber in the systemic position is the morphological right ventricle and is prone to failure in this situation. In contrast the morphologically left ventricle is well placed in the pulmonary circulation. These are an attractive subset of patients in terms of candidacy for destination therapy for ventricular assist device placement. This is especially reinforced by the paucity of donor hearts available for transplantation. We report the successful implantation of the Heartware HVAD ventricular assist device (Heartware Inc, Framingham, MA) into the failing systemic ventricle as a strategy for destination therapy.

Case report

The patient was a 37 year old male with transposition of the great arteries and left SVC. He was palliated with a right classical Blalock Taussig (BT) shunt. At 18 months of age he underwent atrial switch with a Mustard procedure and take down of the BT shunt. In the interval leading to this presentation he sustained a perioperative right hemiplegia with full resolution and severe failure of his systemic ventricle (morphologically right ventricle) with severe tricuspid regurgitation. A biventricular pacemaker and automated implantable cardioverter defibrillator were implanted. There was occlusion of the SVC baffle. There was evidence of end organ dysfunction. His renal function was impaired (creatinine 4.5 mg/dl). Echocardiography showed impaired biventricular function and severe tricuspid regurgitation. Cardiac catheterization was undertaken. This showed that the systemic Sa02 of 95% and mixed venous of 50% with no shunts. The systemic venous pressure was 15mm Hg with the pulmonary/morphologically left ventricular pressure of 80/14. The mean PA was 46mmHg. The systemic/morphologically right ventricular end diastolic pressure was 14-18mmHg. The calculated PVR was in excess of 10 Wood units. The cardiac index of 2l/min/m2.

The decision was taken to implant a VAD and support the failing systemic ventricle. Full cardiopulmonary bypass was instituted via femoral venous and arterial cannulation. Cooling was commenced to 32°C. Repeat sternotomy was safely performed. The inferior wall of the morphological RV was chosen. The sewing ring was implanted in this position. The heart was fibrillated, the aorta was not cross-clamped. A considerable amount of trabeculated myocardium was excised in order to allow unobstructed inflow into the VAD. The inflow was carefully positioned to face the atrioventricular valve. The outflow graft was anastomosed to the ascending aorta. The position of the inflow cannula was confirmed by intraoperative transoesophageal echocardiography (TOE).The VAD was started once weaned from cardiopulmonary bypass. TOE confirmed adequate decompression of the systemic ventricle and a balanced position of the interventricular septum. The total cardiopulmonary bypass time was 52 minutes.

The patient was managed in the intensive care unit. His circulation was managed with an infusion of milrinone which was discontinued. Anticoagulation was commenced with warfarin and anti-platelet therapy. He was safely discharged home and remains well and active.

Discussion

Atrial switch operations for transposition of the great arteries has been superseded by the arterial switch operation[3]. There is a significant

population of individuals status post atrial switch, who survive beyond the second decade of life. 30 year survival is 79.3%[1,2]. The incidence of sudden death is 7%[2]. Right ventricular failure has been observed in long-term cohorts ranging from 18% to 44%[1,2]. Baffle obstruction, occurred much more frequently in patients with a Mustard procedure. Usage of VADs in the setting of congenital heart disease is extremely rare[4-6]. LVAD flow is dependent upon RV function to facilitate device inflow. For all indications for LVADs, a major limiting factor is the unpredictable nature of the RV which may fail and thus necessitate biventricular support[7]. Their use in patients with a failing systemic ventricle post atrial switch is attractive particularly as the durable morphological LV is in the pulmonary position, thus making it less likely to fail. The Heartware HVAD is a third generation rotary blood pump with magnetically levitated rotors. It has the advantage of being small with a short inflow cannula. This allows for complete intrapericardial placement, eliminating the need for a pump pocket and ease of surgical implantation. In addition it is easy to orientate the inflow cannula to face the atrioventricular valve, thereby optimizing ventricular unloading. Initial clinical experience with this device has been reported as extremely favourable[8] and longer term data is emerging regarding its efficacy. In particular this device has been implanted in the right ventricle as well as the left in one patient, and has been reported as providing biventricular support[9]. In the technique described by Strueber et al the outflow graft of the RVAD was constricted in order to provide sufficient afterload to allow the pump to generate requisite physiological flows. In the situation of a patient following atrial switch, the morphological RV is already working against systemic vascular resistance and thus this modification is not required.

The growing incidence of heart failure worldwide is coupled to a lack of suitable heart donors for transplantation. This has generated demand for durable mechanical blood pumps. We have demonstrated the utility of VAD implantation using the Heartware HVAD in a patient with a failing Mustard procedure.

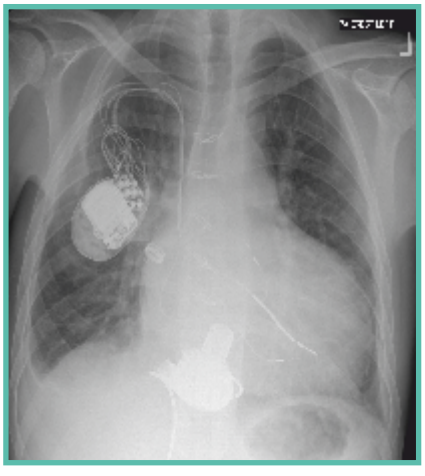

Figure 1: Chest radiograph showing the implanted Heartware HVAD posteriorly positioned in the systemic ventricle.

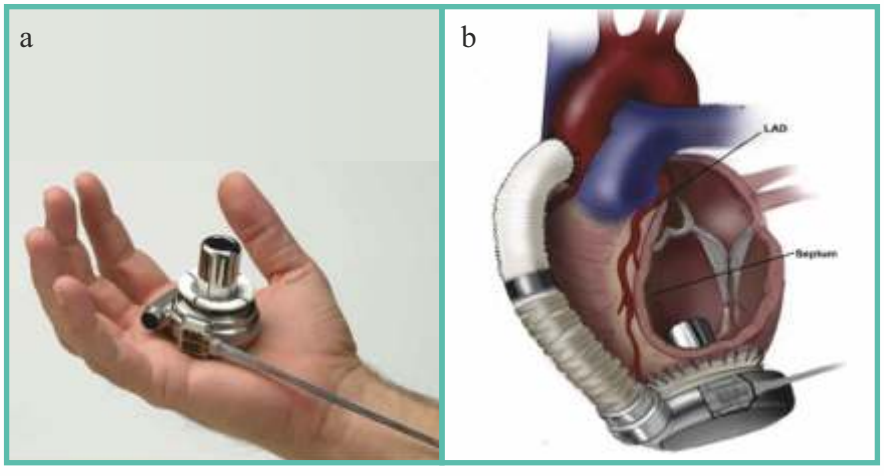

Figure 2: HeartwareTM HVAD Fully Implantable LVAD miniaturized centrifugal flow pump

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Case Report II: Paediatric Surgery

Infantile haemangioma with intra-orbital extension in a baby-conservative management.

Dr. Shirin Joshi, MS, MCh – Pediatric Surgery
Dr. Swathi C, 4th year Resident – Pediatric Surgery
Dr. Ashish Doshi, MS (OPHTH), FAICO (Paediatric Ophthalmology)
Dr. Rajeev Redkar, MCh (Paed. Surg), FRCS, DNB, MS (General Surgery), FCPS, IAS

Abstract:
Haemangioma is a benign vascular neoplasm. They are most common tumors in infancy period. They are characterized by early proliferation and followed by spontaneous involution.We report a case of a 2 month old baby with facial haemangioma having intra-orbital extension which was managed conservatively with propranolol.

Introduction:
Infantile haemangioma affect 4-10% of the infants. Females are three times likely to be affected than males. They are cutaneous and extra cutaneous. The cutaneous variants occur in head and neck, trunk and extremities. If present in inconspicuous sites, they are left untreated and allowed to follow their natural course. Capillary hemangiomas are more frequent in premature or low-birth-weight infants. However, problems in hemangiomas occur when they ulcerate or have massive growth or cause disfigurement or impact normal function or cosmetic development[1,2]. Common locations for complicated haemangioma include the face, ear, orbit, and airway. These haemangioma subsequently require early and aggressive treatment for ideal functional and cosmetic outcomes[4].

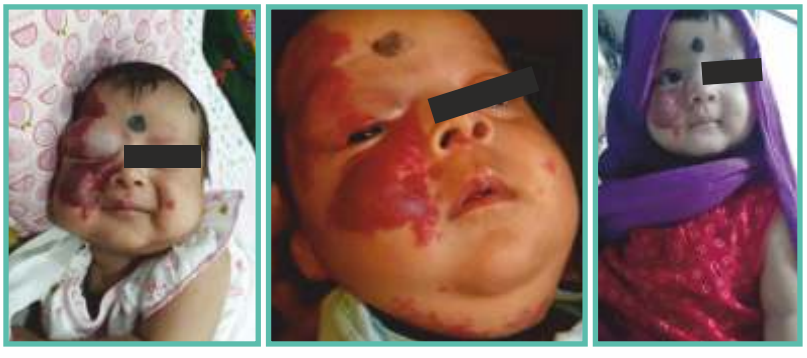
Case details:
Two month old second twin female baby presented with red coloured lesions on right side of the face involving cheek, chin, eye, forehead, neck and left cheek. The baby was conceived by in vitro fertilization and delivered through LSCS. The baby was born at 33 weeks of gestation with birth weight of 1.8Kg with uneventful events till fifth day of life. The other twin is normal. The mother was known hypertensive and on medications from last 5 years. Then baby developed small red coloured macule on medial side of cheek and forehead. It gradually increased in the size, intensity of the colour and extended over the orbit. New lesions developed over lateral side of cheek, neck and left cheek. There was no discharge from the lesions, not associated with pain and itching. There were no lesions over abdomen and lower limbs. The baby never had convulsions, weakness, drowsiness and failure to thrive. In due course of time, the baby was not able to open the right eye as the lesions extended in the orbit. The baby had intermittent discharge from the right eye.

MRI orbit and brain was done to know the extension and pressure effects of the haemangioma and showed a large soft tissue mass lesion encasing the right eye ball and completely filling the intra-conal as well as extra-conal retro bulbar space. The optic nerve, extra-ocular muscles were completely encased by lesion. Proptosis of the right eye with stretching of the optic nerve was seen. MR Angiogram showed prominent right ophthalmic artery supplying the large right orbital soft tissue mass lesion. Ophthalmologist suggested Tobramycin eye drops. We started on proponolol at minimum dose of 1 mg/Kg/day in two divided doses. The child was observed for hypoglycaemia, vomiting, regurgitation (GERD) and hypotension however, there were no side effects. The lesions decreased in the size and intensity of the colour in the first week and gradually a good response was seen. The child was followed up on OPD basis after two weeks. There is a significant decrease in the size of the lesion. The baby was able to open the right eye with no discharge and vision is normal. Currently the baby is having intermittent divergent squint & amblyopia hence started on right eye occlusion.

Discussion:
Infantile haemangioma are most common vascular tumors[3,4]. They characteristically exhibit early rapid growth followed by slow involution. Rapid growth during the neonatal period is the hallmark of infantile hemangiomas. They become elevated, dome

shaped, lobulated, plaque like, tumoral or any combination of them. The growth occurs mostly during the first 4-6 months of life. Proliferation slows considerably between 6-12 months of life. The usual size of haemangioma is between 0.5 and 5 cm however may range from pinhead to greater than 20cm in diameter. Most remain well circumscribed and focal. Cutaneous haemangioma goes through different stages involving blanching, shallow ulceration and fine telangiectasis. Complete involution will occur in 50% of infantile haemangioma by the age of 5 years and 70% by age 7 years. Complete involution may take an additional 3-5 years in the remainder.The large peri-ocular lesions frequently cause amblyopia, strabismus and optic atrophy. Disfigurement, corneal exposure and optic nerve compression can all occur and may frequently worsen during the rapid proliferative phase. Visual indications for the treatment include occlusion of the visual axis, amblyogenic anisometropia, optic nerve compression or significant proptosis causing exposure keratopathy. MRI can delineate the location and extent of cutaneous and visceral haemangioma. It can differentiate proliferating haemangioma from other high-flow vascular lesions. They could be managed medically and/or surgically.

Propranolol was recently found to lighten and reduce the size of hemangiomas during the proliferative phase of development[5]. Theories suggest that propranolol impacts hemangiomas growth through the induction of apoptosis and anti-angiogenic activity. Proposed mechanisms include vasoconstriction, decreased expression of vascular endothelial growth factor (VEGF) and induction of apoptosis of capillary endothelial cells. Disease improvement occurs near 2 to 4 weeks from the onset of the therapy.



The other medical treatment options include Hyper-tonic saline, Bleomycin, OK 432 (Picinabil) and CO_2 Lasers. The effects of bleomycin on hemangiomas are believed to destroy the proliferation of vascular endothelial cells. The onset of involution is usually heralded by a change in color from bright red to purple or gray after treated with bleomycin for several times[6].

The surgical indications for proliferating hemangiomas are[7] (1) hemangiomas located on the tip of nose and lip that do not respond well to other treatments, (2) hemangiomas in the eyelids that impair sight and aesthetics, (3) hemangiomas occurring on the forehead and (4) repeated bleeding from the hemangiomas (5) hemangiomas in the airway.

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Case Report III: Paediatrics

An Uncommon Case of Neonatal Anemia with Jaundice

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Dr. Manish Kumar Arya, MD (Pediatrics)
Dr. Rajesh Kunchelikar, DCH, DNB Trainee
Dr. Swati Kanakia, MD, DCH, PhD (Pediatric Hematology)
Dr. M.R. Lokeshwar, MD, DCH

Abstract
Newborn infants with hereditary spherocytosis (HS) can develop anemia and hyperbilirubinemia.HS is an important cause of direct antiglobulin test (direct Coombs) negative haemolytic anemia requiring erythrocyte transfusion in the first months of life.Early diagnosis and appropriate intervention of HS can help prevent development of hyperbilirubinemia and anemia thus avoiding associated morbidity. Here, we present a case admitted to our hospital's PICU with history of jaundice on day three and severe anemia at week six of life. The objective of this presentation is to present narrative review and appraise the Paediatricians for considering the HS an important aetiology of neonatal anemia with jaundice.

Introduction
Hereditary spherocytosis (HS)is a heterogeneous inherited disorder in which abnormalities of red blood cell structural proteins resulting in loss of red cell membrane leading to spherical shaped, hyper dense, poorly deformable red blood cells with a shortened red blood cell life span. Hereditary spherocytosis is a rare cause of neonatal anemia and hyperbilirubinemia. Medline search from 1966 onwards revealed from India suggesting either lower incidence or lesser reporting in available medical literature.

Case details
One and half months old male infant admitted to our PICU with history of paleness of body and yellowish discoloration of eyes for two days. Baby was on breast feeding, tolerating feeds well with no history suggestive of sepsis, bleeding manifestation or passing clay coloured stools. Examination revealed severe pallor and icterus without any signs of heart failure. Systemic examination was unremarkable. Past history revealed neonatal jaundice on day three of life requiring double surface phototherapy for 48 hours. Investigations showed Hb of 5.0 Gm% with reticulocyte count of 7.8%, serum bilirubin of 6.6 (D/I :6.6/0), negative Coombs test. Peripheral smear showed spherocytes (2+) and anisocytes (1+). Leading query revealed father underwent splenectomy at early childhood for anemia. The baby received twice erythrocyte transfusions and discharged with advice for regular follow up.

Table 1: Investigations during hospital stay

Date	02/09/2017	03/09/2017	05/09/2017
Hb/Hct	5.0/14.2	7.5/21.4	9.9/28.1
TLC	12780	11100	7610
PLT	302000	281000	213000
Reticulocyte count	7.8%	---	---
Peripheral smear	Anisocytes+ / Spherocytes++	---	---
DCT/ICT	Negative	---	---

Discussion
Hereditary spherocytosis (HS) is the commonest reason of haemolytic anemia caused by red cell membrane defect.Heterogeneous alterations in one of six genes (most often the ankyrin gene) that encode for proteins involved in vertical associations that tie the membrane skeleton to the lipid bilayer causes HS.A number of interconnected proteins are involved in the coupling of the cytoskeleton to the lipid bilayer. They include Spectrin (composed of alpha, beta heterodimers), Ankyrin, Band 4.2 (previously called pallidin), Band 4.1 (protein 4.1), Band 3 protein (the anion exchanger, AE1) and RhAG (the Rh-associated glycoprotein).

Epidemiology
HS is seen worldwide affecting the individuals from all racial and ethnic groups particularly in northern European populations where the reported incidence of hereditary spherocytosis (HS) is approximately 200 to 300 per million. No data is available in India about the incidence of HS.

Pathophysiology

Neonatal unconjugated jaundice can be either immune mediated or non- immune mediated haemolytic episodes of R.B.Cs. Immune mediated haemolysis could be either iso-immune or less commonly autoimmune disorders. In immune mediated haemolysis, direct coomb's test is usually but not always positive. The more common causes of non-immune mediated severe neonatal disorders are hereditary spherocytosis (HS) and other red cell membrane disorders, red cell enzyme deficiency.

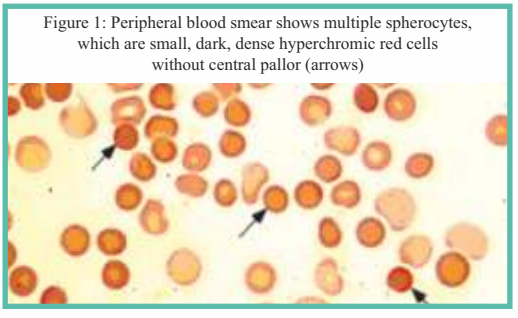

Figure 1: Peripheral blood smear shows multiple spherocytes, which are small, dark, dense hyperchromic red cells without central pallor (arrows)

HS is a familial inherited haemolytic disease. There is alteration of red cell membrane structural protein due to genetic defect reducing their deformability & making it more rigid. These cells are then trapped in spleen and destroyed. Without typical family history, HS in the neonatal period is difficult to diagnose. HS is the leading cause of direct antiglobulin (direct Coombs) test negative haemolytic anemia requiring erythrocyte transfusion in the first months of life.

Perinatal Hereditary Spherocytosis

The clinical spectrum of HS during the perinatal period ranges from severe fetal anemia with hydrops fetalis to the asymptomatic neonate. Fifty percent of patients with HS have icterus in the neonatal period but it is often passed over as physiological jaundice.

Clinical severity

HS varies in clinical severity and is divided in to mild, moderate and severe type. Mild variety generally presents in adult life with cholelithiasis or anemia secondary to aplastic or haemolytic crisis. They may not present until late in life. Moderate variety may present with mild to moderate anemia, jaundice, requirement of intermittent blood transfusion or splenomegaly may be present. Severe form of disease generally requires frequent blood transfusions, may present in neonatal period with jaundice; or present in an early childhood period with anemia, jaundice or splenomegaly requiring partial or total splenectomy. Neonatal presentation does not always mean a severe clinical course in the future. Severe variety usually has an autosomal recessive inheritance.

Diagnostic Approach

Needs high index of suspicion in patients with family history as recurrent jaundice, splenomegaly, cholecystitis, gall stones, unhealed ulcers and surgeries like splenectomy, cholecystectomy in close relations. Newborn infants who have hereditary spherocytosis (HS) may develop anemia and hyperbilirubinemia. Half of patients with HS have history of jaundice in the neonatal period.

Laboratory investigation shows presence of haemolytic anemia, reticulocytosis, increased hematocrit, negative DCT, decreased haptoglobin, increased LDH and plasma Hb. Presence of spherocytes on peripheral smear establishes the diagnosis of HS. In neonates without typical family history diagnosis may be delayed up to 6 months of age, by then the cellular morphology is more typical.Spherocytes are also seen occasionally on the peripheral smear of normal new borns, in ABO incompatibility, autoimmune haemolytic anemia. Blood grouping and DCT help to rule out the latter two.

Treatment

Treatment in the neonatal period is directed towards treating hyperbilirubinemia as phototherapy, exchange transfusion. Occasionally, packed cell transfusion for symptomatic anemia may be required. The definitive treatment is splenectomy which is best deferred till 5 years of age.

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Case Report IV: Pain Management

Pain management of double crush syndrome

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Dr. Dwarkadas Baheti, M.B.B.S., M.D.

Keywords:
Double Crush Syndrome, Ultra Sound, Fluoroscopy, Trans Foraminal Lumbar Epidural, Plantar Fasciitis, Triamcinolone Acetonide.

Abstract
Case of double crush syndrome was successfully treated with trans-foraminal lumbar epidural block and ultra sound guided plantar fascia injection.

Introduction:
A double crush syndrome is the presence of two separate etiologies contributing to appearance of a symptom.[1] Successful management of such a condition involves identifying both the causes and instituting correct treatment of each.

Case Report
A 48 yrs old male presented in our pain management clinic with complains of burning pain over soles of both feet since a year. Pain started insidiously, initially in the morning after getting up from the bed. Gradually he also started noticing pain in the lower back, radiating to both calves, aching type, getting worse as the day would wear on. His visual analogue scale (VAS) score for pain was 7 out of 10 to begin with and would increase to 10 out of 10 on getting up from a prolonged sitting position or walking for short distance. He had no medical co-morbidities like diabetes, old history of any trauma to back or leg; vascular insufficiency of leg or any surgical procedure done in the back or legs. He was non-alcoholic and non-smoker and his work schedule involved long hours of standing.

The clinical examination of the back, ankle and foot showed no areas of tenderness, no neurological or vascular deficit or deformities. The routine blood work up revealed no abnormalities and serological status was negative. MRI studies of the lumbar spine revealed prolapsed intervertebral disc at L4-5 & L5-S1 level, compressing on exiting nerves centrally. The X-ray of the ankle and foot and nerve conduction studies of lower limb were unremarkable. The common causes of burning feet like diabetes, nerve compression, renal disease, HIV, alcoholism, vitamin B12 deficiency were thus ruled out.

The various treatment options were discussed and option of trans-foraminal lumbar epidural block at L5-S1 level along with ultra sound guided bilateral plantar fascia injection was chosen.

Procedure
In prone position under fluoroscopy guidance L4-5 & L5-S1 foramen bilaterally were localised and 23 gauge 3 & ½ inch spinal needle was advanced into it. After confirming dye spread in anteroposterior view (Fig. 1) 40 mg Inj. Aurocort (preservative-free Triamcinolone Acetonide) in divided dosage was injected. Then in supine position under ultrasound guidance (10Hz probe) attachment of plantar fascia was identified and Inj. Aurocort 40 mg in divided dosage was injected at each site. (Fig. 2) The procedure was

uneventful and patient was discharged the same evening. After one week follow up, the pain score was one out of 10. He was advised physical therapy to maintain flexibility, improve strength and prevent recurrence.

Discussion

This patient had two separate causes - prolapsed intervertebral disc causing pressure on the exiting nerve root at lumbar spine and plantar fasciitis in the feet which were responsible for his symptoms. History of pain in soles of feet worsened by sitting or on waking up in the morning and relieved by walking indicated the presence of plantar fasciitis. The treatment of plantar fasciitis includes analgesics as required, physical therapy and footwear modification.[2] Cases of incomplete pain relief may be treated with local steroid injections which was eventually needed in this patient's case.

The worsening of back pain with walking indicated presence of a spinal etiology like nerve compression due to prolapsed intervertebral disc which was supported by MRI. It was treated with a selective trans-foraminal L4-5 & L5-S1 epidural block. The relief of symptoms confirmed the effectiveness of our approach.

Conclusion

Double crush syndrome is a possibility in musculoskeletal conditions and timely evaluation and focussed treatment results in a good outcome. Use of ultrasound to guide needle placement is finding favour with large number of practitioners treating musculoskeletal conditions and can be effectively used in many scenarios depending on the expertise of the operator.

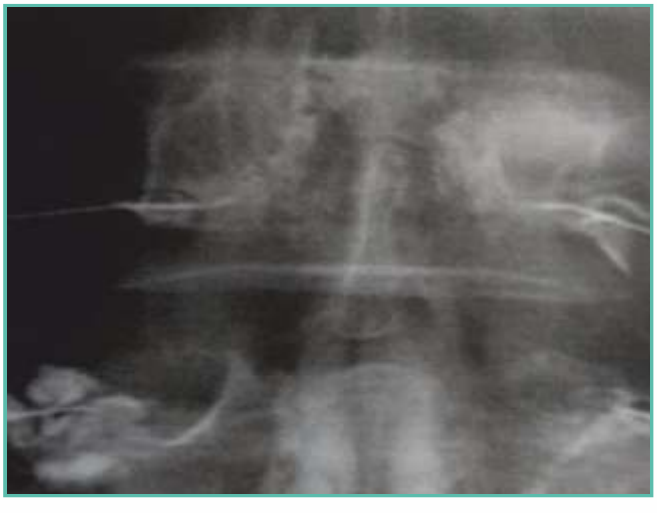

Fig - 1 - Selective transforaminal epidural block at L4-5 & L5-S1 level showing dye spread

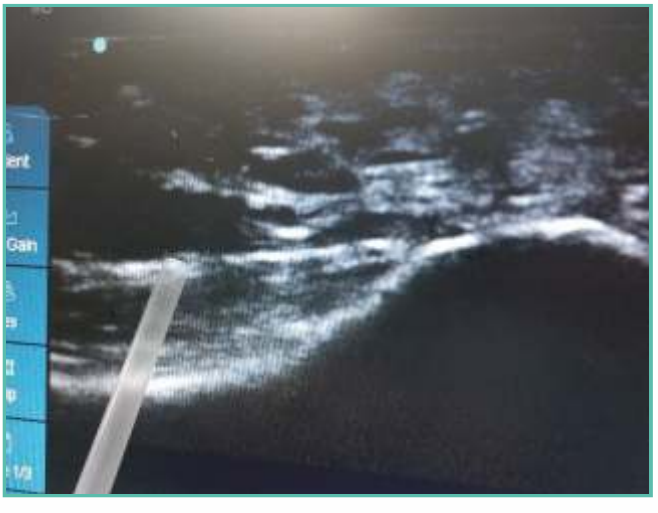

Fig - 2 - Ultrasound image of foot with pointer showing plantar fascia with hypoechoic regions

References:

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Case Report V: Radiology

MR Neurography: Application in Traumatic Brachial Plexopathy

Dr. Ishaan Jani. M.D. Radio-diagnosis.
Dr. Ashlesha Udare M.D., D.N.B, ESR Fellow

Case report:

A 25 years old male patient was presented to Lilavati Hospital with a history of motorcycle accident. Preliminary first aid was provided at a primary health care center and later the patient was referred to our Hospital for further management. On presentation, the patient had complete loss of motor and sensory function of the right arm. A preliminary X-ray of the arm was performed which revealed displaced fracture of mid shaft of right humerus and undisplaced fracture of medial epicondyle.

A dedicated high-resolution 3T MRI of the right brachial plexus was performed using MR neurography techniques for further evaluation. It revealed:

- Cord edema (Fig. 2) with abnormal signal in right paraspinal multifidus muscle and hematoma in right interscalene triangle (Fig. 3).
- Avulsion with loss of isotropic diffusion of right-sided C7, C8 and T1 nerve roots (Figs. 4 & 5).
- Pseudo-meningocele of C7 and C8 (Fig. 6).
- Absence of fiber tracking in lower trunk of brachial-plexus beginning from right-sided C7, C8 and T1 roots (Fig. 7).

MRN Diagnosis: Pre-ganglionic injury involving of right brachial-plexus C7, C8 and T1 roots.

Discussion:

Magnetic resonance neurography (MRN) is an application that is used increasingly in clinical practice for evaluation of peripheral nerve diseases like traumatic nerve injury, inflammatory neuropathy, nerve impingement and peripheral nerve sheath tumors. MRN is successfully used to confirm clinical suspicion of peripheral neuropathy by directly showing signal abnormalities in the nerve and regional muscle denervation changes. It is also used in assessment of the extent of abnormality in nerve injuries and disease load in peripheral nerve lesions. MRN also depicts the lesions causing nerve entrapment or impingement and helps exclude the diagnosis of neuropathy by showing normal nerves and regional muscles.

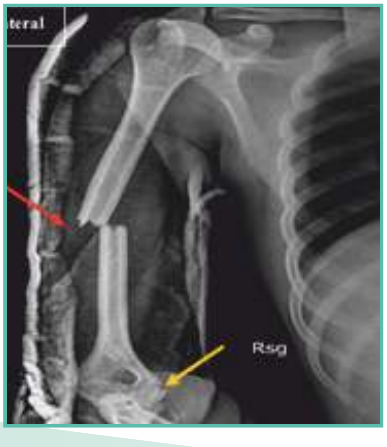

Figure 1:
X-ray of right upper arm with supporting slab. Lateral view shows displaced fracture of the mid shaft of right humerus (red arrow) and un-displaced fracture of the medial epicondyle (yellow arrow).

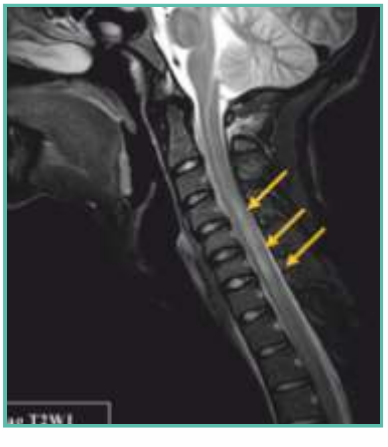

Figure 2:
Sagittal T2W image of the cervical spine shows abnormal T2 hyperintense signal in the cervical cord from C4-C7 cervical vertebral levels, suggestive of cord edema.

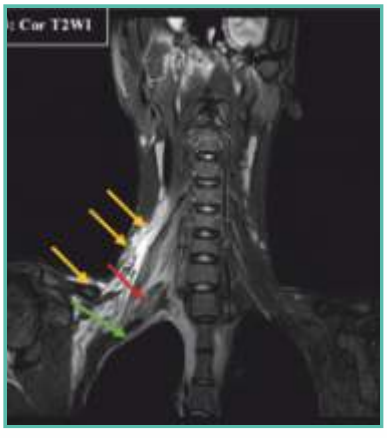

Figure 3:
Coronal T2W image of the cervical spine shows abnormal T2 hyperintense signal in the right paraspinal multifidus muscles (yellow arrows), small hematoma in the right interscalene triangle (red arrow) and T2 hyperintense rim of right sided pleural effusion (green arrow).

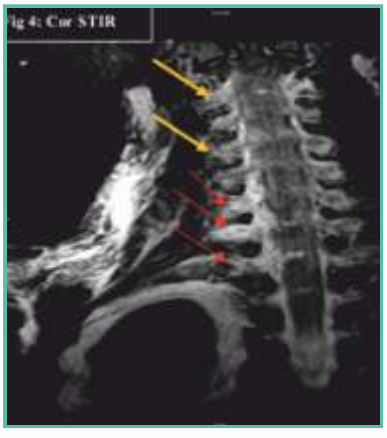

Figure 4:
Coronal STIR image shows normal nerve roots of from C3-C6 (yellow arrows) level and avulsion with non-visualisation of C7, C8 and T1 nerve roots (red arrows).

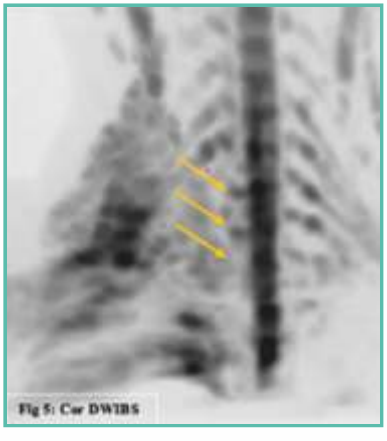

Figure 5:
Coronal DWIBS sequence shows loss of isotropic diffusion in the C7, C8 and T1 nerve roots (yellow arrows).

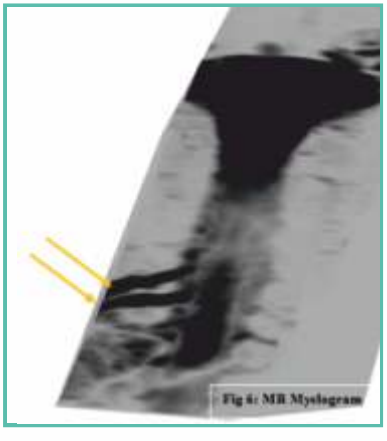

Figure 6:
Coronal reconstructed MR myelogram shows pseudo-meningoceles at C7 and C8 levels (yellow arrows).

Figure 7:
DTI / Tractography shows loss of fibre tracking of C7, C8 and T1 nerve roots (yellow arrows) compared to normal tracking on the opposite side.

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Fun Time

1 **Vitamin K deficiency leads to problem in?**

- Digestion
- Blood Coagulation
- Calcium Metabolism
- All the above

2 **Deficiency of Vitamin D gives rise to?**

- Arthritis
- Rheumatism
- Hernia
- Rickets

3 **What is the name of the disease arising out of Vitamin B deficiency?**

- Scurvy
- Beriberi
- Pellagra
- Gingivitis

4 **What does Niacin deficiency cause?**

- Acne
- Scurvy
- Boils
- Pellagra

Kindly email us your answers on medicaltimes@lilavatihospital.com

Answer to previous quiz

1. Antibiotics
2. Tetracycline
3. Hepatitis B
4. Arterial
5. Ketoacidosis

Straight from the Heart - Patient Testimonials

Our family will always be thankful to the doctors and the staff of Lilavati Hospital. We are thankful to all of them for the support and care they have given. We looked up to them for all we wished. Thank you!

Chaitra Shirodkar

The dedication of all staff members towards their work & patients have mesmerised me. Very good! Everything is excellent and outstanding! Just keep your standard & quality up to the mark and serve people the best out of you!

Anjali Gupta

To,

Lilavati Hospital and Research Centre,
Bandra West.

Respected Sir / Madam,

I am writing this letter to you to let you know how much we are grateful to you and your staff for helping us yesterday during heavy rainfalls. I was at your hospital yesterday to visit a patient with my two friends. We were stranded here since 4:00 pm afternoon since all roads were blocked due to heavy rainfall. Your administration and staff were extremely humble to allow us stay indoors at night and provide us with blankets.

Because of their efforts we felt safe yesterday. This letter is to thank you and your staff for such great humanity showed for us.

Thanking you, From
Dr. Babasaheb Deshmukh
Dr. Dhananjay Marode
Dr. Mitali Vaja

The treatment given to my father helped him to get quick relief. Your staff & doctors gives us courage & faith that our patient is in good hands!

Abdul Khan

100% caring! Patient is in right hospital with right doctors & nurses. Line of treatment is too good!

Urmila Chellaney

Systematic & advanced facilities available under one roof!

Chetan Kanakia

Excellent Courtesy of staff and nurses and the ambience does not feel like hospital!

Atul Gupte

Very courteous, professional & efficient staff. Excellent & streamlined service! Thank You!

Seema Praveena

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 CMEs.

No.	Topic	Department
1	Effective Communication Skills and Personality Development: The Essence of Good Medical Practice	All Departments
2	ISCCM - Mumbai Branch Monthly Meeting	Critical Care
3	Indications and Innovations in Liver Transplantation	Gastroenterology
4	Interstitial Lung Diseases, MCG Meet	Chest Medicine
5	Mumbai Hematology Group Meeting	Pediatrics
6	Common Abdominal Emergencies Pediatrics & Adults	Pediatrics & General Surgery
	Chronic Heart Failure - Review of Current Concepts	Cardiology

▲ Common Abdominal Emergencies Pediatrics & Adults

▲ Indications and Innovations in Liver Transplantation

▲ Mumbai Hematology Group Meeting

▲ Interstitial Lung Diseases, MCG Meet

Services Available

MEDICAL

Anesthesiology
Audiology and Speech Therapy
Cardiology
Cathlab
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
Colorectal 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 & Reconstruction Surgery
Spine Surgery
Transplant: Corneal, Kidney & Liver
Urology, Andrology
Vascular Surgery

CRITICAL CARE

Intensive Care Unit (ICU)
Intensive Cardiac 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
Imaging Services
BMD
CT Scan
Interventional Radiology
MRI
Mammography
Non Invasive Cardiology
Nuclear Medicine
PET & SPECT CT Scan
Sonography
Urodynamics
X-ray

LABORATORY SERVICES

Blood Bank
Histopathology
Microbiology
Pathology

24 HRS SERVICES

Ambulance
Emergency
Pharmacy
Roshni Eye Bank

Latest Feathers in Cap

Best Multispeciality Hospital
of the Year 2017 by Prime Time Global
Healthcare Excellence Awards 2017

Trusted Hospital 2017
awarded by
Readers Digest

Ranked amongst the
Top 10 Hospitals in India by
The Week Nielsen Best Hospital Survey 2017

Lilavati Hospital tops
"i3RC - Times All India Critical
Care Hospital Ranking Survey 2017"

LET TRUTH PREVAIL
THE TIMES OF INDIA

Lilavati Hospital is yet again adjudged
amongst the Top 10 Multispecialty
Hospitals of India in “Times of India -
All India Multispecialty
Hospital Ranking Survey 2017”

Recognized as Centre of Excellence
in teaching for DNB programme –
NBE accredited hospital by
ANBAI

Dr. Pallavi Patil's E-POSTER was adjudged as the **SECOND BEST POSTER** amidst **42 E-POSTERS from 11 countries** during the **5th Asia-Pacific Neuroendocrine Society** (APNETS 2017) conference held in Oct, 2017. The topic of her poster was **"Radiation Dosimetry on post-therapy 177-Lutetium-DOTA scan in patients with Metastatic Neuro Endocrine Tumors"**

Important Telephone Numbers

Emergency / Casualty	**+91 22 2656 8063 / 2656 8064**
Admission Department	**+91 22 2656 8080 / 2656 8081 / 2656 8082**
AKD Counter	**+91 22 2675 8650 / 2675 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 1577 / 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 Department	**+91 22 2656 8354 / 2656 8355**
Hospital Board line:	**+91 22 2666 6666 / 2675 1000 / 2656 8000**
Hospital Fax	**+91 22 2640 7655**
IVF	**+91 22 2656 8226**
Medical Social Worker (SEWA)	**+91 22 2656 8361 / 2656 8362**
MRD	**+91 22 2656 8358 / 2656 8359**
MRI Department	**+91 22 2656 8066**
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**
Urodynamics	**+91 22 2656 8021**
Visa Section	**+91 22 2656 8248 / 2656 8244**
X-Ray, Sonography Department	**+91 22 2656 8031**

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

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
Dr. Ballani Prakash H.
Dr. Bang Vijay
Dr. Choksi Nishit
Dr. Dargad Ramesh R.
Dr. Gokhale Nitin S.
Dr. Jhala Darshan
Dr. Kothari Snehal N.
Dr. Lokhandwala Yash
Dr. Mehan Vivek
Dr. Merchant S. A.
Dr. Menon Ajit R.
Dr. Mehta Haresh G.
Dr. Nabar Ashish
Dr. Pillai M. G.
Dr. Pinto Robin
Dr. Punjabi Ashok H.
Dr. Samuel K. Mathew
Dr. Sanzgiri P. S.
Dr. Shah Chetan
Dr. Sharma Anil K.
Dr. Suratkal Vidya
Dr. Vijan Suresh
Dr. Vyas Pradeep R.
Dr. Vora Amit
Dr. Vajifdar Bhavesh

Chest Medicine
Dr. Chhajed Prashant
Dr. Mehta Sanjeev K.
Dr. Prabhudesai P. P.
Dr. Parkar Jalil D.
Dr. Rang Suresh V.

Colorectal Surgery
Dr. Chulani H. L.

Cosmetic Surgery
Dr. Doshi Milan

Dentistry / Dental Surgery
Dr. Bhavsar Jaydeep P.
Dr. Deshpande Dilip
Dr. Gala Dhimant
Dr. Joshi P. D.
Dr. Khatavkar Arun
Dr. Kamdar Rajesh J.
Dr. Nayak Arun
Dr. Parulkar Darshan
Dr. Sanghvi Sameer

Dermatology
Dr. Goyal Nilesh
Dr. Mehta Nimesh
Dr. Oberai Chetan
Dr. Parasramani S. G.
Dr. Sattur Sandeep

Diabetology
Dr. Panikar Vijay

Diabetology & Endocrinology
Dr. Joshi Shashank R.

ENT Surgery
Dr. D'souza Chris E.
Dr. Parasram Kamal S.
Dr. Pusalkar A.

Endo Urology
Dr. Utture Anand

Gastro Intestinal Surgery
Dr. Bharucha Manoj
Dr. Goyal Neerav
Dr. Gupta Subash
Dr. Kulkarni D. R.
Dr. Mehta Hitesh
Dr. Mehta Naimish
Dr. Shah Ankur
Dr. Varty Paresh
Dr. Wagle Prasad K.
Dr. Zaveri Jayesh P.

Gastroenterology
Dr. Barve Jayant S.
Dr. Gupta Ravi
Dr. Kanakia Raju R.
Dr. Khanna Sanjeev
Dr. Phadke Aniruddha Y.
Dr. Parikh Samir S.
Dr. Shah Saumil K.

Gastroenterology and Hepatology
Dr. Shah Jayshri

General Surgery
Dr. Dhumane Parag
Dr. Garud T. V.
Dr. Mehta Narendra
Dr. Shastri Satyanand B.
Dr. Shetty Sadanand V.

Gynaecology
Dr. Agarwal Rekha
Dr. Coelho Kiran S.
Dr. Dhanu Vilas R.
Dr. Goyal Swarna
Dr. Nanavati Murari S.
Dr. Pai Hrishikesh
Dr. Pai Rishma D.
Dr. Palshetkar Nandita
Dr. Salunke Vivek
Dr. Shah Cherry C.

Haematology
Dr. Agarwal M. B.
Dr. Bhave Abhay

Headache & Migraine
Dr. Ravishankar K.

Healthcheckup Consultant
Dr. Desai Sandeep

Histopathology
Dr. George Asha Mary
Dr. Tampi Chandralekha

Infectious Diseases Consultant
Dr. Nagvekar Vasant C.

Intensivist / Physician
Dr. Shekade Kiran
Dr. Shrinivasan R.
Dr. Vas Conrad Rui
Dr. Kumar Vivek

Interventional Radiology
Dr. Dharia Tejas
Dr. Limaye Uday S.
Dr. Sheth Rahul
Dr. Warawdekar Girish

Joint Replacement Surgery
Dr. Maniar Rajesh N.

Lactation Consultants
Dr. Joshi Mugdha
Ms. Temkar Swati

Nephrology
Dr. Mehta Hemant J.
Dr. Shah Arun
Dr. Suratkal L. H.
Dr. Upadhyaya Kirti L.

Neurology
Dr. Chauhan Vinay
Dr. D'souza Cheryl
Dr. Sirsat Ashok M.
Dr. Vyas Ajay

Neuropsycology
Dr. Panjwani Siddika

Neuro Surgery
Dr. Dange Nitin
Dr. Goel Atul
Dr. Ramani P. S.

Nuclear Medicine
Dr. Krishna B. A.
Dr. Shimpi Mahajan Madhuri

Oncology
Dr. Menon Mohanakrishnan
Dr. R. Gopal
Dr. Smruti B. K.

Oncosurgery
Dr. Bushan Kirti
Dr. Chabra Deepak
Dr. Deshpande Ramakant K.
Dr. Jagannath P.
Dr. Katna Rakesh
Dr. Parikh Deepak
Dr. Sharma Sanjay
Dr. Shah Rajiv C.

Ophthalmology
Dr. Agrawal Vinay
Dr. D'souza Ryan
Dr. Mehta Salil
Dr. Mehta Himanshu
Dr. Nadkarni Shivram
Dr. Nagvekar Sandip S.
Dr. Parikh Rajul
Dr. Shah Manish
Dr. Shah Sushmita
Dr. Shah Gaurav
Dr. Vaidya Ashish R.

Orthopaedic Surgery
Dr. Agrawal Vinod
Dr. Archik Shreedhar
Dr. D'silva Domnic F.
Dr. Desai Sanjay S.
Dr. Deshmukh Niranjan
Dr. Garude Sanjay
Dr. Joshi Anant
Dr. Kini Abhishek
Dr. Kohli Amit
Dr. Mukhi Shyam R.
Dr. Nadkarni Dilip
Dr. Padgaonkar Milind
Dr. Panjwani Jawahar S.
Dr. Thakkar C. J.
Dr. Vatchha Sharookh P.
Dr. Vengsarkar Nirad
Dr. Warrier Sudhir

Pathology
Dr. Chavan Nitin
Dr. Dhunjibhoy Ketayun R.
Dr. Mehta Kashvi
Dr. Rangwalla Fatema
Dr. Saraswat Shubhangi

Paediatric Surgery
Dr. Bangar Anant
Dr. Karmarkar Santosh J.
Dr. Nathani Rajesh
Dr. Redkar Rajeev G.

Paediatrics
Dr. Avasthi Bhupendra
Dr. Chittal Ravindra
Dr. Gupta Priyam
Dr. Lokeshwar M. R.
Dr. Sharma Shobha
Dr. Ugra Deepak

Paediatric Cardiology
Dr. Changlani Deepak K.

Paediatric Critical Care/NICU
Dr. Arya Manish Kumar
Dr. Sheikh Minhaj Ahmed

Paediatric Haematology / Oncology
Dr. Kanakia Swati R.

Paediatric Neurosurgery
Dr. Andar Uday

Paediatric Neurology
Dr. Kulkarni Shilpa
Dr. Shah Krishnakumar N.

Paediatrics Nephrology
Dr. Ali Uma

Paediatric Opthalmology
Dr. Doshi Ashish

Pain Management
Dr. Baheti Dwarkadas
Dr. Jain Jitendra

Physicians / Internal Medicine
Dr. Ballani A. G.
Dr. Bandukwala S. M.
Dr. Dalvi Sunil G.
Dr. Gidwani Vinod N.
Dr. Jadwani J. P.
Dr. Medhekar Tushar P.
Dr. Medhekar Amey T.
Dr. Nair C. C.
Dr. Shimpi Shrikant

Plastic Surgery
Dr. Gajiwala Kalpesh
Dr. Jain Leena
Dr. Kumta Samir
Dr. Prakash Siddharth
Dr. Purohit Shrirang

Psychiatry
Dr. Deshmukh D. K.
Dr. Shah Bharat R.
Dr. Vahia Vihang N.

Psychology
Dr. Chulani Varkha

Physician / Rheumatology
Dr. Sangha Milan

Physiotherapy
Ms. Garude Heena

Radiology & Imaging
Dr. Deshmukh Manoj
Dr. Doshi Pankaj
Dr. Handa Nayha
Dr. Kamath Satish
Dr. Mehta Mona
Dr. Tyagi Neha
Dr. Udare Ashlesha

Rheumatology
Dr. Gill Niharika

Sleep Study Specialist
Dr. Samtani Anil

Spine Surgery
Dr. Bhojraj Shekhar
Dr. Nagad Premik
Dr. Nene Abhay

Urology
Dr. Pathak Hemant R.
Dr. Raina Shailesh
Dr. Raja Dilip
Dr. Sanghvi Nayan
Dr. Shah Sharad R.
Dr. Vaze Ajit M.

Urological Laparoscopy Surgery
Dr. Ramani Anup

Urodynamics Consultant
Dr. Dastur B. K.

Vascular Surgery
Dr. Patel Pankaj
Dr. Pai Paresh

LILAVATI HOSPITAL AND RESEARCH CENTRE

Committed towards Human Care

Lilavati Hospital is proud to announce the installation of the state-of-the-art "Philips Azurion 7F20" in its CATH Lab. This is the first of its kind high end configuration system installed in India.

Key Highlights:

- Clarity IQ Technology
- High Quality 2K x 2K imaging chain
- Sophisticated interventional tools
  - ✶ Stent Boost Live
  - ✶ Dynamic Coronary Road Map
  - ✶ 3D Road Map
  - ✶ 3D Rotaional Angiography
  - ✶ Xper CT Dual
  - ✶ 2D Perfusion
  - ✶ Integration with Volcano IVUS System
  - ✶ Vaso CT

The new system enables excellent imaging for Coronary, Cerebro and Peripheral Vascular Diseases.

Lilavati Hospital and Research Centre

More than Healthcare, Human Care

NABH Accredited Healthcare Provider

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