VOLUME - 19 | ISSUE - 01 | JANUARY 2017

kauvery

CAPSULE

Medi Magazine
A quarterly magazine
from

kauvery hospital

RENAL TRANSPLANTATION IN A HYPERCOAGULABLE STATE

MANAGEMENT OF ACUTE AORTIC DISSECTION – A SURGICAL CHALLENGE

HOSUR UNIT LAUNCH

THE GIST OF CYST IN LIVER -REPORT & REVIEW

250 RENAL TRANSPLANTS

RADIATION ONCOLOGY: NEWER TECHNIQUES, IMPROVED OUTCOME

THE BRAIN HEART NEXUS - NEUROCARDIOLOGY

COMBINATION OF HELLP AND CVP

TOTAL PROCTOCOLECTOMY WITH END ILEOSTOMY FOR ADENOMATOUS POLYPOSIS COLON- CASE STUDY

FRACTURE NECK OF FEMUR WITH ALKAPTONURIA

A LANDMARK IN THE HISTORY OF MICROSURGERY IN TRICHY

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CAPSULE MAGAZINE

Capsule Magazine is published by Kauvery Hospital

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Table of contents

My Dear fellow Clinicians,

Special occasions and events give us the opportunity to establish camaraderie at work with all our stake holders. It gives me immense pleasure to thank each & every one of you for your unstinting support & patronage and playing a vital role in our growth & development.

We have worked together to make the best contribution to establish the best possible standards of healthcare delivery in this region.

2016 was a landmark year for us. We have launched our 6th Unit a 125 bed multi speciality hospital at Hosur this year. Adding value to our academic pursuits, we are recognized for DNB Pediatrics at Trichy and Medicine and Anesthesiology for Chennai. We have been honored with the National Neonatology Forum (NNF) accreditation for our Neonatal Intensive Care Unit (NICU) which has given us more wings to our quality journey.

In the last 2 years we have strategically worked across various locations and stabilized the clinical and non clinical services. We have plans to expand few more regions with which we will double the bed capacity in the next 3 years. Our major focus would be on multi organ transplant as well as individualized growth of all core specialties and transforming every senior Clinician in the system as a leader.

The year 2017 is sure to bring its own set of challenges, but with your continued support all the challenges can convert into significant milestones of Kauvery.

Look forward to a positive & fruitful association.

Hearty wishes for
Happy New Year 2017
& Happy Pongal

Warm regards,
Dr. S. Chandrakumar, MD
Managing Director

On behalf of the Kauvery family,
I wish you and your family a great year ahead!

As you are aware that demonetization has impacted the growth of many industries. Consistent delivery of quality healthcare, and focus on patient delight will help the hospital owners to sustain the momentum in difficult times too.

In 2016, at Kauvery, We focused primarily on patient delight. Regular review of feedbacks, improving service level standards, training all levels of staffs, and the commitment from all levels ensured that our patient satisfaction has improved to a great extent.

We would be happy to get inputs on your personal experience pertaining to patient delight.
Kindly feel free to mail me at
drmani@kauveryhealthcare.com.

Warm regards,
Dr. S. Manivannan, MD, DNB
Joint Managing Director

Greetings!

I wish you all a great New Year.

2016 had proven fruitful for our organization in terms of growth, development and enhancing our brand value, through the effective co-operation, support and continuous commitment from all spheres. It's my privilege to convey and share the milestones we have crossed.

Pediatrics and Neonatology department of Kauvery hospital, Trichy is rewarded as the centre of excellence, for our global standards, round-the-clock comprehensive pediatric coverage and excellent care. We are uniquely identified by the people of Trichy, as their preferred destination for more than a decade.

We are equipped with advanced treatment methodologies, up-to-date apparatus and hi-end infrastructure which earned us the ***prestigious NNF Accreditation.***

Apart from the hospitals of Chennai, only Kauvery Hospital of Trichy holds the fellowship in DNB (Paediatrics and Neonetology) across Tamilnadu, with two seat per year. I whole heartedly welcome you to join this course and enhance your skills.

I therefore invoke your continuous support and co-operation which will elevate us to positive, developing and highly successful results in all our pursuits.

By
Dr. D. Senguttuvan, MBBS. Dch
Executive Director

From Editor's desk

Dear Readers,

2016 was a momentous year for the Country and also for Kauvery Hospitals. At Kauvery we continued our proud tradition of providing excellent patient care with great emphasis on quality and patient safety. During the year we made great progress in number of key areas, moreover, there were notable examples of individual and team success right across the organisation.

On behalf of the CAPSULE TEAM, I would like to thank you for everything you have done over the last year.

I would like to wish you, your colleagues and indeed your families a happy and a fulfilling New Year.

"A good beginning makes a good end".

Dr. S. SENTHIL KUMAR, MS., DNB., (URO)
HOD & SENIOR CONSULTANT UROLOGIST AND ANDROLOGIST
TRANSPLANT SURGEON
LAPAROSCOPIC SURGEON

Management of Acute Aortic Dissection – a Surgical Challenge

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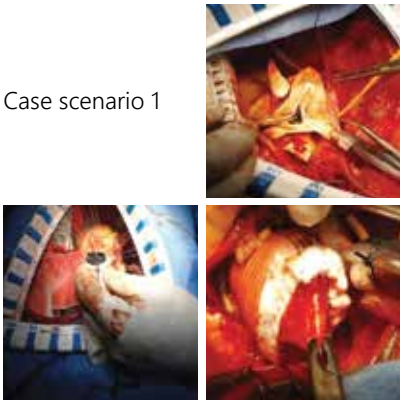
Kauvery Heartcity - Trichy

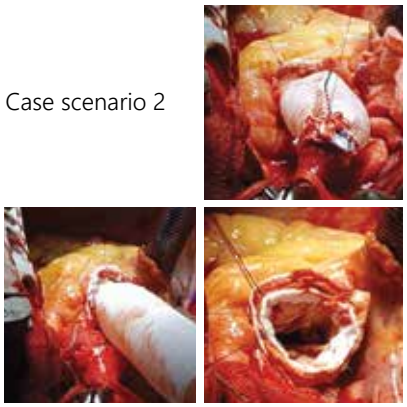
Case scenario 1



32 year old, young hypertensive male was presented with sudden onset dyspnoea and excruciating back pain of five hours duration. ECHO revealed BCAV, intimal flap in ascending aorta with severe aortic regurgitation. CT angiogram revealed Type A, dissection in aortic root and ascending aorta extending onto arch of aorta sparing coronary and arch vessels. Descending thoracic aorta was normal.

Emergency Bentall's surgery was done with size 21 ST. Jude Aortic valved conduit. Patient recovered well and was discharged on seventh postoperative day.

Case scenario 2



31 year old, young hypertensive, presented to casualty with sweating, palpitation and dyspnoea. Emergency ECHO revealed type A dissection with mild AR. CT angiogram revealed dissection involving aortic root, ascending aorta and arch and proximal descending aorta. He was taken up for emergency surgery. At the time of surgery the aortic valve was found to be spared. He underwent a valve sparing ascending aortic replacement with 28mm collagen impregnated polyester conduit. Patient recovered well and was discharged home on eighth post-op day.

Overview

• The most common catastrophe of the aorta (3:100,000); 3 times more common than AAA rupture

• Aortic dissection is characterized by blood entering the medial layer of the wall with the creation of a false lumen.

CLASSIFICATION- There is 2 types of classification:

Stanford

• Type A - Involves ascending aorta. Can extend distally. Emergency Surgery is the treatment of choice

• Type B - Involves aorta beyond left subclavian artery. Managed non-surgically / TEVAR with BP control.

De Bakey

• 1 - entire aorta affected
• 2 - confined to the ascending aorta
• 3 - descending aorta affected distal to subclavian artery

PATHOPHYSIOLOGY

There are 3 possibilities as to how the blood gets into the media:
1. Atherosclerotic ulcer leading to intimal tear
2. Disruption of vasa vasorum causing intramural haematoma
3. De novo intimal tear

FOLLOWING DISSECTION, BLOOD FLOW INTO THE MEDIA MAY CAUSE:

- Extension up or down
- Rupture
- Branch vessel occlusion
- Aortic regurgitation
- Pericardial effusion / Tamponade

80% of aortic dissections are in non-aneurysmal vessels

HISTORY

- Chest pain (ripping, tearing in nature, sudden onset, interscapular) – not always present!
- End-organ symptoms: neurological, syncope, seizure, limb paraesthesias, pain or weakness, flank pain, SOB + haemoptysis
- Hypertension
- Ischaemic heart disease

RISK FACTORS

- **Inherited disease** (especially younger patients (< 40 yrs)
  - Marfan's syndrome (fibrillin gene mutations), Ehlers-Danlos syndrome type IV (collagen defects), Turner syndrome, annulo- aortic ectasia and familial aortic dissection.
- **Aortic wall stress**
  -Hypertension (72%), previous cardiovascular surgery, structural abnormalities (e.g. bicuspid or unicommisural aortic valve, aortic coarctation), iatrogenic (e.g. recent cardiac catheterisation), infection (syphilis), arteritis such as Takayasu's or giant cell, aortic dilatation / aneurysm, wall thinning, 'crack' cocaine (abrupt catecholamine-induced hypertension)
- **Reduced resistance aortic wall**
  - Increasing age, pregnancy

EXAMINATION

Aortic regurgitation is common, hypertension, shock, ominous signs: tamponade, hypovolaemia, heart failure, neurological deficits: limb weakness, paraesthesias, Horner's syndrome, SVC syndrome – compression of SVC by aorta, asymmetrical pulses (carotid, brachial, femoral), haemothorax

COMPLICATIONS

Suspect if hypotensive (check for limb pulse discrepancy!) aortic rupture, tamponade, end-organ ischemia – brain, limbs, spine, renal, gut, liver, death

INVESTIGATIONS

Bedside

- ECG: inferior ST elevation (right coronary dissection)
  - normal
- - pericarditis changes, electrical alternans (tamponade)

LABORATORY

- D-dimer – if negative dissection is very unlikely, but not sufficient to rule out

IMAGING

- CXR – Widened mediastinum (56-63%), abnormal aortic contour (48%), aortic knuckle double calcium sign >5mm (14%), pleural effusion (L>R), tracheal shift, left apical cap, deviated NGT.
- **Echocardiography**
  - Transthoracic 75% diagnostic Type A (ascending), 40% descending (Type B). Good for AR
- - Transoesophageal (TOE). Much higher sensitivity / specificity, though operator-dependent. Useful in ICU / perioperative. Upper ascending aorta and arch not well visualised
- **CT with Aortogram**– Useful screen for widened mediastinum.
- **Aortography** – Was the traditional gold standard, delineating aortic incompetence and associated branch vessel involvement as well.
- **MRI / MRA** – Excellent sensitivity and specificity limited by availability and time required.

MANAGEMENT

Emergent priorities

control BP - Labetolol (beta and alpha blocker) is the drug of choice), control bleeding, fluid resuscitation ,O2 , wide bore IV access (Swan sheath) invasive monitoring, warn blood bank (x-match 6U + need for other products) correct coagulopathy, control HR and BP (aim for P 60-80 and BP 100-120 SBP), start b-blocker first to avoid increased aortic wall stress from reflex tachycardia

- Indications for surgery - Persistent pain, Type A, Branch Occlusion, Leak, Continued extension despite optimal medical management

Intra-operative management

- Avoid hypertension on induction
- Fast, full and forward
- Axillary artery and femoral arterial cannulation used for bypass
- If aortic root involved then patient may need avr with coronary artery reimplantation.

CIRCULATORY ARREST

- Deep hypothermic arrest (DHA) may be required during arch surgery as it isn't possible to perfuse cerebral vessels on bypass
- Safe duration is nearly 45min @ 18 C
- Other ways of protecting brain; pack head with ice, thiopentone, methyl-prednisonlone mannitol, GTN (to prevent vasoconstriction)

CANNULATION OPTION AND SURGERY

- Cardiopulmonary bypass is established using axillary artery and femoral venous cannulation or two stage atrial cannula as appropriate.
- Cardioplegia is delivered using direct ostial cannulation and repeated as necessary
- Ascending Aorta and the aortic valve is excised and replaced by a valved conduit
- Coronary buttons are implanted onto the conduit

CONCLUSION

Aortic dissection is a surgical emergency. Aortic rupture, cardiac tamponade, circulatory failure, stroke, or visceral ischemia, are the most common causes of death. Current overall in-hospital mortality rates for type A dissections is 26% for surgically managed and 58% for medically managed patients. If intervened early with accurate planning with multidisciplinary dedicated team, predictable results are achievable with good outcomes.

The Gist of Cyst in Liver - Report & Review

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Dr. Aniket Phutane
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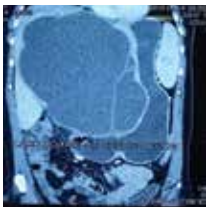
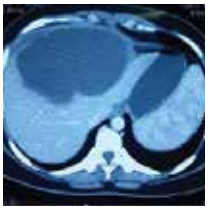
CASE STUDY

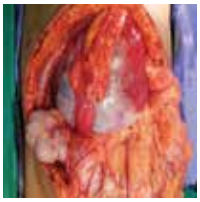
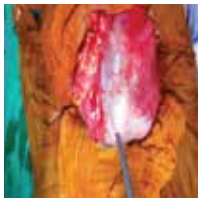
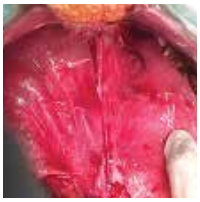
33 year old female was presented with complaints of intermittent right upper quadrant pain of 6 months duration which started after a trivial trauma at home. She did not have any other symptoms or co-morbidities. On examination, her upper abdomen was distended and a large soft, well defined mass was palpable in RUQ. Her abdomen was like that of a pregnant woman in third trimester. All her blood tests including, LFTs and tumour markers were normal. Considering the mass arising from liver, contrast enhanced CT abdomen was performed and it revealed a large complex cystic lesion 21X19X13cms arising from left lobe of liver with multiple internal septations. Significant mass effect was present on adjacent structures. But there was no nodal disease or any other features suggestive of malignancy. Intrahepatic biliary radicles and common bile duct were normal. No other significant findings were present. A differential diagnosis of hydatid cyst, biliary cystadenoma or

chronic haematoma was considered. After informed consent, she was taken up for left hemi-hepatectomy.

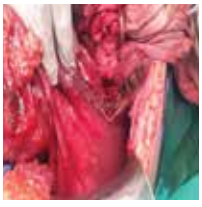
CT ABDOMEN

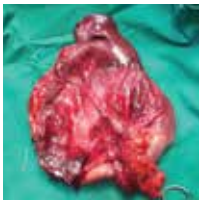
Abdomen was opened by roof top incision. There was a huge cystic lesion arising from left lobe of liver involving segment 4 and part of segment 2 and 3. Perihepatic packing was done in case if it is hydatid. Controlled

decompression without spillage was done in order to get some space around. Adhesions around the cyst were released, left lobe was mobilised. Left hepatic artery and portal vein were ligated and divided.Liver parenchymal transection done. Left bile duct divided intraparenchymally after suture ligation. Left hepatic vein suture ligated and divided Left hemihepatiectomy was done. Haemostatis was secured and abdomen was closed.

INTRA-OP IMAGES



Her post-op period was uneventful and she was discharged on 8th post-op day. Histopathology of the lesion showed **Biliary Cystadenoma** - complete excision with clear margins. At 1 year follow up, patient is doing well with no recurrence or symptoms.

DISCUSSION

There are varieties of cystic lesions of liver encountered in routine surgical practice. The important step in narrowing the differential diagnosis is to determine the presence or absence of complex features in cystic liver lesions. A short review of common cystic liver lesions is given here.

The cystic lesions of liver are divided into SIMPLE or COMPEX cysts

Simple cysts:

Benign developmental hepatic cyst
Von Meyenburg complex
Caroli disease
Adult polycystic liver disease

Complex cysts:

Neoplasm
Biliary cystadenoma or cystadenocarcinoma
Cystic metastases
Hepatocellular carcinoma
Cavernous hemangioma

Embryonal sarcoma

Inflammatory or infectious
Abscess
Pyogenic
Amebic
Echinococcal cyst

Post traumatic and miscellaneous
Pseudocyst
Hematoma

Simple cysts

Simple cysts appear as fluid-containing lesions with smooth thin walls and no evidence of complex internal features, such as septation and mural irregularity or nodularity.

Benign Developmental Hepatic Cyst

This is a benign, congenital, and developmental lesion derived from biliary endothelium that does not communicate with the biliary tree. Hepatic cysts are frequently multiple, usually asymptomatic. On CT, they usually lack septa (although they may contain up to two) and do not show fluid–debris levels, mural nodularity, or wall calcification. Asymptomatic simple hepatic cysts require no further workup or treatment. Symptomatic cysts can be dealt by laparoscopic deroofing. Percutaneous aspiration may be useful in diagnosing whether the patient's symptoms are actually due to the cyst.

Biliary Hamartoma/Von Meyenburg Complex

These are rare benign malformations of the biliary tract that originate from embryonic bile ducts that fail to involute. They are usually asymptomatic. Compared with simple hepatic cysts, they are more likely to be uniformly small and numerous, and smaller than the hepatic cysts of autosomal-dominant polycystic kidney disease. Malignant transformation of biliary hamartoma to cholangiocarcinoma is extremely rare. An isolated finding of biliary hamartomas in a healthy patient requires no intervention.

Caroli Disease

Caroli disease is an autosomal-recessive disorder characterized by multifocal saccular dilation of the intrahepatic bile ducts. It is often associated with cystic renal disease, particularly medullary sponge kidney. The characteristic CT appearance is multiple hypoattenuating cystic structures of varying size that communicate with the biliary system. A finding highly suggestive of Caroli disease is the "central dot sign," in which tiny foci of strong contrast enhancement within dilated intrahepatic bile ducts correspond to intraluminal portal vein radicals. Caroli disease can be diffuse or segmental. If the disease is localized to a lobe or segment, the treatment of choice is hepatic lobectomy or segmentectomy, respectively. Treatment options for more diffuse disease include conservative management, decompression of the biliary tract, or liver transplantation.

Autosomal polycystic liver disease:

There will be numerous hepatic cysts of various sizes having features identical to those described for benign developmental hepatic cysts. If asymptomatic, no treatment is required. Symptomatic disease is managed with deroofing or surgical resection or transplantation in selected cases.

Complex Cysts Neoplastic Biliary cystadenoma

Biliary cystadenomas can be premalignant. They present predominantly in middle-aged women with abdominal pain, nausea, vomiting, and obstructive jaundice. The characteristic CT appearance is a solitary complex cystic mass with a well-defined thick fibrous capsule, internal septations, and mural nodularity. The key difference between biliary cystadenoma or biliary cystadenocarcinoma and a hemorrhagic or infected hepatic cyst is that the capsule, internal septations, and mural nodules show contrast enhancement in the former and do not in the latter. Even if asymptomatic, these lesions should be excised completely as they can transform into malignancy.

CYSTIC HEPATOCELLULAR CARCINOMA

Cystic subtypes of hepatocellular carcinoma (HCC) dominantly solid on gross pathologic examination,it paradoxically presents at CT and MRI as a large cystic-appearing mass. On contrast-enhanced CT, there is heterogeneous enhancement, usually involving the peripheral portions of the mass The finding of a large hepatic mass that appears cystic on CT or MRI but solid on ultrasound suggests the diagnosis of malignancy. The presence of internal enhancement on contrast-enhanced CT or MRI is another feature that may distinguish this lesion from a frankly cystic mass. Treatment should be along the lines of HCC.

Inflammatory or Infectious Cysts

Pyogenic abscess most commonly occurs as complications of ascending cholangitis or portal phlebitis. They manifest in middle-aged or elderly patients who present with fever, right upper and lower quadrant pain, tender hepatomegaly, and elevated WBC counts. On CT, these abscesses appear as well-defined hypoattenuating masses with peripheral rim enhancement after the administration of IV contrast material. A characteristic CT finding is the "cluster of grapes" sign, which represents the coalescence of small pyogenic abscesses into a single large multiloculated cavity. The presence of gas within an abscess may be due to infection by gas-forming organisms such as Clostridia species and is strong evidence for pyogenic rather than amebic abscess. The "double target" sign (hypodense rim, isodense periphery, and decreased attenuation in the center) is also characteristic of complex pyogenic abscess. The treatment of pyogenic abscesses includes antibiotic therapy and percutaneous drainage. Following drainage, antibiotics should be continued for a prolonged period (4-6weeks). Surgical drainage is only required for failed percutaneous drainage or in those who need surgical treatment of underlying pathology causing the abscess.

Amebic liver abscess, caused by Entameba histolytica, is the most frequent extracolonic complication of amebiasis. Patients with amebic abscesses often have a history of travel to an endemic area and positive amebic serology. The radiologic features of amebic and pyogenic abscesses often overlap, necessitating clinical and serologic data for diagnosis. Gas is usually not present within an amebic abscess unless there has been development of a hepatobronchial or hepatoenteric fistula. Unlike pyogenic abscesses, amebic abscesses rarely need therapeutic drainage and are frequently effectively managed with only metronidazole therapy.

Fungal abscess due to Candida species is seen in immune-compromised patients. CT shows multiple low-attenuation lesions, which typically have rim enhancement and often also involve the spleen. The treatment includes antifungal therapy.

Echinococcal cysts-Hepatic echinococcosis, or hydatid disease, is caused by the larval stage of the tapeworm Echinococcus granulosis (more common) or E. multilocularis (more aggressive).

Each hydatid cyst consists of an outer pericyst (compressed and fibrotic host liver tissue), middle laminated membrane or ectocyst, and inner germinal layer. Together, the middle laminated membrane and inner germinal layer are referred to as the endocyst. Daughter cysts develop on the periphery as a result of germinal layer invagination. Key laboratory and clinical features that can distinguish an echinococcal cyst from other cystic liver lesions are eosinophilia, positive serology and Casoni skin test (seen in 25% of patients), and a history of travel within an endemic areas .On CT, hydatid cysts appear as large unilocular or multilocular hypoattenuating liver cysts.

One half of them have crescentic mural calcifications. Daughter cysts are seen as round peripheral structures that may have lower attenuation than fluid within the mother cyst. There is little or no contrast enhancement, reflecting thepoor vascularity of the parasitic lesion. Treatment strategies include medical therapy (albendazole or mebendazole) and excision or surgical resection. Perioperative albendazole cover, avoiding perop spillage, usage of scolicidal agents, attention to identify and suture the biliary communications and obliterating the residual cavity are the issues to be addressed in surgical treatment.

Conclusions:
A wide pathological spectrum can present as cyst in the liver. A thorough knowledge of the natural history on every individual pathology is essential. It is important to differentiate them and diagnose as accurate as possible as the management differ widely. Clinicians should consider referring these patients to centers providing multidisciplinary approach. Patients with symptomatic cystic liver lesions that have potential for further growth, complications or malignant transformation should undergo surgical treatment.

We extend a hearty welcome to our Kauvery family

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Combination of HELLP and CVP

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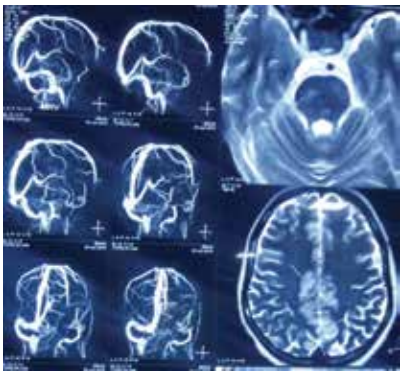
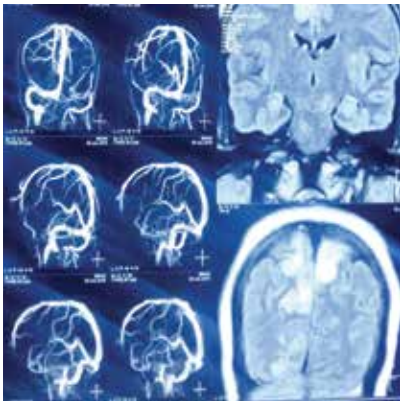
28 years primipara delivered by Emergency LSCS for oligohydramnios on 29th of July, 2016. On the next day patient developed 4-5 episodes of GTCS. Each episode lasted for 5-10 min.

On Examination patient was conscious, oriented, pallor (+). Her Blood pressure was 100/70mmHg, pulse Rate 60bpm. Neurological Examination showed Bilateral Papilledema . No focal Neurological deficit. Clinically postpartum Cortical Venous Sinus Thrombosis was suspected and investigated accordingly. Investigation showed Anemia, Thrombocytopeni, a Hemolysis, Elevated LDH, Elevated D-dimer, Elevated liver Enzymes and Hyponatremia.





MRI Scan of brain &MR venography (30.6.16)

Extensive venous infarcts in the frontoparietal and occipital parafalcine regions bilaterally, affecting the grey and subcortical white matter, causing mild mass effect with no evidence of haemorrhage. Streaky venous infarct in the midbrain on the left side and pons on the right side thrombosis /slow flow in the left transverse venous sinus on MR venography. ECHO (02.07.16)-All chambers dilated, Normal biventricular function.

Patient was treated with two units of packed Red cells and one unit of whole blood, liver protectants, Anti-epileptic drugs, Steroids and Other supportive Measures. After correction of thrombocytopenia, Heparin was started on 4th July 2016, Bridging therapy with oral anticoagulants started on 6th July 2016. Patient didn't develop any bleeding tendency during the course. Patient was discharged on 8th July 2016 with AED, OACs, and tapering doses of steroids.

	01.07.16	02.07.16	03.07.16	04.07.16	05.07.16	06.07.16	08.07.16
Platelet	86000 cells/UL	90000 cells/UL	96000/86000 cells/UL	94000 cells/UL	113000 cells/UL	148000 cells/UL	263000 cells/UL
LDH	883 U/L	581 U/L	362 U/L		250 U/L		
HB%	6.5 g/dl,10g/dl		11.3 g/dl		11.8 g/dl		
PT/INR							1.25

HELLP syndrome is a pregnancy related condition and is an abbreviation for Haemolysis Elevated Liver Enzyme, Low Platelets, Is a life threatening form of preeclampsia although it can occur without co-existing preelampsia. The estimated incidence is 0.17 to 0.85 of live births Etiopathogenesis is not known probably related to endothelial damage triggered by pregnancy. Hormonal changes during pregnancy and pvperium carry an increased risk of venous thromboembolism including Cerebral Venous Sinus Thrombosis (CVST). Here we report a patient presented with post partum (day 1 after emergency LSCS) and HELLP syndrome.

Combination of HELLP syndrome and CVST are rarely encountered during postpartum period. Post partum CVST warrants anticoagulants but in the presence of haemolysis, thrombocytopenia, it may increase the bleeding risk. Low molecular weight heparin is preferable over unfractionated heparin. These patients may need prophylaxis with LMWH during future pregnancies and the postpartum period is reasonable.

Radiation Oncology: Newer Techniques, Improved Outcome

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Kauvery HCG Cancer Centre - Trichy

Cancers account for 14% of the overall NCD mortality in India, and about of 3.3% of the disease burden and about 9% of all deaths. Cancer is a major public health concern in India and has become one of the 10 leading causes of death in the country. The burden of cancer is expected to further increase due to increase in life expectancy, demographic transitions and the effects of tobacco. Around 40 % of cancer cases are due to tobacco use.

The leading sites of cancer are the oral cavity, lungs, oesophagus and stomach among men and cervix, breast and oral cavity among women Cancer of the breast takes the number one spot in the urban regions Among men, cancers of the prostate, colon, rectum and liver have shown statistically significant increase in incidence.

We have been warned by WHO that India is the next hub for cancer. Having been practicing Radiation Oncology with a fairly good understanding of the tumour biology based on different age groups, stages, different kinds of cancers and again after a fairly good understanding of the radiobiological aspects which is the basis for getting the best results following irradiation; when it comes to the management of the patient after a histopathology diagnosis and staging, group discussion is very important. Time and time again I have been stressing on the basis on which a cancer patient needs to be managed. A thorough review of the literature based on results of various clinical trials should be inspected thoroughly. We need to not just look at the available American and the European guidelines but study them seriously and come to a clinical judgment based on our own experiences and practices both academic and clinical, the way it should be.

It is very important to see that the economically weaker section of the society has the access to modern treatment which is the standard of care. Science and technology should be combined to implement the evidenced based medicine for a successful outcome.
The triumph of Radiation therapy depends on the radio sensitivity of the particular tumour being treated relative to the surrounding normal tissue. The aim in Radiation therapy thus is to sufficiently separate the dose response curves of local tumour control and normal tissue complications. During the past decade, advances in radiologic imaging and computer technology have significantly enhanced our ability to achieve the goal through development of modern Linear Accelerator Machines capable of three dimensional image based conformal radiation therapy (3D-CRT), Intensity modulated radiation therapy (IMRT), Image guided IMRT or IGRT, Flattening free filter technique, Stereotactic body radiation therapy (SBRT), Stereotactic radio surgery (SRS) and Stereotactic radio therapy (SRT). Cyberknife and Tomotherapy have augmented the available resources in special situations. The implementation of these technologies permits better shaping of the high dose volumes of the radiation treatment so as to better conform to the tumour volume while minimizing the radiation dose to the surrounding normal tissue. Success of the above techniques critically relies on the accurate delineation of the tumour volume, with the help of imaging modalities such as Computed tomography (CT), Magnetic resonance imaging (MRI), Positron emission computed tomography (PET CT), and 4 dimensional computed tomography. (4D-CT). Organ motion change of the patients anatomy and the tumour response to radiation therapy calls for the transition from 3D CRT to 4D IGRT.

Let us have a look at some of our Radiation treatment plans to appreciate what modern techniques can deliver for improved outcome and better quality of life.

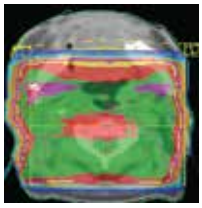


Fig 1

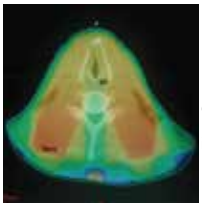


Fig 2

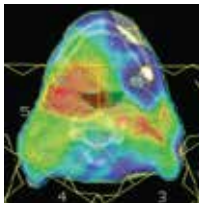


Fig 3

Comparison of dose distribution between various techniques FIG 1-3

FIG 1 Ca Oropharynx on conventional 2D radiation treatment plan. Surrounding normal structures fall in the high dose region resulting in unacceptable toxicity

FIG 2 Ca vocal cords 3D CRT Better conformity. Compared to 2D. Even though excess dose to the surrounding normal structures

FIG 3 IMRT. Surrounding normal tissues are significantly spared from high dose thus minimizing toxicity to a great extent

Fig 5

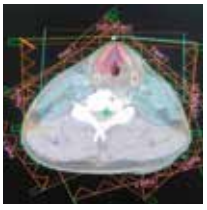


Fig 4

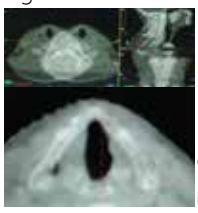


Fig 6

FIG 4 Ca vocal cords IMRT with SIB (simultaneous integrated boost) technique. Significant sparing of radiation dose to normal structures .Dose modulation to enable very high dose delivery to the area of gross disease and lesser doses to the areas of microscopic disease and presumed microscopic disease in the same sitting

FIG 5 ,6 Ca vocal cords same patient IGRT . Verification and placing the target in the path of the radiation beam before irradiation

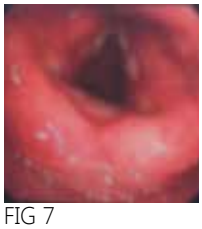


FIG 7
Same patient
before treatment

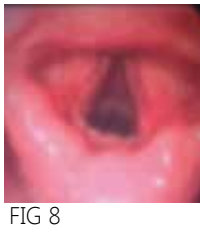


FIG 8
After treatment
Complete response

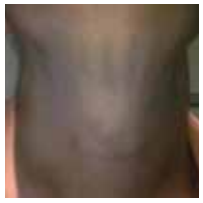
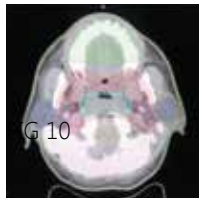


FIG 9 No soft tissue morbidity



G 10

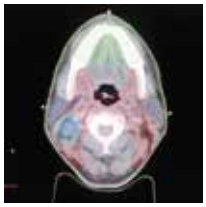


FIG 11
Ca Nasopharynx
Notice the sparing of parotids ,spinal cordOral cavity from the high dose region (blue and red) with IMRT

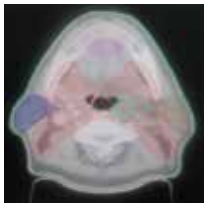


FIG 12 Ca Left Pyriform fossa extending on to Left Ary epiglottic fold With Left level 2 and 3 nodal mets.

Treated with IMRT. Notice the conformity of the radiation beam to the target and sparing of surrounding normal structures

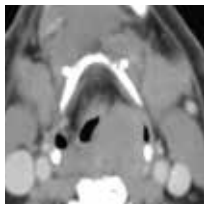


FIG 13
Same patient
Before
treatment

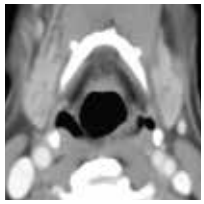


FIG 14
After treatment
Complete response

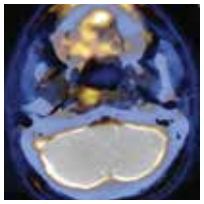


FIG 14 A 26/4/10

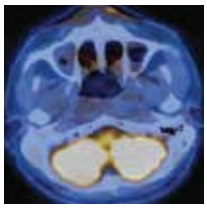


FIG 14 B 2/8/10

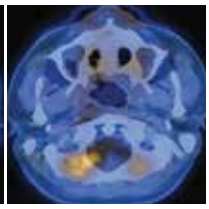


FIG 14 C 6/12/12
NED Three and half year later

A young gentleman of 23 years, med representative, treated in 2005-06, localized recurrence in April, 2010 Underwent treatment with SBRT technique using Cyber Knife

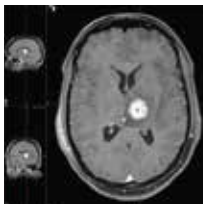


FIG 15 Oligo brain metastasis

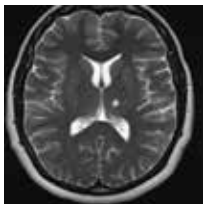


FIG 16
same patient after SRS with Cyber knife

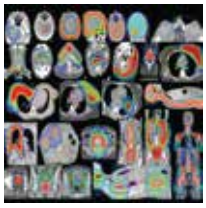


FIG 17
Tomotherapy for various sites in red

Notice the significant sparing of normal structures

conclusion:

Newer modalities of Radiation treatment enables us to deliver a very high dose of radiation to the cancerous site with significantly much lesser dose to the surrounding normal structures, thus enhancing very high cure rates without significant toxicity and at the same time ensuring a very good quality of life, when used alone or in combination with surgery and /or chemotherapy as definitive, pre operative, post operative, and for recurrent cancers.

Fracture Neck Of Femur With Alkaptonuria

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DNB Post Graduate

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Dr. Rajesh Kumar, MBBS, M.S (Orthopedic Surgery),
Diplomate in National Board (Orthopedics)
Orthopedic Consultant
Kauvery Hospital - Trichy

Abstract

Fracture neck of femur in younger age group (<60 years) poses a dilemma in terms of surgical management of the fracture. The aim of treatment is early mobilization of the patient after surgery to prevent development of complications. Major trauma is the leading cause of fracture neck of femur, however pathological fractures of the neck of femur have to be kept in mind. One cause of the latter is alkaptonuria, and the orthopaedic manifestations of the disease need to be kept in mind.

Case Report:

We present a 55 year old male patient, acute onset of pain in his hip following a fall tripping while walking, with a history of right hip pain past two years. He had diabetes mellitus, was on regular treatment and it was well controlled. He underwent a contralateral cemented bipolar hemiarthroplasty for a left sided traumatic fracture neck of femur sustained 5 years ago.

On examination, there was external rotation and shortening of the right lower limb with painful hip movements, inability to do active SLR(straight leg raise) and localised joint line tenderness. X ray showed a degenerative right hip with a fracture neck of femur [Fig 1]. Apart from the localised hip findings, the patient also had genu varum bilaterally and minimally painful bilateral knee.

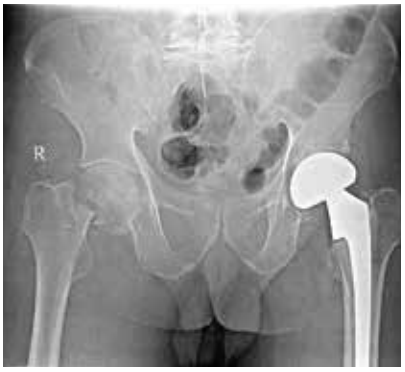


Fig 1. Pre operative radiograph showing fracture neck of femur right side with hemiarthroplasty on left side

The patient underwent a cemented total hip replacement [Fig 2] under general anaesthesia for the fracture neck of femur, asregional anaesthesia was attempted but was not successful.

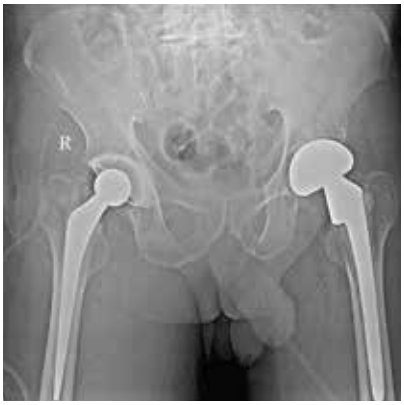


Fig. 2 – Post operative radiograph showing total hip replacement on the right side and hemiarthroplasty on the left side

Intra operative findings were as follows. There was blackish pigmentation of the tensor fascia lata, the capsule and the tissue surrounding the hip and the labrum. The head and the acetabular cartilage was completely blackened [Fig 3]. A standard cemented total hip replacement was performed. Wound was closed over a drain which was removed after 48 hours. Routine post-operative rehabilitation was done following the procedure including walker assisted weight bearing on the first post-operative day. He was discharged having had an uneventful recovery.

Fig 3. Head of femur when removed from the patient showed complete black discolouration

Fracture neck of femur is a common, serious, and life threatening injury especially in the elderly population, with an incidence of 1/1000 population. Femoral neck fractures in the elderly population is generally secondary to osteoporosis with low energy trauma. Apart from senile osteoporosis, osteomalacia is also known to be a cause for pathological fracture neck of femur.

Insufficiency fractures may occur in patients, without no apparent history of trauma. These fractures may occur in pre-existing diseases that cause an alteration in the quality of bone or due to external factors, like bisphosphonate,s that may cause a change in bone quality. While all these causes may be the aetiological factors for femoral neck fractures in the elderly age group, the incidence of the fracture in young adults is also rising due to the higher incidence in road traffic accidents and trauma. The treatment for fracture neck of femur is largely based on the age of the patient and the time from injury to the presentation of the patient at the hospital. In older patients and patients with rheumatoid arthritis, arthrosis or pathological fractures, surgeons agree that the best modality of treatment is arthroplasty. The choice between hemiarthroplasty and total joint replacement is influenced by many factors. AAOS in 2014 published guidelines that recommended a total hip replacement in patients above the age of 65 years. However, there is no consensus on the treatment of femoral neck fractures in younger patients with a displaced fracture. In younger patients, conservative management with fixation using screws may be opted for. However, with this line of management, there is an increased risk of revision surgery. If there has been a considerable lag between the time of occurrence of the fracture and the time of surgery, the risk of avascular necrosis rises, and joint replacement may be the choice of the surgeon.

Therefore, apart from the age of the patient and the time of presentation, the aetiology of the fracture is also an important factor in determining the line of management for the patient.

Alkaptonuria is one such disorder that may cause pathological fracture of the neck of femur. It is a rare autosomal recessive metabolic condition which affects the metabolism of phenylalanine and tyrosine. It occurs due to the deficiency of homogentisatedioxygenase leading to the accumulation of homogentisic acid. On exposure to air, HGA undergoes a process called ochronosis, causing oxidation and polymerization of the homogentisic acid that gives a black colour to urine and the tissues, where it gets accumulated. The pigment gives a macroscopic appearance of black colour, while it has an ochre colour on unstained HPE slides giving it the name ochronosis.

Edgar Reid first described this condition as a clinical curiosity rather than a phenomenon with and morbid interest. Since then, alkaptonuria has been shown to cause a disorder with multisystem involvement. It is known to affect various organs namely kidneys, major vessels, heart, soft tissues including tendons and cartilage.The clinical manifestations are dark coloured urine on exposure to air, staining of the clothes due to the pigment in sweat, and it is deposited in the patients' skin, teeth, nails, pinnae, sclera and buccal mucosa, larynx, tympanic membrane and tendons. Renal stones, renal failure, aortic valve stenosis and orthopaedic predominance of severe arthritis and spondyloarthropathy, tendon rupture are all signs of amore serious disorder.

While the disorder may itself be congenital, Patients with alkaptonuria may be asymptomatic till the 4th decade of life, when it largely manifests as arthropathy. The pigment has a greater affinity for the hyaline cartilage of the large joints and the intervertebral discs. With advancing age there is deposition of homogentisicacid and its oxidised products extracellularly on the surface of collagen fibres as well as intracellularly in the fibroblasts. Impregnation of the deposit causes the tissue to become friable and brittle. As a result, severe degenerative changes are seen in the large joints and the thoracic and lumbar spine. Synovial reaction is common, however pathological fracture neck of femur is quite uncommon.

Ochronoticarthropathy typically involves the intervertebral discs and gives it a characteristic appearance on radiographs. However, peripheral arthropathy has no such imaging peculiarities, leading to a missed diagnosis. The picture obtained radiologically, does not correlate to the clinical symptoms of the patient.

Orthopaedic manifestations:

The commonest involvement is that of the spine – patient may present with spondylosis, known as 'first sign' of ochronosis.Clinically, the patient presents with chronic back pain with loss of lumbar lordosis with an increase in thoracic kyphosis. It may also lead to loss of height and decreased lumbar

flexion. It differs from other degenerative disorders in that the symptoms are more thoraco lumbar than lumbosacral and the lack of involvement of the sacroiliac joint (differentiates it from ankylosing spondylitis). It is a progressive disease in which there is a calcification or ossification of the disc which is pathgnomonic on radiography, with typical narrowing of the disc spaces and a variable degree of fusion of the adjacent vertebrae and small osteophyte formation and occasional reports of a prolapsed intervertebral disc.

Peripheral arthropathy usually involves the larger joints and commonly, the small joints are spared. The high affinity of the pigment to the proteoglycans of the hyaline cartilage may increase the fragility of the tissue leading to early degenerative changes. Premature large joint arthritis may develop in the middle aged patient between 30 and 50 years of age. It typically affects the hips, knees and shoulders. Radiographically, there is loss of joint space and subchondral sclerosis and osteophytes are not as evident as osteoarthritis. Calcification may also be seen in the menisci when the knee is involved. While there is no definitive medical management of the disease, patients may present with painful debilitating joints that require arthroplasty for severe degenerative arthritis. While there is some concern regarding the decrease in quality of bone and connective tissue due to the disease, Studies have shown that there is no difference in the longevity of the joint post replacement in these patients.

Connective tissue involvement is seen with pigmentation of sclera and ear cartilage. However, orthopaedically, it leads to tendon related findings. The accumulation of homogentisic acid in the connective tissue inhibits collagen cross linking and thereby reduction in the structural integrity of collagen. The most often reported finding is that of thickening of the Achilles tendon, with involvement of up to 50% of the patients. Spontaneous ruptures or ruptures with low energy trauma may be seen in these patients, with Achilles and patellar tendons being commonly involved. Tendons generally rupture where they have been weakened by the deposition of the pigment – which is seen intra operatively as blackish discolouration at the ruptured ends. The repair of the tendon has to be done after the tendon has been debrided to healthy tendon. The tendons once repaired, heal well after debridement and primary repair.

ANTICIPATED DIFFICULTIES DURING SURGERY

Anaesthetic problems - A thorough evaluation of the type and severity of systemic dysfunction is essential before administration of anesthesia. Cardiac problems due to calcified and stenotic valves may be detrimental while considering general anaesthesia. The accumulation of homogentisate may also lead to the development of renal calculi and therefore renal failure. The cartilage of the airway and respiratory system too may be affected in ochronosis - heavy deposition of the pigmentinthe laryngeal, tracheal, and bronchial cartilages may result in hoarseness, dysphagia, and difficult airway management.Restrictive pulmonary disease may also be present in ochronotic fibrosis of the costal cartilages. Homogentisic acid may cause damage to the thedura and arachnoid membrane and also narrowing of the disk space and spine fusion would make the regional technique unsuccessful.

Difficult arthroplasty procedure – reports have suggested that the thickening of the capsule may lead to difficulties while attempting to cut the capsule during arthrotomy, and a saw blade may need to be used to substitute the scalpel; difficulty in dislocating the patella during (total knee replacement) TKR due to stiffened and attenuated patellar tendons. In the post operative phase, ochronosismay affect the mechanical properties of the bone and connective tissue because of which early implant failure maybe seen.

CONCLUSION:

Fracture neck of femur is a very common fracture causing considerable morbidity and mortality in young and old patients. Apart from trauma, various other causes, like alkaptonuria have to be borne in mind. Alkaptonuria is one such cause of a pathological neck of femur fracture with various other orthopaedic manifestations.

Hearty Congratulations to

Dr. Manisha J Kumar

Kauvery hospital is proud to announce that,
Dr. Manisha J Kumar, DNB PG from ortho paediatrics department has participated in the IASCON 2016 held in Kolkata held between 30th September and October 2nd and bagged the 2nd place for oral poster presentation.

She has presented for three minutes on the poster titled "Is any patient too old for ACL reconstruction" in The National Conference of the Indian Arthroscopy Society.

A Landmark In The History Of Microsurgery In Trichy

Dr. S. Skanda, MBBS., M.S(General Surgery)., M.Ch(Plastic & Reconstructive Surgery)
Consultant Plastic surgeon and in charge,
Hand injury and Microsurgical Unit
Kauvery Hospital - Trichy

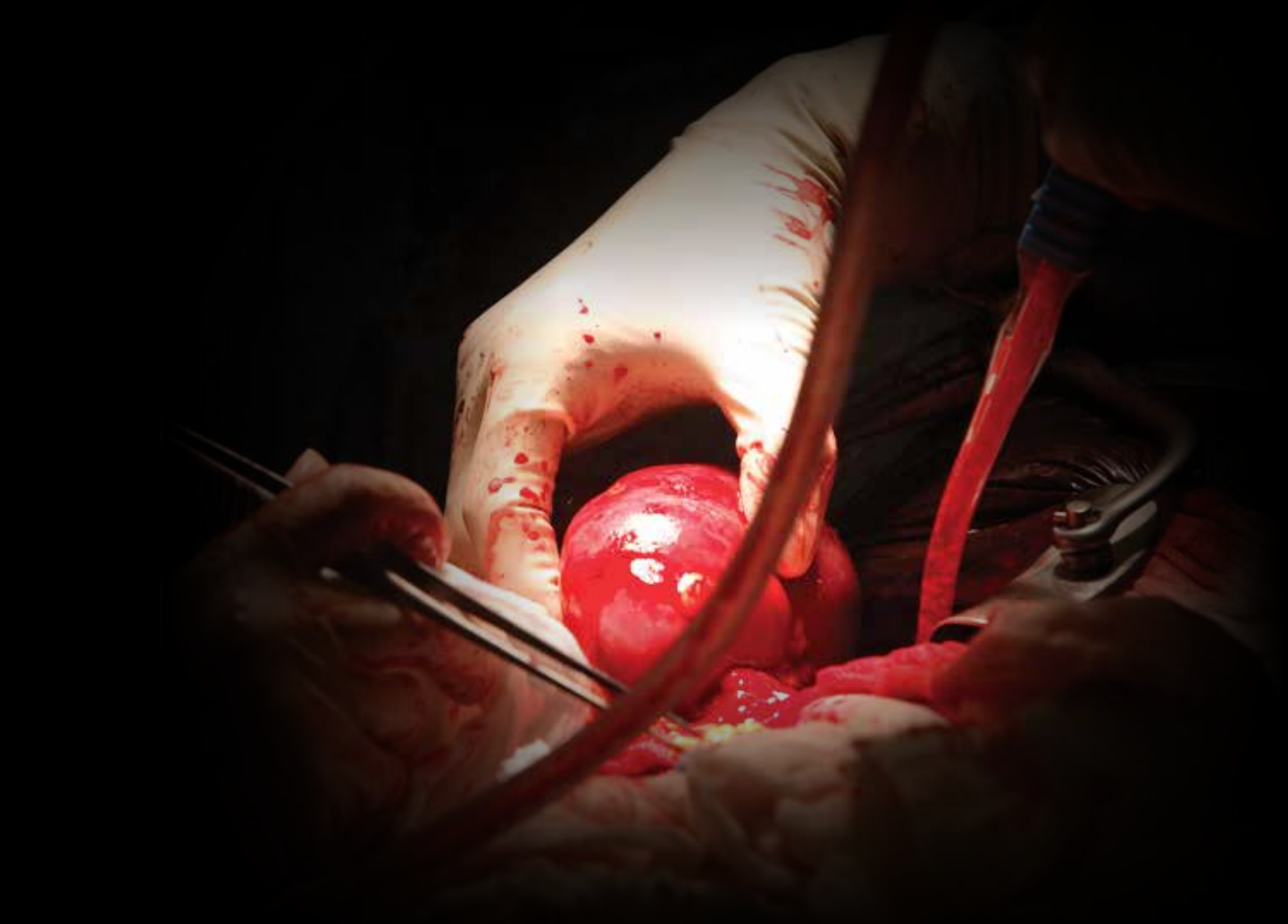
Replantation (reattachment of an amputated part back to the body) is an extremely difficult and special skill. There are multiple factors that go into the success of each replant, with highest levels of technical skill and expertise involved in the process, along with a highly equipped team ready to face this even during odd hours. Highest level of skill and dedication is involved in a replant,as every minute is precious and every minute that is wasted can cause a replant failure or result in poor functional outcome. So when so many factors are involved in a single replant, one can imagine the complexity of a double replant.

A 43 year old business man was viciously assaulted. He was received in a state of shock with as many as 30 cuts all over the body. **His left hand and right thumb were completely severed from the body.** In addition, he suffered a cut facial nerve, an extensor injury at three levels in his right forearm and a fracture of both bones to his right forearm and injury to his lower limbs. He was received within two hours of his injury having happened at a small town near Trichy.

He was vigorously resuscitated by the team of Microsurgical plastic surgeons and Anesthesiologist, who took him up for replantation. In a marathon attempt lasting over 14 hours, both amputated parts were successfully reattached. His bones were stabilized, all flexor and extensor tendons were repaired, digital nerves were repaired, and arteries and veins were anastomosed in a complex microsurgical procedure. All the other injuries were also addressed. His post-op period was stormy and patient went into shock following reperfusion injury, and was vigorously resuscitated. Not only did both replants survive, but also the functional recovery has been excellent. This patient is able to do vigorous gym exercises, and drive a bike.

This is a landmark case in the history of microsurgery at Trichy. This is the first and only ever recorded bilateral replant. This is also the only successful bilateral replant in Trichy, which is a great achievement in itself.

This case is a testimony to the wonder that is microsurgery. This has not been a result from an international centre, but right here, at Trichy the cumbersome process was achieved remarkably. The photos are a testimony to the determination of the patient and the team that we have here, which **"Never say die!"**



Renal Transplantation in a Hypercoagulable State

Dr.T.Rajarajan, MBBS – MD, DM

Consultant Nephrologist
& Transplant physician,
Kauvery kidney centre, Tennur - Trichy

A male of 38 years, tailor by occupation, non-smoker, non-diabetic, normotensive known chronic kidney disease on follow up elsewhere, was presented with severe renal failure with early uremic symptoms.
Significant past history includes, acute onset diminution of right eye vision in 2004 which was diagnosed as branch retinal artery and venous occlusion, for which he underwent trabeculectomy and laser photo coagulation. He was diagnosed as having chronic kidney disease in 2011 (Sr. creatinine 2.0mg / dl, Ultrasound showing B/L small echogenic kidneys and no active urine sediments) and was on follow up elsewhere. Blood counts were normal at that time. Left radiocephalic AV fistula was created and haemodialysis was initiated on May 2015. Spouse (Blood group B +ve) was willing to donate one of her kidneys and both had worked up for renal

transplantation. In view of unexplained spontaneous arterial and venous thrombosis, work up for hypercoagulable state was also undertaken. His lab profile was as follows.

- Sr.Protein – C 52.8% (Normal 70-140)
- Sr.Protien – S 61.6 %(Normal 65-140)
- Antithrombin III level Normal
- Facter V leiden mutation Heterozygous mutation
- Sr. Homocystiene 20.7 mol/l(3.7–13.9)
- APLA Screening:
- Beta 2 Glycoprotein Negative
- Anticardiolipin antibody Negative
- Antiphospholipid antibody IgG&IgM Within normal limits
- Lupus anticoagulant 0.8 (normal<1.2)
- ANCA P & C Negative
- ANA Negative
- CRP Negative

To summarize, our patient had heterozygous factor V leiden mutation, low protein C and S with strong presence of acquired inhibitors of coagulation (invitro testing). With the explained and risk of graft vessels thrombosis and increased incidence of vascular rejection and subsequent graft failure, patient was taken up for renal transplantation surgery on 25.06.15. He was given induction therapy with thymoglobulin (ATG). Surgery was uneventful. Profuse urine output was noted soon after the clamp release. Nadir creatinine was reached in post-op- day 2 (Sr creatinine 0.8 ug/dl). Tacrolimus / mycophenolate / steroids were his immunosuppressive drugs. In order to prevent early graft vessel thrombosis, unfractionate Heparin 5000 units subcutaneously thrice daily with tablet Ecospirin 75 mg was started soon after transplantation and was continued for 5 days postoperatively. He was switched over to Dalteparin

Acquired inhibitors of coagulation

	CONTROL	TEST	MIX
PT	12	11.9	12
APTT	31.7	33.9	31.8
½ hr	31.4	36	33.5
1hr	31.4	36.2	36.1
1 ½ hr	31.0	36.7	38.7 ↑
2hr	31.8	37.6	39.2 ↑

5000u SC once daily along with Clopidogrel 75 mg once daily at discharge. Patient was maintaining normal graft function at discharge (Sr.creatinine 0.8 ug /dl). Dalteparin was continued for 3 week and later switched over to Apixaban 2.5mg OD (Direct Xa inhibitor) which was continued for 6 months. His early post operative period and follow up largely remained uneventful and as on June 2016, he was maintaining normal graft function (Sr.creatinine 0.9ug/dl).

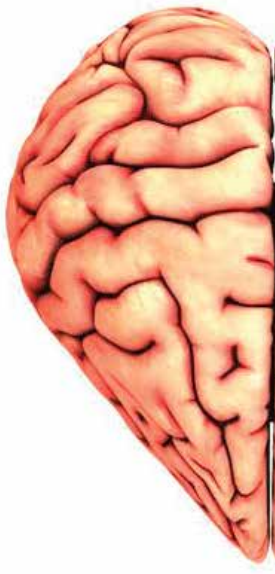
Discussion:

Hypercoagulable state is defined as a group of inherited and acquired condition associated with increased risk of venous and arterial thrombosis. Among the various etiologies of hypercoagulable state, Factor V leiden mutation (3-7 % of general population) ranks first in its prevalence followed by prothrombin mutation (1-3%). Other etiologies include protein C & S deficiency antithrombin and plasminogen deficiencies, activated protein C- receptor mutation, homocysteinemia, APLA syndrome[1]. There occurs many haemostatic abnormalities in CKD of which increased activated protein C, increased Factor VII a, VII a, fibrinogen and von villebrand factor are the commoner observations[2]. A study by Lidia Ghisdal et al., showed antithrombin deficiency, Protein C & S deficiency, Activated protein C resistance, elevated factor VIII c are found with increased incidence among the dialysis patient when compared to early CKD patients[2]. However, this study also states that the prevalence of Factor V leiden mutation doesn't increase among dialysis population compared to the control group.
Since, our patient had spontaneous venous and arterial thrombosis at the time when the renal function was said to be normal, we consider the abnormalities (Protein C and S deficiency and Factor V Leiden mutation) to have been inherited. With regard to renal transplantation in these patients, a study by Stefan Heidenreich et al., observed that Factor V leiden mutation and Prothrombin gene mutation are associated with increased risk of acute vascular rejections and early graft vessels thrombotic episodes. However the presence of hypercoagulable state is not an absolute contraindication for renal transplantation, the study further concluded. Our patient who had Factor V leiden mutation, Protein C and S deficiency was successfully transplanted with no vascular events or acute rejections in our 10 months follow up.

Conclusion:

Renal transplantation can be safely done in patient with hypercoagulable state, provided effective anticoagulation for the extended period of 6 months following transplant should be given and monitored carefully.

The Brain Heart Nexus - Neurocardiology



Dr. Prithika Chary, MD (GEN), DM(NEURO), PHD(NEUROLOGY), MNAMS(NEUROLOGY), MCHN(NEURO SURGERY
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The heart and brain have an intimate association in function and in disease. Several disorders of the brain are due to cardiac causes and often associated with cardiac disease

Some of the associations are listed below:

• Cardiac arrest and other hypoxic ischaemic insults

• Brain embolism

• Encephalopathies and neurological effects of drugs used in cardiac patient

• Neurological complications of cardiac surgery

• Neurological complications of nonsurgical cardiac interventions

• Asymptomatic coronary artery disease in patients with carotid artery stenosis - incidence, prognosis, and treatment

• Cardiac and cardiovascular findings in patients with nervous system disease

Neurological consequences of Cardiac arrest

This is a serious issue requiring our attention as it is associated with high caregiver and economic cost. With increasing public awareness about basic life support and the use of defibrillators and improved emergency services and ICU care, the number of patients resuscitated after a cardiac arrest has increased considerably.

However, only a small number of these patients recover, the prognosis is poor and those who survive are often severely impaired neurologically. Fewer than 60% of persons in whom cardiopulmonary resuscitation (CPR) is attempted following SCA will survive hospital admission, with 2%-44% reaching hospital discharge. The inherent ability of the brain to tolerate global ischaemia limits its response.

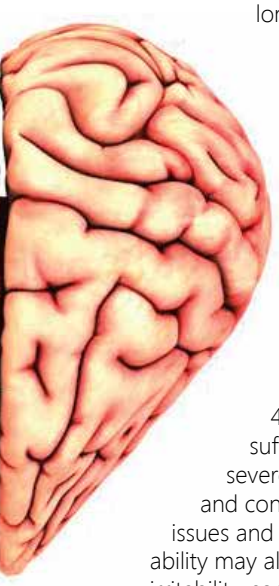
In the natural history of such patients, a number of clinical variables determine neurologic outcomes following resuscitation,

- time to postarrest awakening,
- the number of minutes until bystand er CPR is initiated,
- time from collapse to first defibrillatory shock,
- time from collapse to the return of normal sinus rhythm, and
- time to receipt of advanced life support

The American Heart Association's joint task force on uniform reporting for out-of-hospital cardiac arrest has identified the period of unconsciousness after resuscitation as a simple and reliable approach for determining post arrest cerebral outcomes.

- Time to initiation of CPR (<4 min) and response times of medical personnel were significantly associated with postresuscitation survival.
- If definitive care (e.g., defibrillation, medications) was received within 8 minutes after collapse, 33% of patients lived to hospital admission, and 37% of these were discharged from the hospital.
- Other authors have reported that, patients who are arousable 12-72 hours after resuscitation usually do well neurologically
- In an evaluation of 117 survivors of out-of-hospital cardiac arrest who were

resuscitated and followed for 3.5 years, Earnest et al. found that those who were awake on hospital admission and who survived medical complications had a 90% probability of good long-term neurologic function.



Deficits in cognition may be mild and transient in some in the early days after good recovery after resuscitation. These may be due to depression, CNS side effects of antiarrhythmic drugs, or hypoxia due to low cardiac output states. 40% of long term survivors suffer mild to moderately severe impairments in memory and concentration. Attention issues and impaired constructive ability may also occur. Increased irritability, social isolation, subtle behavioural changes, impatience, deficits in comprehension, problem solving ability, reduced attention to environmental stimuli, forgetfulness, changes in learning abilities are all possible cognitive impairments after SCA and resuscitation.

The Injury cascade

During total circulatory arrest, lack of cerebral oxygenation results in
- Loss of ATP production and dysfunction of membrane ATP–dependent Na-K pumps.
- Subsequent loss of cellular integrity triggers the release of glutamate, which causes excitotoxic injury that is mediated largely through N-methyl-D-aspartate (NMDA) receptors

- Other neurotransmitters that dampen the excitotoxicity of glutamate, such as glycine and g-aminobutyric acid (GABA), are decreased concomitantly
- Activation of NMDA receptors by glutamate leads to an influx of calcium into the intracellular space. Elevated intracellular calcium activates a series of second messengers, which amplifies injury by increasing calcium permeability and glutamate release.
- Elevated intracellular calcium also increases oxygen-free radicals by interfering with the mitochondrial respiratory chain.

During re-perfusion, excitotoxicity can be enhanced by providing oxygen as a substrate for several enzymatic oxidation reactions that produce free radicals in the setting of mitochondrial dysfunction.

These reactive oxygen species are known to cause damage through lipid peroxidation, protein oxidation, and DNA fragmentation, all of which contribute to cell death. The complexity of the injury cascade is not limited to the above processes. This injury cascade begins with hypoxia and reperfusion, but it can continue for hours to days after the initial insult.

Clinical Neurological examination after resuscitation from SCA

Assess mental status by documenting the patient's ability to arouse and interact meaningfully with the examiner.

Evaluation of the brainstem includes the testing of cranial nerve function and reflexes, most importantly the pupillary light reflex, corneal reflex, grimacing to noxious stimulation, cough and gag reflexes, and the presence of spontaneous respirations.

In a comatose patient, the motor and sensory examination relies on the evaluation of the patient's response to a noxious stimulus, which may be purposeful (warding off the stimulus), reflexive (extensor or flexor posturing), or absent.

It is also helpful to note the autonomic responses such as respiratory pattern, temperature lability, and heart rate and blood pressure variability.

Parameters of poor outcome

The American Academy of Neurology published an evidence-based review and generated practice parameters on the prediction of poor outcome in comatose survivors of cardiac arrest. The practice parameters defined specific indicators of poor outcome on bedside examination:
- absent pupillary light response and corneal reflexes and extensor or
- no motor response to pain after 3 days of observation (level A), and
- myoclonic status epilepticus (level B).
- Based on neuroelectrophysiologic testing, the bilateral absence of cortical responses (N20 potentials) on somatosensory evoked potential recordings 3 days after CPR also predicted poor outcome (level B).
- Serum neuron-specific enolase greater than 33 mg/L also was specific for poor outcome (level B).

Neuroprotective measures to improve outcome

- Controlled hypothermia within 6 hours post cardiac arrest has improved outcomes but the extent and duration of hypothermia recommended is not clearly defined.
- No specific pharmacological agents have been found useful
- But managing associated factors in the ICU can be beneficial

Maintaining cerebral perfusion hypotension after resuscitation should be avoided. Cerebral perfusion is compromised due to microvascular dysfunction and failure of cerebral autoregulation. It can be compromised further by altered autoregulation of the cerebral vasculature, which has been described as absent or right-shifted in the acute phase in many survivors of cardiac arrest. The clinical implication of this finding is that a patient's mean arterial blood pressure (MAP) may need to be maintained at higher levels to ensure adequate cerebral blood flow. A MAP of greater than 65 mm Hg, which may support adequate coronary perfusion, probably is not sufficient to provide adequate blood supply to the brain, unless other therapies that are designed to decrease cerebral metabolic demand are implemented (eg, sedation, hypothermia).

A MAP of 80 to 100 mm Hg has been suggested to be beneficial, at least for the first 24 hours after arrest - **Cerebral oedema and raised intracranial pressure**-ICP is not

elevated after cardiac arrest, but high ICP can compromise cerebral blood flow, and cerebral herniation can cause structural brain damage and death. In comatose patients with evidence of increased ICP, such as clinical signs of herniation or cerebral edema on CT scan, ICP monitoring may be helpful to guide therapies for optimization of ICP and cerebral perfusion pressure. Hypoxia, hypotension, and hypercapnia can worsen brain damage and should be avoided. In the absence of ongoing ICP elevation, prophylactic and long-standing hyperventilation aggravated a wide range of brain injury. Therefore, it is suggested that comatose patients be mechanically ventilated to achieve normocapnia.

Fever management - Fever may worsen secondary brain damage after cardiac arrest. Each degree over 37°C was increasingly damaging. Antipyretics and surface or invasive cooling measures should be used aggressively to ensure that the body temperature is less than 38°C.related with an increased risk for severe disability, coma, or persistent vegetative state.

Hyperglycaemia management - Hyperglycemia after ischemic brain injury has been associated with worse outcome. Recent studies have shown that tight glucose control in critically ill patients can lead to better outcome. The favourable neurologic outcome was noted not only in the glucose range of 67 to 115 mg/dL, but also in those with blood glucose levels from 116 to 143 mg/dL especially in the first 12 hours.

Seizure control -Seizures and myoclonus are common after cardiac arrest and the occurrence of status epilepticus is a strong predictor of death. Seizures can be detrimental to recovering brain because of the increased cerebral metabolic demand and elevated ICP. Seizures also can slow recovery of consciousness after resuscitation. Prophylactic antiepileptic drugs are not used commonly; however, if a patient develops seizure activity, it should be treated with standard antiepileptic medications. An EEG should be performed on any patient who is suspected of having seizures, and it should be considered if the patient fails to regain consciousness after resuscitation to rule out nonconvulsive status epilepticus.

Brain injury continues to be the leading cause of disability after cardiac arrest, despite seminal advances in intensive care and cardiovascular therapy over the past several decades. Care of these patients can be challenging, and it requires a great deal of medical resources and expense.

Total Proctocolectomy With End Ileostomy For Adenomatous Polyposis Colon- Case Study

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Adenomatous polyposis is a syndrome characteristically having numerous (hundreds to thousands) polyps in the epithelium of the large intestines with an autosomal dominant inheritance caused by germ line mutations in Adenomatous Polyposis Coli (APC) gene in chromosome. Most patients have a family history of colorectal polyps and cancer but 25-30% of them without any clinical or genetic evidence of adenomatous polyps in family members. Prophylactic proctocolectomy is required in almost all patients since all affected patients inevitably develop cancer. Its prevalence is approximately 3–10/100,000, affecting both sexes equally. These polyps start out as adenomas in childhood, predominantly in the

rectosigmoid colon, and during the second and third decades of life a malignant transformation to colorectal cancer occurs. The most common symptoms manifest in the advanced stage which include rectal bleeding, anemia, abdominal pain, tenesmus, intestinal obstruction and diarrhea. In the majority of patients, a genetic disorder resulting from a germ line mutation in the adenomatous polyposis gene (APC gene) is responsible for the syndrome. The majority of patients with adenomatous polyp develop colorectal cancer by the age of 40 years. Therefore, different surgical strategies have been adopted to prevent cancer development in the large bowel mucosa. Here we discuss a case of a 51-year-old lady who presented with altered bowel habits without any family history, which on evaluation as found to have multiple colorectal polyps and underwent Total Anoproctocolectomy with end ileostomy.

CASE STUDY:

A 51 years old lady, yoga instructor presented with the history of altered bowel habits since 2 months with intestinal obstruction. Known case of Hypothyroidism on treatment. She has a history of multiple surgeries in the past (Right ORIF, Total Thyroidectomy and Total abdominal Hysterectomy). Her investigation of CT abdomen showed circumferential growth causing lumen narrowing visualized in the sigmoid colon with multiple enlarged regional lymphnodes. Colonoscopy showed polypolis/partial colonic obstruction, in which colonoscopic biopsy showed malignant adenomatous polyps. Due to her symptoms she was taken up for surgery, patient wanted to have a normal passage and did not want a stoma, hence anterior resection was done, her intra operative finding showed carcinoma of sigmoid with obstructed growth, plenty of nodes in the pedicle, entire colon and rectum with polyps and adhesion due to previous surgeries and liver free. Her Histopathology showed adenocarcinoma involving serosa, nodes were negative for malignancy. She underwent 8 cycle of chemotherapy. After 8 months, during her repeat colonoscopy showed multiple polyps in residual colon and a polyps in the ascending colon showed suspicious of malignancy in the histopathology. PET scan showed multiple polypoidal lesion in caecum/ascending colon and transverse colon (multiple focal neoplastic colonic polyps) with no evidence of metabolically active disease anywhere else in the body. Hence she underwent total proctocolectomy with end ileostomy. Intraoperatively findings showed dense adhesion between the omentum and parietal wall and bowel loops, multiple polyps in the entire colon and rectum. Her histopathology report showed Caecum shows large adenomatous polyps with focal areas with high grade dysplasia, rest of the colon and rectum show multiple polyps with low grade dysplasia and occasional polyps show high grade dysplasia, margins free of tumours and 9 regional lumphnodes showed free of tumour. Her post operative period uneventful and was discharged in stable condition with end ileostomy management.

DISCUSSION:

Prophylactic surgery is recommended before the age of 25 years. The main surgical options for patients with Adenomatous polyps are:

(1) Total proctocolectomy with Brooke ileostomy
(2) Subtotal colectomy with ileorectal anastomosis,
(3) Restorative proctocolectomy with the formation of an ileal reservoir and ileoanal anastomosis.

The decision to remove the rectum depends upon the number of rectal polyps and the family history. For few polyps in the rectum, total colectomy with ileorectal anastomosis is recommended. In rectal involvement, a restorative proctocolectomy with ileal pouch-anal anastomosis is the treatment of choice. Prophylactic surgery improves the outcome of patients significantly and it is recommended in late teens or early twenties. The risk of developing rectal adenomas and carcinomas after ileorectal anastomosis is approximately 13 to 59%, after 25 years mandating a lifelong rectal surveillance. Proctocolectomy with pouch formation and ileoanal anastomosis is the preferred surgical procedure as it completely removes large bowel mucosa as potential site for origin of cancer, minimizing the risk of malignancy and also preserving the bowel function. Patients undergoing proctocolectomy, an annual endoscopic surveillance of the pouch and transitional anal zone is important because premalignant changes and invasive adenocarcinomas are found in the ileoanal pouch after restorative proctocolectomy. The American Gastroenterology Association recommends annual sigmoidoscopy in patients with classic family history and at-risk relatives starting at the age of 10-12 years. Patients with adenomatous polyps found on sigmoidoscopy require a full colonoscopy and biopsy.

CONCLUSION:

Patients with adenomatous polyps may present with vague abdominal complaints and without any family history, hence need to be carefully evaluated. Good patient compliance is of prime importance in deciding the treatment and surveillance modality subsequently determining the prognosis of patients with multiple polyps. Timing and type of preventive surgery as well as compliance with preventive strategies and strict follow-ups are essential for minimizing the risk of cancer development in patients with these symptoms.

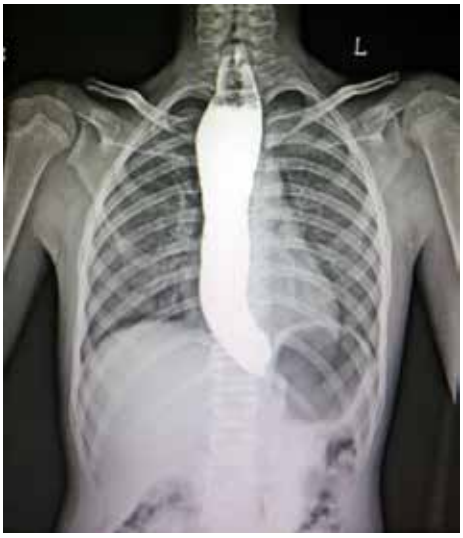
Organ Donors Day Human Chain

Kauvery Hospital organized a District level Awareness Human Chain, recommended by the Chief Minister's Comprehensive Health Insurance Scheme on 25th Nov 2016, on the occasion commemorating Indian Organ Donors Day. Mr.Sachithananadam, Assistant Commissioner of Police, Srirangam was the chief guest. More than 500 members from various firms and institutions like NGOs, Rotary Elite, Live Donors and Organ recipients participated in the human chain. Signature campaign was also organized and sensitized the idea of organ donation to the public.

Hosur Unit Launch

Kauvery Hospital's sixth unit was inaugurated at Hosur Shanthi Nagar on 20th November 2016. The mark of the inauguration is yet another milestone in successful journey of our hospital towards the service of humanity.

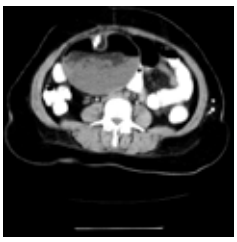
Mr. P.Balakrishnan Reddy, Minister of Animal Husbandry, Government of Tamilnadu, felicitated the event. The Catheterization laboratory was also inaugurated on the same day by Dr. K.Senthil Raj IAS, Sub Collector – Hosur Division. The directors of the hospital along with the dignitaries and the localities of Hosur participated in the inaugural function.



QUIZ COMPETITION

Quiz Question
16 year old male presented with history of dysphagia and chest discomfort.
What is the investigation?
What is the diagnosis?

Send your answers to capsule@kauveryhospital.com
or WhatsApp to +91 95240 64687



Previous Issue's Question & Answer
Question:
36 year old female presented with severe lower abdominal pain and vomiting.
What are the findings?
What is the diagnosis?
Answer
Ovarian Teratoma
(Ct image showing Fat, Tooth)

KAUVERY KIDNEY CENTER TENNUR RECORDS 250 RENAL TRANSPLANTS -A NEW MILESTONE

Kauvery Hospital – Tennur has set a new record by completing 250 successful Kidney Transplant Surgeries. The hospital had launched kidney transplant services way back in 2010. We have performed 30 Cadaver renal transplants during the past 6 years. We are well equipped with state-of-art infrastructure to handle High risk cases, Seropositive dialysis, CAPD and all major adult and Paediatric Urological Surgeries in our hospital at Tennur.

Dr. S. SENTHIL KUMAR.,MS.,DNB.,(URO)
HOD & Senior consultant Urologist and Andrologist
Transplant Surgeon
Laparoscopic surgeon

HEALTH RECIPE

40-Second Omelet

BREAKFAST, LOW POTASSIUM, HIGH PROTEIN

Ingredients

Based on 1 serving per recipe.

- 2 Eggs
- 2 Tbsp Water
- 1 Tbsp Margarine
- ½ Cup Filling (vegetable, meat, seafood)

Preparation:

Beat together eggs and water until blended. In a 10-inch omelet pan, heat margarine until just hot enough to sizzle a drop of water. Pour in egg mixture. Mixture should set at edges right away. With an inverted pancake turner, carefully push cooked portions at edges toward center so uncooked portions can reach the hot pan surface. Tilt pan and move as necessary. Continue until egg is set and will not flow. Fill the omelet with 1/2 cup of vegetable, meat, seafood, or fruit filling, if desired. Put filling on left side if you're right handed and the right side if you're left handed. With the pancake turner, fold omelet in half. Invert onto a plate with the omelet's bottom side facing up.

About This Recipe:

Eggs are a great source of protein and a quick meal when time is limited.

Calories	**255**
Carbohydrates	**1.3 g**
Protein	**13 g**
Dietary Fiber	**22 g**
Sodium	**296 mg**
Potassium	**122 mg**
Phosphorus	**195 mg**

Sodium: This recipe is low in sodium because it is hard on kidneys and raises blood pressure. Most people should limit sodium to 1,500 milligrams per day.

Potassium: If you are on hemodialysis, limit potassium too, to 2,000 milligrams per day. If you are on peritoneal dialysis or short daily dialysis, limit potassium to 3,500 milligrams per day.

Phosphorus: If you are on dialysis, limit phosphorus to about 1,000 milligrams per day.

Protein: If you are not on dialysis but have kidney disease, you might benefit from a diet lower in protein. Check with a kidney doctor or dietitian for guidelines.

“புத்தரிசி புதுப்பானை பொங்கலுடன்
கதிரவனை வணங்கி கொண்டாடுவோம் தைத்திருநாளை
அனைவருக்கும் காவேரி மருத்துவமனையின்
இனிய பொங்கல் திருநாள் நல்வாழ்த்துகள் ”

THE NEW-AGE FAMILY HOSPITAL

kauvery hospital

It gives us great pleasure & pride to share with you that the high end pediatrics & neonatology department of Kauvery Hospital has been recognized by the National Board of Examinations for conducting the DNB Programme in Pediatrics.

This is an important academic milestone in our journey and comes as a crowning glory to the center of excellence in pediatrics & neonatology of Kauvery Hospital.

List of DNB Programmes

- General Medicine
- General Surgery
- Orthopaedics
- Paediatrics

For more details contact: dnb@kauveryhospital.com

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