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MED REVIEW

July'16 - September'16
Vol. 2

Med Review published by Jaypee Hospital, Noida for Medical Professionals.

Permanent Pacemaker Implantation in Acute Myocardial Infarction

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Introduction

Acute myocardial infarction continues to be a major health problem. 50% of deaths with acute myocardial infarction are said to occur within first 24 hours after myocardial infarction and is attributed to arrhythmias. Arrhythmic deaths remain the major cause of death with reduced left ventricular ejection fraction or frequent ventricular premature beats. Complete Atrio Ventricular Block (AVB) develops in more than 5% of patients with Myocardial Infarction (MI). These patients have poorer outcomes compared to those without complete AVB. Thrombolysis has been demonstrated to improve the prognosis of such patients, especially those with inferior MI. Patients with anterior MI, however, remained at high risk of mortality and most required pacemaker implantation. With the increasingly widespread availability of Primary PCI for MI, the prognosis of these high-risk patients would be expected to improve, although limited data have been available till date. We report on a retrospective case of a patient with acute anterior MI complicated by complete heart block.

50% of deaths with acute myocardial infarction are said to occur within first 24 hours after myocardial infarction and is attributed to arrhythmias. Arrhythmic deaths remain the major cause of death with reduced left ventricular ejection fraction or frequent ventricular premature beats.

Case Report

Mrs. Kasturi Devi, a 90-year-old female, hypertensive & non-diabetic admitted at Jaypee hospital with c/o retrosternal chest pain with altered sensorium. She was

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diagnosed to suffer from acute AWMI (Anterior Wall Myocardial Infarction) with complete heart block. Troponin I was positive. 2D Echo showed akinetic mid anterior septum, mid anterior wall, apex & LVEF 25-30%. Patient was taken for primary PCI. Temporary pacing done in view of complete heart block and CAG revealed LAD proximal minor plaque 30% disease (recanalized vessel). Her creatinine (2.36 mg/dl) was elevated, nephrology consultation was taken and advice included. In view of altered sensorium, neurology consultation was taken and advice incorporated. Carotid Doppler showed normal study. She was kept on conservative management for 48 hours. Patient general condition, sensorium and renal function (creatinine 1.66 mg/dl) were improved, but her complete heart block was not improved after 48 hours. So, PPI (DDDR-Medtronic) was done in view of complete heart block. Although pacemaker implantation was high at risk because of fragile condition, severe LV dysfunction, deranged KFT and pacemaker had to be implanted intramuscular. Repeated 2D Echo showed akinetic mid anterior septum, mid IVS, apex, mid anterior wall, LVEF = 30%. Mild MR, pacing leads seen in situ. Post procedure stay was uneventful and she responded well to the treatment and was discharged in a stable condition.

Coronary angiography minor plaque lad mid | Normal RCA | Pacemaker pulse generator | Atrial & Ventricular pacing leads

Patient general condition, sensorium and renal function (creatinine 1.66 mg/dl) were improved, but her complete heart block was not improved after 48 hours. So, PPI (DDDR-Medtronic) was done in view of complete heart block. Although Pacemaker implantation was high at risk because of fragile condition, severe LV dysfunction, deranged KFT and Pacemaker had to be implanted intramuscular.

Discussion

Nevertheless, this condition is associated with extensive myocardial damage and high mortality during the acute hospitalisation which was not significantly improved with correction of CHB with temporary pacing.

Complete AV block can occur in patients with either inferior or anterior infarction, although it is more common in the inferior than in the anterior location. Complete heart block in patients with inferior infarction usually develops gradually, often progressing from a Type I second-degree block. The escape rhythm is typically stable without asystole and often junctional, with a rate exceeding 40 beats/min and a narrow QRS complex in 70% of cases & a slower rate and wide QRS complex in the others. This form of complete AV block is often transient, may respond to methylxanthines and resolves in most patients within a few days. Patients with inferior infarction often have concomitant ischemia or infarction of the AV node secondary to hypoperfusion of the AV node artery but the His-Purkinje system usually escapes injury. Pacing is not generally necessary in patients with inferior wall infarction and complete AV block because it is often transient in nature but it is indicated if symptoms related to a ventricular rate emerge.

In patients with anterior infarction, third-degree AV block can occur suddenly 12 to 24 hours after the onset of infarction, although it is usually preceded by an intraventricular block and often a Type II AV block. Such patients typically have unstable escape rhythms with wide QRS complexes and rates less than 40 beats/min; ventricular asystole may occur quite suddenly. In patients with anterior infarction, AV block generally develops as a result of extensive septal necrosis involving the bundle branches.

Some physicians contend that ventricular pacing is of limited efficacy when used to correct a complete AV block in patients with anterior infarction in view of the poor prognosis in this group regardless of therapy. However, pacing protects against asystole and may protect against transient hypotension, with its attendant risks of extending the infarction and precipitating malignant ventricular tachyarrhythmias.

In our case, significant LAD lesion was not found probably due to recanalization of LAD and PPI was done due to wide QRS CHB which didn't improve within 48 hours.

Indications For Permanent Pacing After Acute Myocardial Infarction

Class I

1. Permanent ventricular pacing is indicated for -

a. Persistent second-degree AV block in the His-Purkinje system with alternating bundle branch block or third-degree AV block within or below the His-Purkinje system after ST-segment elevation myocardial infarction. (Level of evidence: B).

b. Transient second or third-degree infranodal AV block and associated bundle branch block. If the site of block is uncertain, an electrophysiologic study may be necessary. (Level of evidence: B).

c. Persistent and symptomatic second or third-degree AV block. (Level of evidence: C).

Class IIb

Permanent ventricular pacing may be considered for persistent second or third-degree transient AV block at the AV node level, with or without symptoms. (Level of evidence: B).

Multi-vessel coronary bypass with aortic valve replacement and mitral valve repair

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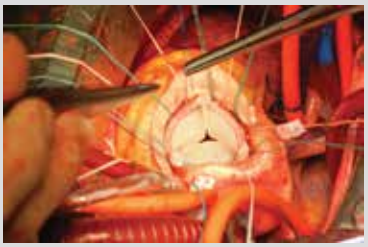
Case Report

Mrs Rosanne, a sixty one year old lady, resident of Harare, Zimbabwe presented with excessive fatigue and breathlessness on exertion. Her symptoms were rapidly progressive so much so that in about six months time she was not able to perform even her routine daily chores and was wheelchair bound. After initial investigations at a hospital in Harare, she came to Jaypee Hospital for further management. Echo was showed heavily calcified aortic valve with severe stenosis, mitral valve was incompetent and the LV was severely dysfunctional and dilated with Ejection fraction 20%. Coronary angiography revealed that all the three major coronary arteries were blocked. She needed an aortic valve replacement, a mitral valve repair / replacement and multi vessel CABG.

Surgery was performed on cardiopulmonary support. Four coronary arteries were bypassed, the aortic valve was replaced and the mitral valve was repaired. After completion of surgery the patient required additional support with intra-aortic balloon pump to maintain her blood pressure. She was shifted to ICU and was kept on ventilator for three days. Her condition slowly improved and medications to maintain blood pressure was reduced and IABP was taken out. She was weaned from ventilator on the third day after surgery and by the fifth day all ionotropes were discontinued. Aggressive chest physiotherapy was done to minimize respiratory complications and she was actively mobilized before shifting to the ward eight days after the operation. She was kept under close monitoring in the ward and discharged from the hospital after another couple of days.



Discussion

In the last quarter, we at Jaypee Hospital Adult CTVS unit operated upon 12 patients with low Ejection Fraction (range 20-25%). Ejection fraction less than 35% which is considered high risk for cardiac surgery.

Of these patients, 10 (ten) have undergone CABG alone and one a mitral valve repair along with CABG and one a triple procedure i.e. CABG + aortic valve replacement and mitral valve repair. All have made an uneventful recovery and went home happily because of the intensive management and personal care given.

Society of Thoracic Surgeons (STS) based on American data predictive cumulative morbidity/mortality score for this group was in the range of 17- 43% and the equivalent mortality score by the EUROSCORE II (of the European Society of Cardiothoracic Surgeons) was calculated to be in the range of 3.4- 10.74%. In this group none of the patients had renal failure, sepsis, prolonged ventilation or prolonged hospital stay which are the common post-operative complications in these patients.

Such results have been possible only because of appropriate surgical management, adequate nursing care and good Physiotherapy/ Rehabilitation.

Intradural Tumor Excision



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Intradural extramedullary tumors are located within the dural sheath but outside the spinal cord. Common intradural extramedullary benign spinal tumors are Meningioma, Schwannoma, Neurofibroma, maxillary ependymoma. Schwannoma are the most common of these accounting for 30% of the cases, followed by meningiomas (25%) in the adult population. In paediatric population most common Intradural extramedullary neoplasm are the leptomeningeal metastasis resulting from primary brain tumors. These neoplasm may be multiple or solitary with some especially meningiomas having a dural tail and may have a neural foramen component giving rise to a dumbbell appearance (Schwannoma) on MRI. Adult patients usually present with back pain or radicular pain, with or without deficit. X-ray & CT scans are generally normal till later stage, MRI is the investigation modality of choice.

Case Report

A 65-year-old female presented to us with severe Right Lower Limb Radiculopathy since 2 months with gradually increasing severity. The pain was continuous and patient was not able to sleep due to it. There were no bladder or bowel symptoms. On examination, patient was having no neurovascular deficit but SLR was 60 degree on Rt Side. MRI was done which showed a well-defined enhancing intradural mass at the L2 vertebral location, and was reported as Myxopapillary Ependymoma (Fig.1). Patient was advised tumor excision and counseled regarding the pros & cons of the surgery and possibility of neurological deficit, which may occur due to the close proximity of tumor with the neural structures. Patient was then examined by a team of Neuroanaesthetist and posted for Tumor Excision.

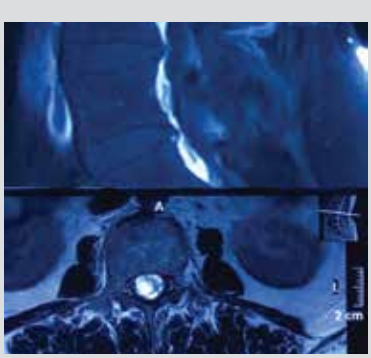

Fig.1 -Intradural Extramedullary Tumor

Fig. 2 - Blue Arrow:- Showing the exposed Arachnoid matter Black Arrows: Dural sheath which is cut and retracted sideways.

Fig. 3 - Blue Arrow:- Showing the exposed Tumor Tissue Black Arrow:- Showing the adhered nerve to the tumor. Dural sheath is seen being retracted with silk sutures.

Fig 4 - ENBLOC Removal of Tumor Tissue

Fig. 5 - Tumor Tissue

Surgical Details

On 19.12.2015, patient was taken up for surgery. In prone position under General Anesthesia, after painting and draping posterior midline incision was given from L1 to L3, subperiosteal exposure done from L1 to L3, L2 laminectomy with L1 & L3 laminotomy was performed. After achieving hemostasis, using micro instruments linear duratomy was performed over intended tumor site. Careful elevation and separation of the dural sheath was done from arachnoid sheath (Fig.2), tumor tissue was identified, which was a cystic globular mass of 2cm X 1cm and was adherent to one of the nerves (Fig.3). Careful separation of the tumor mass was done from the nerve tissue so as to not injure the nerve and prevent rupturing of the tumor tissue, thereby avoiding spillage. Total enbloc removal of tumor tissue was successfully achieved (Fig.4&5). Dural repair was done with 5-0 prolene suture. Valsalva maneuver was done to check the integrity of repair and was found to be satisfactory. Patient withstood the surgery well, there was no post-operative neurovascular deficit and patient had complete resolution of the radicular pain after surgery. Patient was mobilized on 2nd Post-operative day without any support and was discharged after 3 days. Patient presented at follow up with HPE report, which stated “Suggestive of benign Nerve sheath tumor (Schwannoma)”. Stitches were removed on 14th post-operative day and till last follow up patient remained symptom free.

Discussion

Schwannoma is the most common (30%) type of benign Intradural extramedullary nerve sheath tumor in adults. Although associated with risk of neurological deficit, surgery is usually straightforward.

Combined Ring Disruption and T type Acetabular fracture with posterior dislocation hip in a young male- A surgical challenge

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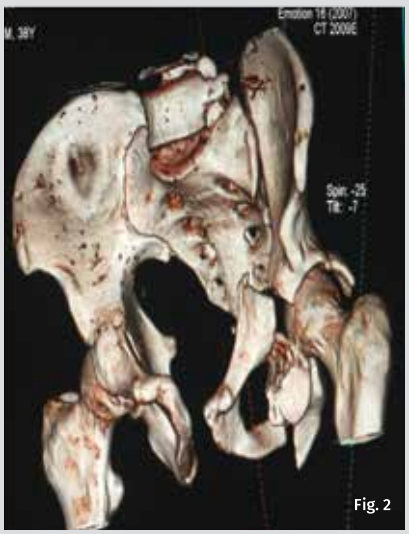
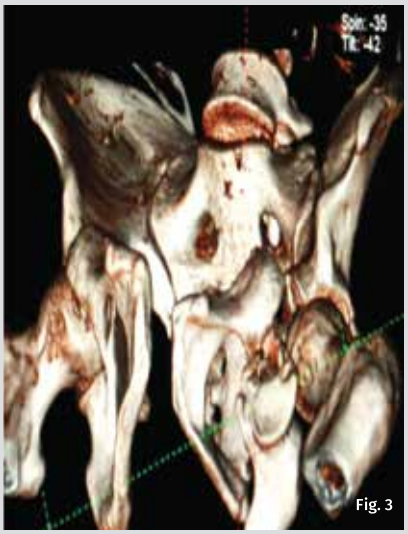
With the increasing number of highway trauma, incidence of Pelvi-acetabular fractures has increased considerably. We hereby present a rare injury of combined Pelvic ring disruption and acetabular fracture with posterior dislocation of hip joint.

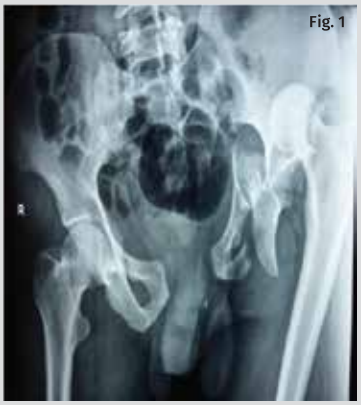




3D CT shows ring disruption, T type acetabular fracture and posterior dislocation

Case Report

A 35-year-old male patient presents in emergency with RTA and injuries to pelvis and fracture in both bone forearms (Fig. 1). He was initially resuscitated in casualty and an external fixator with upper tibial pin traction was applied. He had no associated visceral injuries.



Pre-operative

His pre-operative CT scan shows tiles type C unstable pelvis and T type acetabular fracture with posterior dislocation of hip joint with the complete acetabular articular surface lying anterior to the hip (Fig. 2&3)

Our primary concern was to reduce the hip joint first so patient was optimised and taken for surgery on the next day, from Posterior Kocher langenbeck approach and reduction of hip joint and posterior fixation with 2 acetabular reconstruction plates was done. His post-operative 3D CT shows a congruent reduction of hip joint and displaced anterior column and disruption of symphysis pubis (Denis Grade **III**)

After 2 days, patient was taken to OR again and anterior symphyseal plating with 3.5mm LCDCP and anterior column fixation with 7mm CCS from percutaneous approach under C-Arm was done (pic 5).

Follow-up

Standard protocols for post-operative mobilisation and weight bearing were maintained and patient was able to do ground level activities at 6 months (Fig. 4 & 5).

Result after 6 months

Gender Dysphoria - A Case Report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Introduction

Symptoms of GD in children include anxiety, disgust at their own genitalia, social isolation, loneliness and depression. Adults have increased risk for stress, isolation, depression, poor self-esteem, eating disorders and suicide. The diagnosis of gender dysphoria as per American Psychiatric Association is permitted if the criteria in the Diagnostic and Statistical Manual of Mental Disorders (5th Edition) or DSM-5 are met. The DSM-5 states that at least two of the criterias for gender dysphoria must be experienced for at least six months duration in adolescents or adults for diagnosis.

Treatment for a person diagnosed with GD may include psychotherapy and Sex Reassignment Therapy (SRT). SRT includes hormone replacement therapy to modify secondary sex characteristics, genital reassignment surgery to alter primary sex characteristics and other ancillary procedures like permanent hair removal, voice alteration, etc.

Case Report

A 23-year-old girl already diagnosed with gender dysphoria presented to us for Genital Reassignment Surgery. As per the patient, she was in conflict with herself since childhood and wanted to be of opposite sex. She loved being dressed as a male and found pleasure in all the male activities. After being diagnosed as suffering from Gender Dysphoria and getting enrolled in the Gender reassignment programme at another hospital, she was started on sex reassignment theraphy. At the time of presentation to us at Jaypee Hospital, she was on Hormone replacement therapy and had already undergone multiple surgical procedures like mastectomy and hysterectomy with salpingo-oophorectomy.

The patient had willfully presented to us for the most complex amongst all procedures in Sex Reassignment Surgery – Phalloplasty or making a new Penis. Phalloplasty is a complex micro-surgical technique in which the neophallus, constructed with the skin and fascia of the forearm is transferred to the perineum. It is a 'tube in tube' technique in which the outer tube is wrapped around the inner tube or urethra. The neophallus is based on radial artery and veins & also carries radial sensory nerve for neurotization. After construction, the neophallus is detached from the forearm, transferred to the perineum and microvascular anastomosis is done between radial artery and femoral artery, cephalic vein and great saphenous vein and radial sensory nerve with cutaneous nerve of the thigh. After transfer, vascularity of penis is ascertained and dressing is done.

The patient underwent a successful neophallus reconstruction and was discharged on the 7th post operative day. Presently, the patient is extremely happy with 'his' complete transition from a female to male and is planning for the next procedure – placement of implant in the neophallus to convert it into an erectile organ for his sexual needs.

Conclusion

Genital reassignment surgery for female to male or Phalloplasty is a complex microsurgical reconstructive technique that hugely boosts the morale of a gender dysphoric person who 'gets' the ultimate symbol of manhood – a phallus with which he can urinate while standing and can successfully intercourse with his female partner.

Gender Dysphoria (GD) or Gender Identity Disorder (GID) is the term used to describe people who experience distress with the gender they were assigned at birth. The cause may vary from psychological/ behavioral issues, genetics or prenatal exposure to hormones. It is estimated that about 0.005% to 0.014% of males and 0.002% to 0.003% of females would be diagnosed with gender dysphoria, based on the current diagnostic criteria.


Gender Dysphoric Female


Penile reconstruction by radial artery forearm flap under construction


Flap after division



Flap after Neurovascular Anastomosis

Laparoscopic Mini-Gastric Bypass: Latest Procedure for Weight Reduction

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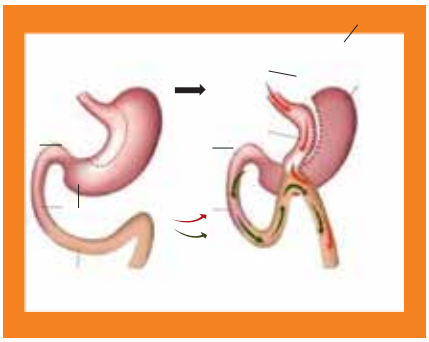
The Laparoscopic Mini-Gastric Bypass procedure is being done at selected centers in India as both a procedure for weight reduction and to treat metabolic problems such as diabetes, hypertension, etc. The procedure involves making a gastric sleeve along the lesser curve and then a mal absorptive procedure is done by making a loop gastrojejunostomy with a long proximal jejunal limb. This procedure has advantage that only a single anastomosis is required as compared to the Roux-en-Y Gastric Bypass. A comparative study of Roux-en-Y Gastric Bypass and the Mini-Gastric Bypass procedure at 10 years concluded that the Mini-Gastric Bypass procedure can be regarded as a simpler and safer alternative to Laparoscopic Roux-en-Y Gastric Bypass with similar efficacy at a 10-year experience. The procedure has also been done primarily as a metabolic procedure in patients with BMI less than 35 for control of diabetes.

A 52-year-old lady from Greater Noida weighing 145 kgs, BMI 54 underwent Laparoscopic Mini-Gastric Bypass surgery at Jaypee Hospital in September 2015. She had extensive problems due to her excessive weight including high blood pressure, back pain, shortness of breath and severe joint pains. She was not able to bend down due to joint pains and had very limited mobility affecting her quality of life. She had to also leave her work. The GI and Bariatric Surgery team at Jaypee Hospital performed Laparoscopic Mini-Gastric Bypass Surgery on her after a thorough pre-operative assessment. The surgical team was supported by the Anesthetists, Cardiologist, Pulmonologist and Bariatric Medicine Specialist. Image 1: Patient 1 day after surgery Image 2: Patient in OPD 6 months after surgery. The patient made an uneventful recovery after surgery and was discharged after 2 days. Six months



after the surgery, she had lost 45 kgs and high blood pressure was cured. She did not require medication for Hypertension anymore. Her back pain was significantly better and she had started exercising. She was able to climb stairs. She was able to sleep much better at night. When asked to provide feedback about the surgery, the patient said, “Surgery changed my life. I was having a tough time taking care of myself and could not do my own household work before and now I do everybody else’s work too.”

Bariatric surgery is also known as metabolic surgery since more than the weight loss the surgery corrects the underlying metabolic syndrome. The altered gut hormonal milieu improves insulin resistance corrects dyslipidaemia, helps in resolving hypertension and diabetes mellitus. The resultant weight loss and correction of co morbidities results in overall improved quality of life.

Fig. 1: Patient’s 1st day after surgery

Fig. 2: Patient in OPD 6 months after surgery

Cystic Tumor of Pancreas

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A 75-year-old lady had presented to us with a swelling of the left side of her abdomen for three months. She gave history of abdominal discomfort and heaviness on the left upper abdomen but there was no history of severe abdominal pain, jaundice or fever. There was no history of anorexia or weight loss. On examination, the patient was conscious and oriented without any presence of icterus, lymphadenopathy or edema. Examination of her abdomen revealed 15x10cm sized lump present at the left hypochondrium which was smooth, non-tender as well as cystic and partly below left costal margin. There was no bruit on auscultation. Her routine investigations were within normal limits. On ultrasound examination, there was a 15x10cm swelling involving the body and tail of the pancreas. The large cyst contained a few smaller cysts inside called as daughter cysts. Possibility of hydatid disease could not be ruled out. The liver, gallbladder and other organs were normal. No other cystic lesion identified in any other organ. IgG antibodies to E. Granulosus were not detected by Enzyme-Linked Immunosorbent Assay (ELISA). For further confirmation, we did a CECT of abdomen which showed large cystic mass at the left hypochondrium involving the body and tail of pancreas with intracystic septae. The pancreatic tissue found splaying out at the medial most part of the cyst confirming it as a cystic neoplasm.

The lady was planned for exploratory laparotomy and excision of cyst. Laparotomy was done with an upper midline incision. The cyst was 15x10cm in size and involved the body and tail of pancreas and was pushing the stomach anteriorly and superiorly. On aspiration, mucinous material was aspirated and was confirmed by microscopy and biochemical examination. No scolices were found on microscopy. Distal pancreatosplenectomy along with excision of the cyst was planned. The gastrocolic ligament transected to enter the lesser sac. The splenic vessels dissected at the upper border of pancreas and secured. Pancreas was looped at the body just medial to the origin of the cyst. Pancreas transected with eschlon endoscopic gun and white cartridge and the pancreatic duct at the remnant pancreas secured with prolene suture. The cyst along with the distal pancreas and the spleen dissected retrogradely. The splenic attachment lysed and specimen retrieved. Postoperatively she was extubated immediately and sent to the ward after four hours of observation in PACU. She tolerated liquid diet in POD 2 and soft diet on POD 3. The day 3 drain amylase level was 372 IU/ml. The drain removed on POD 4 and was discharged on POD 5. The histopathology confirmed the case as benign mucinous cystadenoma of pancreas.

Discussion

Mucinous Cystic Neoplasms (MCN) are septated mucin-producing cyst with a distinctive ovarian-type stroma. They are usually of large size with a thick fibrotic

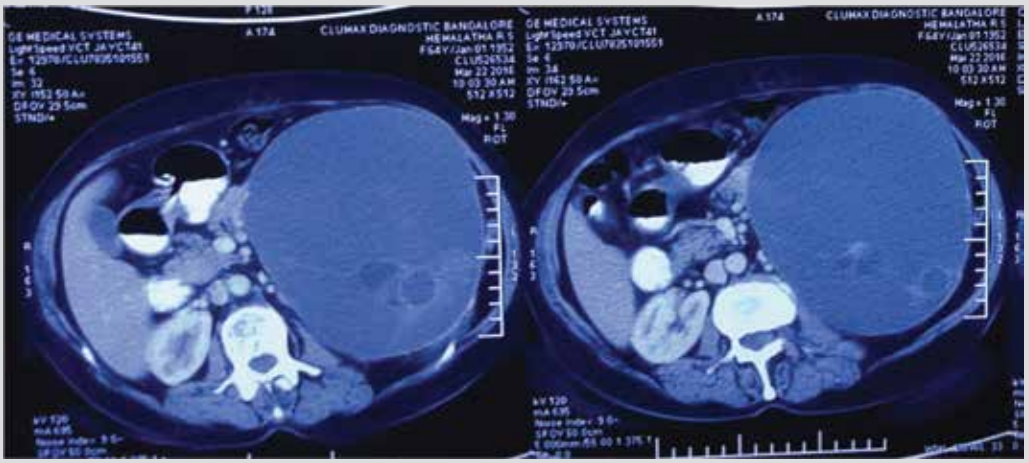

Figure1: CECT abdomen: Axial view showed large multiseptated cystic mass at left hypochondrium

wall without communication with the ductal system. MCNs are more common in females (20 : 1) and usually presents after 40 years (41-95 years), common in the body and tail of the pancreas (95% - 98%). When localized in the pancreatic head, mucinous cystadenocarcinoma is more prevalent. Invasive carcinoma incidence in MCN varies between 6% and 36%. On pathological evaluation, a thickened wall with peripheral calcification and papillary proliferations, vascular involvement and hypervascular pattern should be considered as malignant changes. The benign variety are slow growing, asymptomatic and should be differentiated from other neoplastic cystic lesions like serous cystic neoplasm intraductal papillary mucinous neoplasms and non-neoplastic cystic lesions (pancreatic pseudocysts). Pre-operative diagnosis depends on combination of findings including clinical features, tumor markers, CT, MRI & EUS with cyst fluid analysis. High serum values of CEA and CA 19-9 show a high positive predictive value for pancreatic malignancy or premalignancy in the preoperative assessment of pancreatic cystic mass (70%-100%). Though ultrasound abdomen has a low accuracy (50%) for cystic neoplasms of the pancreas, EUS improves that accuracy and allows better evaluation of the wall as it may show septations or nodules within the cyst and can also be used to obtain aspiration of the cyst contents as well as to perform biopsy of the wall. Cyst fluid analysis for presence of mucin and levels of CEA also adds to the diagnosis of MCN. Multidetector Computed Tomography (MDCT) and MRCP play a critical role in assessment, defining size, septation, calcifications, nodules of the wall and communication with the ductal system of the pancreatic cyst. At cross-sectional imaging, the MCN appears as a unilocular or multilocular single macrocyst with a solid component and no communication with the main duct. The internal architecture of the cyst including septae and internal wall, is best appreciated with MR imaging. Cross-sectional imaging generally shows peripheral calcification, a thickened wall, papillary proliferations, vascular involvement and hypervascular pattern in the cases of malignant MCNs.

Conclusion

Any cystic lesions of pancreas should be investigated thoroughly. Though the pseudocyst of pancreas is the most common lesion the cystic neoplasm should also be suspected. Surgical excision is indicated for all MCNs as it is considered premalignant. Factors influencing treatment include tumor histological features, the patient's age, surgical risk, tumor size and location. Because mucinous cystic adenoma of the pancreas are usually localized at the level of the body and tail of the pancreas, the most common operation performed to cure these neoplasms is distal pancreatectomy which is a safe procedure in high volume centres (overall post-operative morbidity ranging from 5% to 50% and a mortality rate of 0%). The main complication of pancreatic fistula, occurs in 15%-20% of cases. Enucleation can be done for patients with MCNs smaller than 2cm with benign features and superficially located. It can be performed without risk of recurrence but has been associated with a higher incidence of pancreatic fistula (30%-50%).

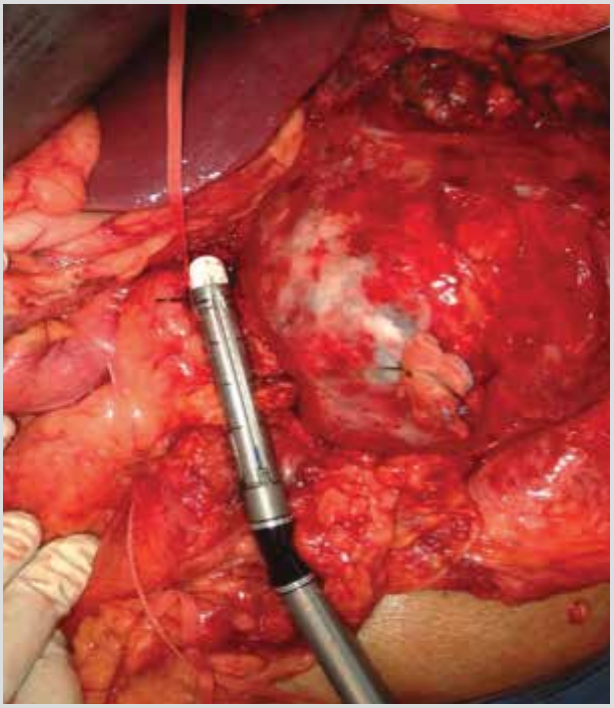

Figure 2: Pancreatic transection at body of pancreas

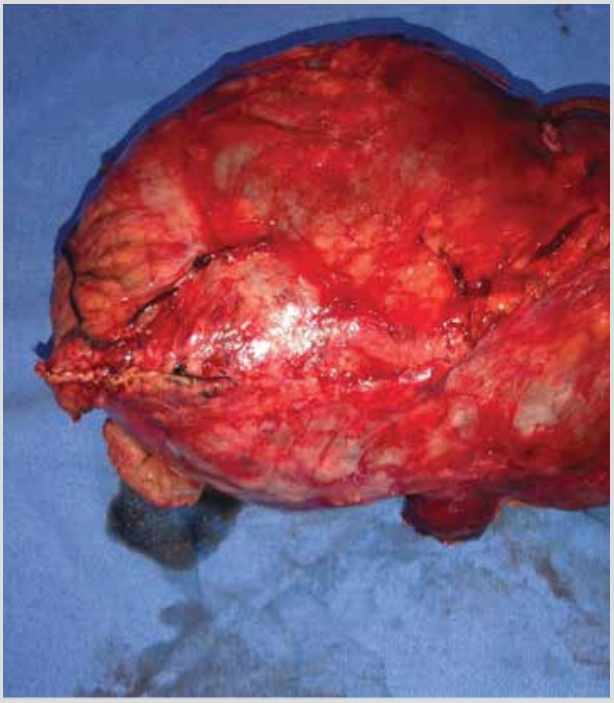

Figure 3: Specimen with cystic tumor along with distal pancreas and spleen

Endovascular Repair of Abdominal Aorta Aneurysm (EVAR-AAA)

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Dr. Dhirendra Pratap Singh Yadav - MD (Radiology)
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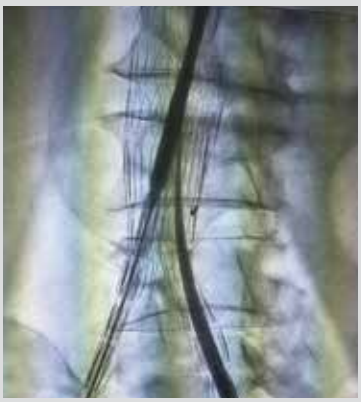
Case Report

A 80-year-old gentleman from Iraq, a known case of abdominal aortic aneurysm. He was complaining of the pain in the abdomen and on the back with increased feeling of pulsation in abdomen and got admitted in Jaypee Hospital for further evaluation and management. Patient was a known case of CAD. Angioplasty + Stenting was done 3 years back. Patient was a known case of hypertension on regular medication. No history of diabetes mellitus, epilepsy, TB, asthma or thyroid disease. Neurological, CVS, chest, abdominal examinations were normal.

All relevant investigations CBC, LFT, KFT, PT/INR were normal. Viral marker, HIV/HBV/HCV was negative. Echocardiogram showed normal left ventricular, ejection fraction-55%, Cardiology clearance was given.

CT Angio was done and it showed, Fusiform aortic aneurysm in the infrarenal aorta (3cm distal to renal arteries), reaching up to the bifurcation with no evidence of aneurysm into the common iliac arteries. Aneurysm shows peripheral thrombosed lumen with peripheral calcification with no evidence of any dissection and measures 5.8 x 7.0cm size including thrombotic part and while the enhancing lumen measures 3.3 x 3.5cm. IMA seen across through the thrombus portion of the aortic aneurysm.

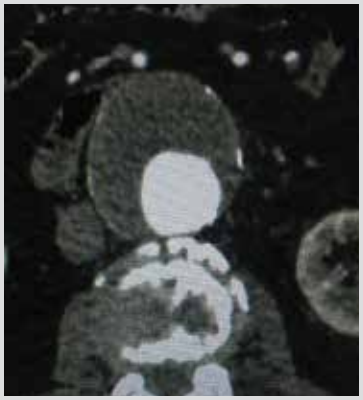
Contrast CT Scan Saggital Image



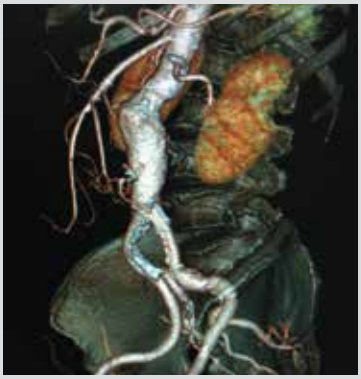
Intra- procedure Image

EVAR - AAA aortic stent graft with bilateral Iliac artery stenting was done in state-of -the-art PHILIPS FD20 CLARITY HYBRID - DSA Lab. Procedure was done under GA. Cut open bilateral femoral artery exposure was done by CTVS team, access was taken with femoral sheath (6F). Angiogram was performed before and after the procedure. Cook Zenith Aortic Stent Graft 30 x 96mm used to Stent Anurysm and Zenith Stent 16 x 56 and 16 x 90mm stent used for right and left CIA respectively. Angiogram was performed after the procedure where Bilateral renal arteries were seen patent. Bilateral internal iliac arteries remain patent. No E/O endovascular leak seen. Patient was shifted to CTVS ICU after the procedure keep for monitoring for 12 hours. Next day patient was shifted to room. He was discharged on the 3rd day post procedure.

CT Angio was done after a week which showed satisfactorily stent graft placement.



Pre-procedure Contrast CT Scan Axial Image

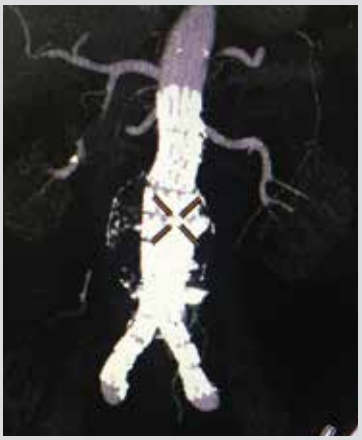


Pre-procedure 3D Reconstruction on
GE Dual Energy 750 Discovery CT Scan

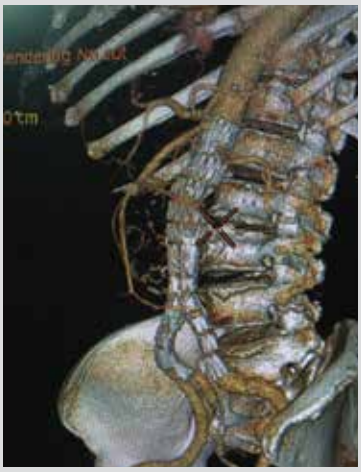
Discussion

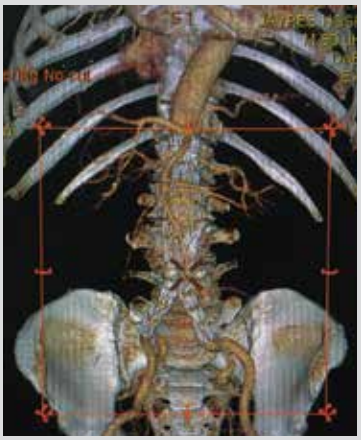
Aneurysms are defined as a focal dilatation in an artery, with at least 50% increase over the vessel's normal diameter. Thus, enlargement of the diameter of the abdominal aorta to 3cm or more fits the definition.

Abdominal Aortic Aneurysms (AAAs) are



Post-procedure 3D Reconstruction on GE Dual Energy 750 Discovery CT Scan





Post procedure 3D Reconstruction on GE Dual Energy 750 Discovery CT Scan

relatively common and are potentially life-threatening. Patients at greatest risk for AAA are men who are older than 65 years and have peripheral atherosclerotic vascular disease. AAAs are usually asymptomatic until they expand or rupture. An expanding AAA causes sudden, severe and constant low back, flank, abdominal or groin pain. Syncope may be the chief complaint. The presence of a pulsatile abdominal mass is virtually diagnostic. Patients with a ruptured AAA may present in frank shock, as evidenced by cyanosis, mottling, altered mental status, tachycardia and hypotension. The diagnosis may be confused with renal calculus, diverticulitis, incarcerated hernia or lumbar spine disease.

For patients who suffer rupture of an AAA before hospital arrival, the prognosis is guarded. More than 50% do not survive to reach the emergency department and for those who do, the survival rate drops by about 1% per minute. As many as 65% of patients with ruptured AAAs die of sudden cardiovascular collapse before arriving at a hospital.

Most AAAs begin below the renal arteries and end above the iliac arteries. The size, shape and extent of AAAs vary considerably, AAAs may be broadly described as either fusiform (circumferential) or saccular (more localized). An infrarenal aorta that is 3cm or more in diameter is considered an AAA, even if asymptomatic. Approximately 90% of AAAs are infrarenal. Most AAAs occur in individuals with advanced atherosclerosis. Atherosclerosis may induce AAA formation by causing mechanical weakening of the aortic wall with loss of elastic recoil along with degenerative ischaemic changes through obstruction of the vasa vasorum. Proteolytic degradation of aortic wall connective tissue, Inflammation and immune responses, Biomechanical wall stress & Molecular genetics are the main mechanisms important in the development of AAA.

Aneurysm diameter is an important risk factor for rupture. In general, AAAs gradually enlarge (0.2-0.8mm/year) and eventually rupture. Hemodynamic factors play an important role. The incidence of AAA begins to increase sharply after 50 years of age and peaks in the eighth decade of life. Normally, systolic blood pressures are higher in the thighs than in the arms. In patients with AAA, this relation may be reversed. Death (1.8-5% mortality for elective open repair, <1% for endovascular repair and 50% if the AAA has ruptured, Pneumonia (5%), Myocardial infarction (2-5%), Groin infection (<5%), Colon ischemia (<1% for elective repair, 15-20% if the AAA has ruptured), Renal failure.

Ultrasonography is the standard imaging tool for AAA. CT has a sensitivity of nearly 100% for detecting AAA and it has certain advantages over ultrasonography for defining aortic size, rostral-caudal extent, involvement of visceral arteries and extension into the suprarenal aorta. CT is the best modality for determining whether a patient is a candidate for endovascular aneurysm repair (EVAR). MRI may have a role in very stable patients with a severe dye allergy. Limitations of MRI in the assessment of AAA are the lack of widespread availability, the need for a stable patient, potential incompatibility with monitoring equipment and high cost.

There are two primary methods of AAA repair, open repair and EVAR. Patient's preference is the strongest determinant in deciding between endovascular and open approaches. Open AAA repair requires direct access to the aorta via an abdominal or retroperitoneal approach. It is well established as definitive treatment. EVAR is an established and increasingly popular alternative to open repair. Endovascular repair of an AAA involves gaining access to the lumen of the abdominal aorta, usually via small incisions over the femoral vessels. An endograft, typically a polyester or stent graft with a stent exoskeleton, is placed within the lumen of the AAA, extending distally into the iliac arteries. The graft serves to contain aortic flow and decrease the pressure on the aortic wall leading to a reduction in AAA size over time and a decrease in the risk of aortic rupture.

Conclusion

When outcomes after open repair are compared with those after EVAR, perioperative mortality (30 days or inpatient) is significantly lower for EVAR. Outcome at 2 years also favors endovascular repair.

Frameless Non-Invasive X-Knife Radiosurgery in a case of Arteriovenous Malformation

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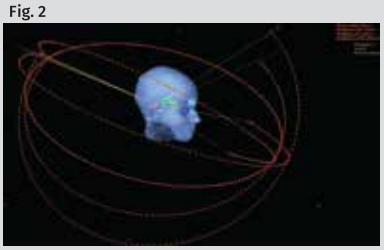
Intracranial Arteriovenous Malformations (AVM) constitute relatively rare and usually congenital vascular anomalies of the brain. AVMs are composed of complex connections between the arteries and veins that lack an intervening capillary bed. The arteries have a deficient muscularis layer. The draining veins often are dilated and tortuous due to the high velocity of blood flow through the fistulae. The goal of AVM treatment is complete removal or obliteration of the nidus, while preserving the functionality of the adjacent brain tissue. The successful treatment of AVMs remains a challenge with current options, including microsurgical resection, embolization and Stereotactic Radiosurgery (SRS).

A 51-year-old right handed female presented with headache and pain in left arm and neck of 6 months duration. On examination, she was in a good general condition without any neurological deficit. Magnetic Resonance Angiography (MRA) revealed multiple tortuous vascular channels showing T2 flow void in right posterior-temporal region suggestive of arteriovenous malformation. It's measures- 1.7cm (AP) x 1.0 (TR) with two arterial feeders, were noted. One originating from the right posterior cerebral artery and another small feeder was seen coming from right MCA. Case was discussed in joint clinic with neurosurgeon and neurointerventional team. Patient was given options of both surgery and radiosurgery and pros and cons of both the risks were explained and the patient opted for radiosurgery.

Fig. 1

Fig. 2



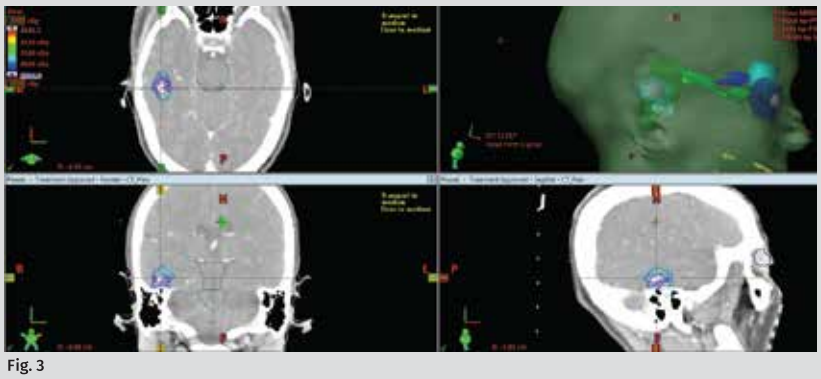


Fig. 3

After informed consent, the patient was taken for uniframe immobilization and CT Simulation. 1 mm axial contrast images were acquired and fused with MR images for the target and organs at risks delineation (Fig 1). A dose of 2000 cGy single fraction of SRS (Stereotactic Radiosurgery) was prescribed to the PTV and was planned with 5 arcs (One full co-planar and 4 partial non co-planar arcs) in Varian EclipseTM Treatment Planning System (Ver. 13.0) (Fig. 2). The minimum peripheral dose to the nidus was 2010cGy (Fig. 3). Treatment was delivered with Varian True Beam™ STx with 6 MV FFF, having High-Definition Multileaf Collimator (HDMLC) of thickness 2.5mm with a dose rate of 1400MU per minute. On board KV CBCT was used for image and set up verification. The translational and rotational shift of less than 0.1mm and ≤ 0.5deg was observed with 6D correction during the course of the treatment. Using FFF beam was useful to reduce the overall treatment time to 4.86 minutes. For the patient, this treatment provided maximum precision with utmost comfort because of it being a non-invasive, frameless method with ultrafast treatment delivery capabilities.

Bone Marrow Transplant: Everyone has a donor

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Dr. Pawan Kumar Singh - MD, DM (Hematology)
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Introduction

Acute Myeloid Leukemia is a type of blood cancer in general with poor outcomes, especially in older patients. Treatment of AML consists of induction chemotherapy followed by consolidation. Patients of AML with good risk cytogenetics which constitute just 15-20% of all patients can be consolidated by chemotherapy alone. For all other patients, stem cell transplant offers the best likelihood of long term cure. This requires a suitable stem cell donor. A few years back a number of eligible patients were unable to undergo stem cell transplant due to lack of a matched donor. With the advent of haploidentical or half match transplant, almost everyone who needs this treatment can be transplanted successfully. Here we report the first case of a haploidentical or half matched stem cell transplant done at Jaypee Hospital.

Case Report

The patient is a 52 year old male who presented with abdominal pain and review of his blood film showed 16% blasts. He was diagnosed with AML-M2 based on bone marrow examination and immunophenotyping. He underwent induction with Daunomycin and Cytarabine (7+3 induction) and achieved complete remission. He was categorized as intermediate risk based on cytogenetic and molecular tests which predicts for a 50-60% risk of relapse. HLA typing of patient and 2 brothers was done and there were no full matches. Any one sibling has a 25% chance of being a full match. After careful evaluation of the patient and one brother who was found to be haploidentical (50% match) patient was taken up for transplant. This included several tests to screen for donor specific antibodies and other measures of donor fitness. The protocol used has been adapted from the one introduced by Dr. Leo Luznik's group at The Johns Hopkins Hospital. Conditioning given was Fludarabine/Cyclophosphamide and total body irradiation. Prophylaxis for graft versus host disease included post transplant cyclophosphamide, tacrolimus and Myfortic. The patient engrafted both neutrophils and platelets on the 16th day post transplant. It has been 6 months now post procedure with no evidence of AML and full donor chimerism and an excellent performance status.

Discussion

Allogeneic stem cell transplant is often the only curative option for a number of blood cancers and other blood disorders. Until recently a number of patients in need for this treatment could not be offered one due to lack of a suitable donor. Only about 25% of people will have a 100% match with a sibling. Another option is searching in donor registries for Matched Unrelated Donor (MUD). This approach has several limitations. The search itself is a multi-step process and in certain situations can take 3-4 months which is not advisable when the patient is in need of urgent treatment. Secondly, the chances of finding a match for patients of Asian/India ethnicity and other minorities are small since most of the potential donors and caucasian. Thirdly, the cost of procuring the stem cell product from a foreign registry is often very high (2-3 times the cost of the entire transplant procedure) and most patients in India are not able to afford it. There are Indian registries but their donor pool is much smaller.

Traditionally haploidentical transplants were associated with high risk of graft failure and graft versus host disease. However, with a better understanding with the immunological mechanisms of graft and host interactions, donors can be screened to minimize such risks. The global experience with haploidentical transplants is quickly increasing, especially in the developing world. The transplant process and follow-up is slightly more complex than a full match sibling transplant but when done properly, the outcomes are equivalent and according to some reports better than matched unrelated transplant. Almost everyone will have a half matched donor (child/sibling/parent). It is safe to say that with the advent of haploidentical transplants in a big way, this life saving therapy can now be offered to almost anyone who needs it.

Mullerian Duct Cyst with Bladder Outlet Obstruction in a new born

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Case Report

A 2.5-month-old male baby, 5 kgs in weight presented with abrupt cessation of passage of urine for 3 days. There was a brief period of hospitalization at around 2 months of age for a respiratory illness which improved with antibiotics and nebulization. The immediate newborn period was uneventful.

Child was delivered vaginally in a remote health facility. He was second of the twins, the first of whom was a male born with a congenital anomaly suggestive of meningomyelocele (as per verbal description of attendants). For mother, no comprehensive antenatal work up had been done.

On admission, the baby had a markedly palpable bladder, suggestive of urinary retention which was relieved immediately on catheterization. On examination, there was a ballotable mass palpable in the left lumbar region, suggestive of an enlarged left kidney. The genitalia was normal. He had generalized edema and the blood pressure was consistently noted to be greater than 99+ 5th percentile as per age, sex and height specific normograms. Amlodipine and metoprolol were started orally in a graded manner to control hypertension. Initial blood investigations showed deranged kidney function tests, hyponatremia and hyperkalemia suggestive of an acute renal insult. These parameters gradually normalized over the next few days. There was no laboratory evidence of sepsis.

An ultrasound was obtained which showed enlarged left kidney with hydronephrosis, absent right kidney, trabeculated bladder suggestive of chronic urinary retention and a cystic lesion below bladder neck with dilated posterior urethra. Subsequently, MCUG was done which revealed a thickened and trabeculated bladder wall with grade V vesicoureteral reflux in left kidney but was inconclusive about posterior urethral valve. Diagnostic and therapeutic cystoscopy was thus planned considering posterior urethral valve as a possible diagnosis.

On introducing the cystoscope, a large cyst was found arising just above the verumontanum obstructing the bladder outlet giving the picture of large median lobe of prostate. Usually most of the urology facilities do not have paediatric resectoscope and a few cases of posterior urethral valve are dealt with small caliber ureteroscopes. But at Jaypee Hospital, we are equipped with all types of paediatric urology instruments. Therefore, we were able to resect/deroof this large prostatic cyst endoscopically successfully. MRI was obtained postoperatively which confirmed the absence of right kidney and ureter.

The urine output remained normal after removal of urinary catheter postoperatively. The blood pressure gradually normalized and the child was discharged seven days later. In follow-up the baby is normotensive, he has normal renal functions and ultrasonography shows normal bladder and left renal hydronephrosis subsided.

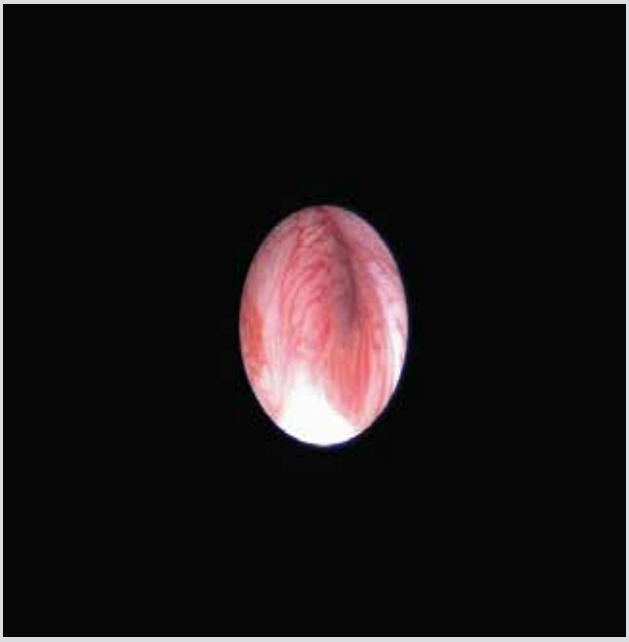
Challenges

As the patient belonged to economically weaker section of society, he was taken up for the surgery without MRI evaluation considering the clinical diagnosis of posterior urethral valve on ultrasonography. On cystoscopy, a surprise rare finding of prostatic urethral cyst was found. Due of availability of advanced paediatric endourological instruments, we were able to relieve the obstruction endoscopically in the same sitting with successful result.

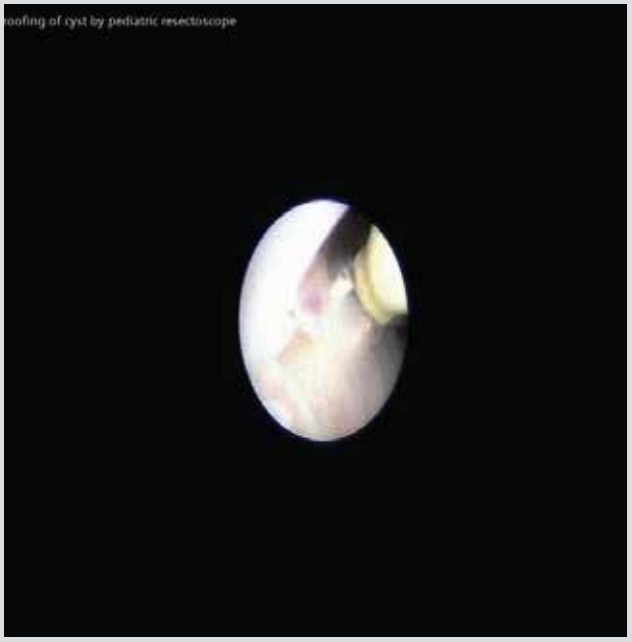
Discussion

The most common cause of bladder outlet obstruction in male infants is posterior uretheral valves. However, other uncommon causes like mullerian duct remnant cyst should also be ruled out when evaluating a case of obstructive uropathy. Prostatic midline cysts are an uncommon urogenital anomaly of males. These are the remnants of fused caudal end of mullerian duct which normally regresses in utero. Usually asymptomatic, these may sometimes become symptomatic in early adulthood presenting as urinary obstruction, epididymitis or ejaculatory duct obstruction. Its diagnosis in infancy is rare.

After 6 weeks of development, the male and female genital systems are indistinguishable in appearance, constituting two sets of paired ducts: the paramesonephric (müllerian) ducts and the mesonephric



Mullerian duct cyst causing bladder outlet obstruction



Deroofing of cyst by paediatric resectoscope

(wolffian) ducts. The urinary and genital systems both arise from a common ridge of mesoderm arising along the dorsal body wall and both rely on normal development of the mesonephric system. The ureters, renal calices and collecting tubules are formed from the ureteral bud which arises from the mesonephric ducts and which also induce formation of the kidneys. Hence, abnormal differentiation of the mesonephric and paramesonephric ducts may also be associated with anomalies of the kidneys. Renal agenesis is the most common associated anomaly, although crossed renal ectopy, cystic renal dysplasia and duplicated collecting systems have all been described. Only a few cases of mullerian duct cysts co-existing with renal agenesis have been reported in literature.

Normally, mullerian duct regresses in-utero by 10 weeks of gestation under the influence of Mullerian Inhibiting Substance (MIS) secreted by sertoli cells. An aberration in release of MIS, inappropriate timing of secretion or receptor unresponsiveness to MIS may cause the mullerian duct to persist. The cranial end of the mullerian duct remains as appendix testis and the caudal end as the prostatic utricle in normal males.

Some authors have used the terms mullerian duct remnant (eg, prostatic utricle) and mullerian duct cyst interchangeably. However, although the two have similar embryological origins, the clinical presentation is often different. They are difficult to differentiate based on radio imaging or histopathology. A few clinical features may help in understanding differences between the two, which are extremely subtle.

The prostatic utricle cysts present in second-third decade of life communicate with posterior urethera and usually do not extend beyond the prostate gland. These are known to be associated with abnormalities like cryptorchidism, hypospadias and intersex states. The Mullerian duct cysts are connected to verumontanum by a thin stalk, do not communicate with posterior urethera, grow to be big in size and can extend beyond the prostate. These usually present later in life around third-fourth decade and occur in isolation, without concomitant congenital malformations.

Differential diagnosis include ectopic ureterocoele, cyst of right sided ureteric bud which failed to develop normally, vas deferens cyst, ejaculatory cysts or seminal vesicle cyst. However, these are more likely to present as paramedian cysts and not as midline cysts.

Treatment is indicated in symptomatic individuals and to prevent long-term complications. Endoscopic treatment has been limited to de-roofing infected and obstructed cysts. Surgical management of prostatic utricles is challenging due to their deep location in the pelvis and close relation to important surrounding structures. Recently laparoscopic and robot-assisted excision has been utilized for excision of mullerian duct cysts and remnants.

Conclusion

Mullerian duct remnant cyst is an unusual urogenital anomaly in males. Though rare, it can cause bladder outlet obstruction as early as infancy. A high index of suspicion is needed to diagnose this uncommon, though surgically correctable congenital anomaly. A well-equipped facility with paediatric urologist and availability of paediatric endourological instruments are the keys for the success of these rare paediatric urological cases.

Experience of a Living Donor Kidney Transplant Programme



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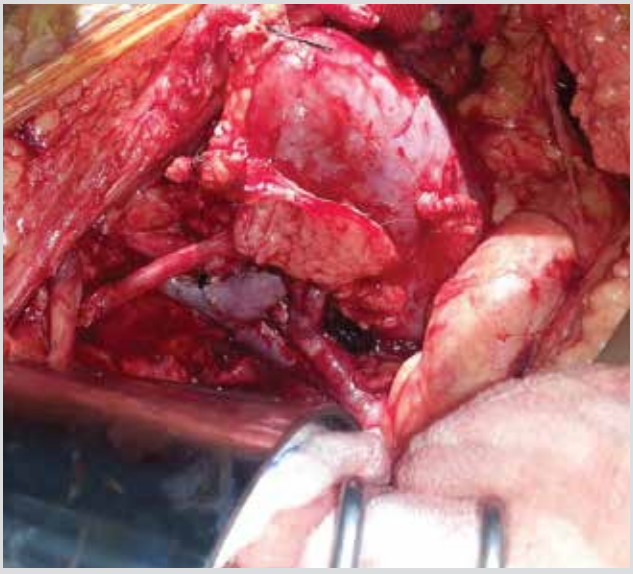
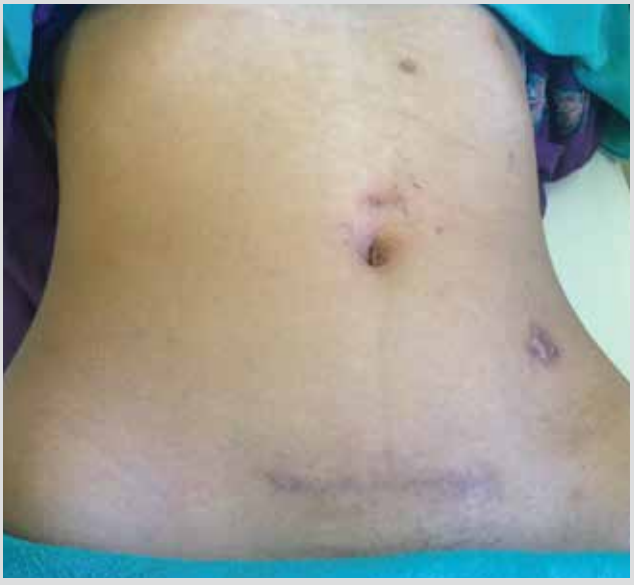
The preferred mode of Renal Replacement Therapy (RRT) in patients with End Stage Renal Disease (ESRD), who are fit to undergo surgery is renal transplantation. Kidney transplantation offers longer and better quality of life as compared to dialysis. However, the procedure of renal transplantation is complex as the success of transplantation is influenced by donor and recipient selection, the surgical procedure and appropriate medical management of the transplant recipient. Renal transplant programme at Jaypee Hospital was started in May 2015. A total of 39 renal transplants have been performed in one year duration from June 2015 to May 2016. Clinical and demographic data of donors and recipients were collected and analysed.

Donor

In the donor group, 58.97% were females and 41.03% were males. The mean age of the donors was 44 years (range was 21 to 70 years). Of the donors, 30.76% were parents (10.25% were fathers and 20.51% were mothers), 12.82% were siblings (brothers 7.69% and sisters 5.12%) and 28.20% were spousal donors. In 7.69%, either son or daughters were donors. In 15.38%, donor belonged to extended family members (Fig.1). Out of 39 donors, 10 patients underwent right donor nephrectomy while 29 donor underwent left donor nephrectomy. Out of these, 12 (30.76%) patients opted for laparoscopic donor nephrectomy. In case of no donor, blood transfusion was needed. The mean hospital stay post donor nephrectomy was 4.8 days.

Recipient

Out of 39 recipients, 82% were males and 18% were females. Mean age of recipient was 37 years (range: 12 to 66 yrs). One patient was in paediatric age group (12 years). We had patients from all parts of the country (79.5%) and also from abroad (20.5%). Majority of the recipients (35.9%) had chronic glomerulonephritis, 20.5%

Renal Allograft of Transplant

had diabetic nephropathy, 15.38% had hypertension and 15.38% had chronic interstitial nephritis (Fig.2). Two patients had earlier failed kidney transplant, so underwent left iliac fossa allograft placement. In most patients (87.17%), arterial anastomosis was done with external iliac artery while in 2 patients (5.12%) with internal iliac artery and in 3 patients (7.67%) common iliac artery was used. In 4 patients (10.25%) two arteries were present, so it needed multi vessel anastomosis. One allograft had small renal stone which was removed ex-vivo RIRS over bench before allograft transplantation. All patients received Tacrolimus, Mycophenolate mofetil and Prednisolone immunosuppressant. In 12 patients (30.76%) induction with anti thymocyte globulin (3mg/kg body weight) was given. All the patients were discharged with stable renal function. In all the patients, surgical outcome was uneventful. Two patients had persistent lymph drainage from drain which was managed conservatively. The mean serum creatinine at the time of discharge was 1.16 mg% (range: 0.56 mg% to 1.64 mg %). Mean hospital stay post kidney transplant was 8.2 days. Long term follow-up data is yet to be received, 2 patients are lost to follow-up. With available data, the graft survival after 6 months of follow-up is 100%.

Jaypee Hospital is running a very successful kidney transplant programme at a very affordable price. It has achieved 100% success rate (graft survival) till date and has all the expertise required to handle difficult kidney transplant cases namely earlier failed transplant, paediatric transplant, transplant with multiple vessels, transplant in unmatched blood group and immunologically sensitized patients. We also offer donor kidney harvesting by minimally invasive method providing all the benefits of laparoscopy i.e. less pain and better cosmetic benefit to the donor.

Relationship Donor With Reciepient (Fig. 1)

SPOUSE	11	28.20%	WIFE	9	23.07%
			HUSBAND	2	5.12%
PARENTS	12	30.76%	MOTHER	8	20.51%
			FATHER	4	10.25%
SIBLING	5	12.82%	BROTHER	3	7.69%
			SISTER	2	5.12%
CHILFREN	3	7.69%	SON	2	5.12%
			DAUGHTER	1	2.56%
GRAND PARENTS	2	5.12%	GRAND MOTHER	2	5.12%
EXTENDED FAIMILY MEMBER	6	15.38%	NEPHEW	2	5.12%
			MATERNAL AUNT	1	2.56%
			INLAW	3	7.69%
TOTAL	39				

Etiology Of (Fig. 2)

Chronic glomerulonephritis	14	35.9%
Diabetic Nephropathy	8	20.5%
Hypertension	6	15.38%
Chronic interstitial nephritis	6	15.38%
Idiopathic (Unknown)	5	12.82%

Pregnancy with intracranial hemorrhage

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Hypertension in pregnancy is a known disorder seen in young women and may be pre-existing, gestational or associated with preeclampsia or eclampsia. Compared with women without hypertension, women with hypertension complicating pregnancy are more likely to have a stroke.

We report a similar case of multiple intracranial bleeding in a pregnant lady with high BP, who along with her baby survived with the multidisciplinary approach in Jaypee Hospital.

Case Report

Mrs. AG, 31 weeks pregnant with essential hypertension, came for routine antenatal checkup. She was on anti-hypertensives and low molecular weight heparin. Despite her previous record of BP being normal, she had a sudden episode of very high BP of 200/160 mmHg. Intravenous Labetalol was given immediately to lower down her pressure, but in the meantime patient became unconscious with drooling of saliva and facial tilt. MRI was done which showed multiple intraventricular bleeds. Neurosurgeons opinion was taken and patient was shifted to ICU where extra ventricular drain was inserted by neurosurgeon to decompress the brain.

Patient was managed conservatively for a day and fetal heart monitoring was done. Patient was monitored with serial MRI and in view of intraparenchymal hemorrhage and intraventricular extension of hemorrhage, a decision for craniotomy and caesarean section was taken to save both mother and baby. LSCS was done and a male baby was delivered and shifted to NICU. This was followed by patient's craniotomy and she was shifted to MICU.

Tracheostomy was done on 19-12-15 in view of expected long term intubation. Patient was weaned off from ventilator gradually. She improved and tracheostomy tube was removed and patient was shifted to ward from ICU. After 25 days, patient was discharged with minimal neurological sequelae which were recoverable with physiotherapy.

Discussion

Cerebrovascular disease during pregnancy can be distilled into two major categories: Thrombosis/Ischemia (including arterial and venous infarction) and Hemorrhage (including intracerebral and subarachnoid hemorrhage). Physiologic changes associated with pregnancy, combined with pathophysiologic processes unique to pregnancy, predispose women to develop stroke during pregnancy and the puerperium. Some of these risk factors associated with pregnancy-related stroke include hypertension, diabetes, valvular heart disease, hypercoagulable disorders, sickle cell disease, lupus, abuse of tobacco and other substances and migraine. Normal physiologic changes during pregnancy including resistance to activated Protein C and a decrease in functional Protein S, compounded by the transient hypercoagulability associated with surgery may lead to clot formation. Approximately 10 percent of strokes occur in the antepartum period, 40 percent occur proximate to delivery and 50 percent occur postpartum and after discharge. Intracerebral Hemorrhage (ICH) accounts for a substantial portion of pregnancy-related mortality. Urgent neurosurgical conditions generally outweigh obstetric considerations in management decisions, although anesthetic and surgical modifications can be made to minimize adverse effects to the fetus. To conclude, a patient with this severe morbidity and risk of high mortality can be saved with multidisciplinary approach involving obstetrician, neurosurgeon, anesthetist and radiologist.