A case of tracheoesophageal fistula 'H' variant

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ABSTRACT

Tracheo esophageal fistula without an associated esophageal atresia (H – variant) is one of the rare anomalies (incidence being 4.2%). According to the American academy of pediatrics survey which was done in 1964, 1058 cases of tracheoesophageal fistula cases reported out of which only 4.2% were tracheoesophageal fistula without any esophageal atresia. Most of the cases were mis-diagnosed during neonatal period and were treated as pneumonia. In a large survey done by Killen and Greenle in 1965 it has been reported that the diagnosis was made within the first month of life in 43% and with in first year in 83%. We report a case of tracheo esophageal fistula where diagnosis was missed on day one of admission as naso-gastric tube was passed in to stomach with out difficulty and child was treated for respiratory distress. Diagnosis was made on day two as there was excessive pooling of secretions, there was coiling and difficulty in passing nasogastric tube. As respiratory distress did not subside, a repeat chest x-ray plain was taken which confirmed coiling of the naso gastric tube. Diagnosis was confirmed by contrast (gastro graphin) x-ray taken at different time intervals. In this child there were no any other systemical or physical anomalies noted.

Key words: Naso-gastric tube, tracheoesophageal fistula, Gastro graphin, transanastomotic tube.

INTRODUCTION

‘H’ type, tracheoesophageal fistulas account for 4.5% of all congenital tracheoesophageal malformations. According to the American academy of pediatrics survey which was done in 1964, 1058 cases of tracheoesophageal fistula cases reported out of which only 4.2% were tracheoesophageal fistula without any esophageal atresia.1

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The clinical features differ in different cases, the common one being the recurrent respiratory symptoms, aspiration, cyanosis, abdominal distension. The early diagnosis of this disorder is difficult and some cases may remain undiagnosed, until late in infancy or childhood. The first surgical repair of such a defect was reported by Imperatori in 1939. We are reporting a case of 'H' type tracheoesophageal fistula that was diagnosed after 24 hours of birth.

CASE REPORT

A post natal day one, 4 hours old female baby weighing 2.6 kilograms born to a primi mother with normal vaginal delivery was brought to NICU with complaints of respiratory distress. Initially nasogastric tube has been passed on day one and an x-ray was taken (fig.1), baby was treated with intravenous fluids and antibiotics for respiratory distress. On day two there was pooling of secretions and a naso gastric tube was tried to pass but there was resistance, when an x-ray was taken (fig.2) there was coiling of tube, there were no coexisting anomalies. A contrast (gastro graphin) x-ray (fig.3) was taken at 1 minute, 3 minutes, 5 minutes and 10-minutes interval to confirm whether it was a congenital esophageal stenosis or a variant of tracheoesophageal fistula and a 'H' type tracheoesophageal
fistula was diagnosed. Baby was put in semi upright position, i.v fluids and empirical antibiotics were continued. A complete blood picture and coagulation factors were checked. Ultrasound abdomen and 2D-echo were unremarkable. Baby was shifted to pediatric surgeon for correction of anomaly.

Figure 1: X-ray showing nasogastric tube in situ on day one
Figure 2: X-ray showing coiling of nasogastric tube on day two
Figure 3: A contrast x-ray (gastro graphin) taken at various intervals confirming TEF

DISCUSSION

Most infants with esophageal atresia with tracheoesophageal fistula have proximal atresia with distal tracheoesophageal fistula. They are easily diagnosed soon after birth with apparent clinical features. Nevertheless, 'H' type tracheoesophageal fistulas are not diagnosed soon after birth because of patent esophagus. Many diagnostic methods have been advocated for diagnosis of 'H' type fistula. Esophagogram is usually a reliable method to identify congenital 'H' type fistula. Though often difficult requiring multiple attempts before the defect is confirmed. Further more contrast-enhanced studies have the potential risk of aspiration pneumonia, therefore a resuscitation kit should be at the hand. Endoscopic methods like bronchoscopy and esophagoscopy have the advantage of being diagnostic and allowing placement of catheter around the fistula to assist its localization during surgery. 'H' type tracheoesophageal fistula is associated with other malformations in about 30% of cases, including VACTERL/VATER, CHARGE SYNDROME, congenital esophageal stenosis Goldenhars Syndrome and syndactyly. ²,³,⁴ The index case has none of these associations.

Different surgical approaches have been described for this anomaly. ⁵ For proximally located fistula choice is cervicotomy and in cases of distal fistula, thoracotomy is the choice of approach. Alternative thoracoscopic approach has been recently reported by Allal et al.⁶

In present case cervical approach was chosen for preservation of the recurrent laryngeal nerve. Post operatively head end of the bed is kept in slightly elevated position and suctioning was done in this child to prevent aspiration. Child was put on maintenance i.v fluids and transanastamotic tube feeds were started on post operative day 2. A contrast study was done on postoperative day 5, as there were no leaks oral feeds were commenced and the outcome was satisfactory in the present case.

TAKE HOME MESSAGE:A high index of suspicion in a new born when it presents with RDS like picture not subsiding for days even with appropriate treatment, should be raised in case of 'H' type tracheoesophageal fistula until proved otherwise. Such patients should be thoroughly investigated to demonstrate the anomaly and treated appropriately.

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ABSTRACT

**Introduction:** Patients with Cor pulmonale pose a difficult challenge for the anesthesiologist.

**Case report:** We present a case of 75 year old female with cor pulmonale with fracture left femur posted for Austin Moore prosthesis. Regional anesthesia with invasive haemodynamic measurement was done with successful perioperative management.

**Discussion:** proper understanding of pathophysiology, preoperative optimization of the patient, invasive cardiovascular monitoring and avoidance of factors raising pulmonary artery pressure are keys of successful management.

**Conclusion:** In a subset of patients who do not have left ventricular dysfunction secondary to cor pulmonale, regional anesthesia is an option but should be guided by invasive haemodynamic data.

**Key words:** Cor pulmonale, fracture neck femur, regional anesthesia

INTRODUCTION

Patients with cor pulmonale presenting for surgery pose challenging scenarios for anesthesiologist. Patients are at increased risk for perioperative complications. We present a case of 75 year old lady with cor pulmonale for fracture left femur posted for Austin Moore prosthesis.

CASE REPORT

A 75 year old female was admitted with a history of fracture left femur. There was history of fall one day ago. She was a known case of bronchial asthma and chronic obstructive pulmonary disease from last 10 years with intermittent treatment of bronchodilators, nebulizers. On admission she was having NYHA class IV dyspnoea, occasional wheeze and rhonchi.

On admission, she was evaluated by a pulmonologist and cardiologist and was found to have cor pulmonale. The echo revealed dilated right atrium, right ventricle, right ventricular systolic and diastolic dysfunction with good left ventricular function and elevated pulmonary artery pressure, with estimated pulmonary artery pressure around 52 (severe pulmonary hypertension). X ray revealed prominent pulmonary vasculature. Electrocardiogram revealed right ventricular as well as right atrial hypertrophy. She was kept in intensive care unit and was stabilized with oxygen supplementation, antibiotics, nebulizers, and bronchodilators along with diuretics. After 4 days, she felt symptomatically better and dyspnoea reduced to NYHA class II and she was posted for surgery.

On the day of surgery, the patient was conscious and coherent, with pulse rate of 92/minute, blood pressure of 140/70 mm of Hg, saturation of 95 % on air, respiratory rate of 14/minute with all routine investigations within normal limits (Hemogram, Liver function tests, kidney function tests, blood sugar levels). The patient was kept on the operation table and under local anesthesia 16 gauge Intravenous canula, left sided radial canula was done along with 7 french 16 cm triple lumen central venous catheters. All invasive monitors were connected to the monitoring lines. It was decided to do the case under regional anesthesia in view of good left ventricular systolic function. Preloading was done with 750 ml of ringer lactate solution. Under all aseptic precautions 25 gauge spinal needle was introduced in L3-L4 interspace and after the free flow of the CSF was achieved, spinal anesthesia was...
given with 3.5 ml of 5% bupivacaine. Patient was kept supine immediately. Within 5 minutes a level of T10 was achieved with moderate falls in blood pressure of 140 systolic to 110 systolic. Pressure was maintained in the same range throughout the procedure. Central venous pressure was maintained in between 6 – 8 with judicious use of ringer lactate solution. Injection nitroglycerine infusion was put at a rate of 1 ml/hour (25 mg/50 ml through syringe pump) to keep pulmonary artery pressure low. The Austin Moore prosthesis was done in lateral position. The procedure was over within 40 minutes with blood loss of around 100 ml. Intraoperative vitals were stable; the patient was shifted to the intensive care unit under monitoring. After 4 hours, analgesia was maintained with paracetamol infusion and tramadol. Patient went fine and discharged from the hospital on 7th postoperative day.

DISCUSSION

Cor pulmonale is the alteration of right ventricular structure or function that is due to pulmonary hypertension caused by diseases affecting the lung or its vasculature. Right-sided heart disease from primary disease of the left side of the heart or congenital heart disease is not considered. The signs and symptoms of PH are nonspecific and subtle. Left untreated, patients will experience progressive symptoms of dyspnoea and right heart failure culminating in markedly curtailed survival. Surgery for patients with PH is associated with significant morbidity and mortality regardless of which anesthetic technique is utilized. A thorough history, clinical examination and all investigations (Hemogram, urine routine, liver function tests, kidney function tests, electrocardiogram, chest x ray, echocardiogram) and if required right heart catheterization should be considered. All the drugs should be continued except anticoagulants.

Right ventricle is a thin walled chamber, which fails easily if chronic pressure overload exists. So goals of intraoperative management include optimized pulmonary artery pressure, right ventricular preload, avoid right ventricular ischemia, and consequent failure. Factors which lead to increase in pulmonary artery pressure like hypoxia, hypercarbia, acidosis, hypothermia should be avoided. If the above goals are kept in mind and followed meticulously, the choice of anesthetic becomes less important.

We considered regional anesthesia as a method of choice in this patient as the left ventricular function was good as suggested by echocardiography. If left ventricular function is deranged, general anesthesia is a more favorable option. So regional anesthesia may be considered the technique of choice in a subset of patients who do not have consequent left ventricular dysfunction. Moreover regional anesthesia may be beneficial in these subsets by reducing preload, it may improve right ventricular function. We did not put pulmonary artery pressure catheter in this patient as these patients are at higher risk of pulmonary artery rupture and chances of loss of atrial kick while the catheter is passing the right ventricle. These patients are dependent on properly timed atrial contraction for optimum preload. These patients are also at risk of high mortality in the first 24 hours, and as the effect of anesthetic wears off, increased pulmonary artery pressure, right ventricular failure, and arrhythmias. Aggressive postoperative pain control as well as optimum fluid management is the key of good postoperative recovery.

CONCLUSION

Cor pulmonale is a difficult clinical problem to treat. Moreover anesthesia induces lots of pathophysiologic stress on various systems of the body which can complicate the disease process. Proper understanding of the pathophysiology of the disorder, proper preoperative optimization and meticulous care is must to successfully manage the patient in the perioperative period. In a subset of patients of cor pulmonale with good left ventricular function, regional anesthesia is an option and should be actively sought but under invasive cardiovascular monitoring.

REFERENCES

Unilateral hypertrophied right kidney and contralateral atrophy of left kidney: In a setting of malignant hypertension – A case report

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ABSTRACT

During routine dissection of cadavers for 1st MBBS students in 2009-2010 a normal built adult male cadaver presented with a hypertrophied right kidney and an atrophied left kidney. In the right kidney (16cmx6.5cmx4.5cm) the capsule was difficult to strip off. The cut section showed well demarcated cortex and medulla. Blood clots were present in renal sinuses. Histopathology showed glomerulosclerosis, thyroid casts in atrophic tubules thickening and hyalinization of blood vessels, inflammatory changes in the interstitium. The left kidney (4cmx2.5cmx1cm) showed thinned out cortex on cut section. Calyces were not well distinguished. Capsule was adherent to its surface. Glomerulosclerosis and predominant atrophic changes in the tubules observed in histopathology. Vascular compromise secondary to hypertension caused ischaemic changes in the left kidney. This superimposed with chronic renal infection had resulted into an atrophic left kidney which led to a compensatory hypertrophy of the right kidney.

Key words –Hypertrophied kidney, atrophic kidney, renal failure, hypertension, renal infection

INTRODUCTION

The kidneys are a pair of essential excretory organs which are placed retroperitoneally on each side of vertebral column, extending from T12 to L3 vertebra. The kidneys in the fresh state are reddish brown in colour. They are bean shaped with hilum directed medially. It is enclosed by a fibrous capsule which can be stripped off except at the hilum. The kidneys are supplied by the renal arteries and drained by the renal veins into the inferior vena cava. The kidney is composed of multiple uriniferous tubules bounded by a delicate connective tissue in which runs blood vessels, lymphatics and nerves. Each tubule consist of two embryologically distinct parts the nephron and the collecting duct. Any insult to the kidneys in the form of infection( acute or chronic), toxins, systemic disease like hypertension, stenosis of renal artery etc. can cause macroscopic and microscopic changes in the kidney which may lead to renal failure.1,2

CASE REPORT

During routine dissection of cadavers for 1st MBBS students in 2009-2010 a normal built adult male cadaver presented with a hypertrophied right kidney and an atrophied left kidney.

The right kidney measured 16cmx6.5cmx4.5cm and was heavier than the normal. The capsule could not be easily peeled off. The cortical surface was smooth but appeared dark reddish brown. On cut section, cortex and medulla were well demarcated. The number of calyces increased. The renal artery showed multiple branching at the hilum. The left kidney was found to be atrophic, measuring about 4cm x 2.5cm x 1cm. The capsule was adherent to the underlying scar tissue. Surface of the kidney appeared reddish white and uneven. On cut section, the cortex and medulla were found to be ill defined. The kidney was supplied by a single renal artery at the hilum.
In the present case, histopathology of the right kidney showed glomeruli-shrunken, sclerosed, Bowman space increased. Tubules-atrophied, degenerated with thyroid cast. Interstitium- showed dense lymphoid and neutrophilic aggregates and interstitial fibrosis. Vasculature- thickened and hyalinized large and medium size vessels. Small arteries show arteriosclerosis at places showing onion skin appearance. All these findings are suggestive of renal hypertension. Left kidney showed same morphology but predominant atrophic changes in tubules without much inflammation and interstitial fibrosis.

DISCUSSION

Hypertrophy means enlargement or overgrowth of an organ or part of the organ due to increase in the size of its constituent cells. The cells of the kidney are particularly prone to hypertrophy. Hypertrophy of kidney may be due to physiologic or pathologic conditions.

The common causes of enlarged kidney are medullary sponge kidney, malignant hypertension, rapidly progressive glomerulonephritis, membranous glomerulonephritis, ischaemic acute tubular necrosis, toxic acute tubular necrosis.

Atrophy is the reduction of the number and size of parenchymal cells of an organ, or its parts which were once normal. Atrophy may be physiological or pathological. Small atrophic kidney is due to atherosclerosis of renal artery. Size may also be reduced and scarred because of pre-existing arterial narrowing or stenosis.

Hypertensive renal disease is the second most common form of end stage renal disease after diabetic nephropathy. The incidence is high in African Americans than in the whites. It is also mentioned that nephrosclerosis is probably the most common finding in renal pathologic condition found at autopsy. The incidence increases with age commonly associated with low grade essential hypertension. Diabetes mellitus is a predisposing factor.

The gross size of the kidney depends on the duration of severity of hypertensive disease. Haemorrhage in the kidney may appear due to the rupture of arterioles, or glomerular capillaries.

The histopathological changes in malignant hypertension shows glomerulus increase in mesangial matrix which results in either segmental or global solidification (sclerosis) of the glomerular tuft. Tubules may be atrophic and sometimes contains hyaline casts. The epithelial cells are flattened and surrounded by thickened tubular basement membrane, which may be wrinkled. Interstitium is widened in areas with atrophic tubules. Increased collagen is noted. Chronic inflammatory cells usually small lymphocytes may be widely dispersed in areas of scarring.

According to Sheldon C et al, arteriolar sclerosis, tubular degeneration was the most frequent parenchymal lesion observed and was the earliest recognizable renal abnormality accompanying hypertension. Tubular lesion accompanying pyelonephritis were distinguished by presence of ordinary inflammatory and reparative process.
Finely pitted cortical surface reflects the scarring of kidneys in individuals with hypertension. Hyalinized glomeruli were found more frequently in association with advanced arteriolar sclerosis. Acute post streptococcal glomerulonephritis is a common form of glomerulonephritis in developing countries like India. Though it mostly affects children between 2-14 years of age, 10% cases are seen in adults above 40 years of age. The kidneys are found to be symmetrically enlarged weighing 1.5 to twice the normal weight. Development of hypertension is a poor prognostic sign. In adults renal failure may result as a complication. According to Michie et al, pyelonephritis provokes a functional deficit which in turn induces compensatory hypertrophy in nondiseased kidney. Compensatory hypertrophy results from an increased workload due to some physical defect, such as, in an organ where one part is defective, or in one kidney when other is absent or nonfunctioning. The present case showed a unilateral hypertrophic right kidney in an adult male. The left kidney was atrophic. The surface of the kidney was irregularly scarred and the capsule was adherent to the scar. There is blunting and dilatation of calyces. Hypertension and chronic renal infection such as pyelonephritis led to scarring and atrophy of the left kidney which led to compensatory hypertrophy and hypertensive changes on the right kidney.11

CONCLUSION

Vascular compromise secondary to malignant hypertension caused ischemic changes in the left kidney. This superimposed with chronic renal infection, ultimately resulted in an atrophic kidney. The right kidney became hypertrophied to compensate the work load of the left kidney. The histopathologic changes in the right kidney revealed that renal hypertension as well as infection had set in. As regardless of cause, any renal disease ultimately leads to renal failure (End stage renal disease). This might have been the cause of death for this present case.

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Vaginoplasty by using amnion graft in a patient of vaginal agenesis associated with Mayer-Rokitansky-Kuster-Hauser Syndrome

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ABSTRACT

Background: Vaginal agenesis is a congenital anomaly of the female genital tract and may present as isolated developmental defect or as part of a complex of anomalies. The aim of reporting this case was to determine the effectiveness of vaginoplasty by using amnion as graft in the creation of neovagina for a patient with Mayer-Rokitansky-Kuster-Hauser Syndrome.

Case report: Vaginoplasty using amnion graft was successfully performed in this case of 23 year old young lady with MRKH type-II syndrome. The functional result was quite satisfactory. Post surgical result was acceptable to the patient sexually and emotionally.

Conclusion: The ideal method for vaginoplasty is yet to be defined and all of the available methods have potential advantages, disadvantages or complications. Vaginoplasty by modified Abbe-McIndoe procedure using amnion graft is still a safe, relatively simple and effective procedure.

Key words: Vaginoplasty, amnion graft, vaginal agenesis, Mayer-Rokitansky-Kuster-Hauser Syndrome

INTRODUCTION

Vaginal agenesis is a congenital anomaly of the female genital tract and may present as isolated developmental defect or as part of complex of anomalies.1 The incidence is about 1 in 4000-5000 live female births.2 Vaginal agenesis is usually associated with Mayer-Rokitansky-Kuster-Hauser (MRKH) Syndrome and Androgen Insensitivity Syndrome.2 MRKH syndrome is a malformation characterized by congenital absence of uterus and vagina in the presence of normally functioning ovaries.3 Type-I MRKH syndrome is characterized by an isolated absence of the proximal two thirds of the vagina, whereas type II MRKH syndrome is associated with other congenital anomalies, including skeletal, urinary tract, and digestive tract abnormalities.3

Women with MRKH syndrome have a 46 XX genotype and a normal female phenotype with spontaneous development of secondary sexual characteristics.1 Several methods for creating a neovagina have been described, and most commonly used technique to create a neovagina is the non surgical Frank technique, which depends on serial dilation of the perineal dimple between the urethra and anus into a functional invagination. Vecchietti operation was developed in principle of application of intermittent pressure from below with constant traction on vesicorectal space from above.3 In Abbe McIndoe vaginoplasty split thickness skin graft is placed over a mould which is inserted into a surgically created space between the bladder and rectum.3 Several investigators have described modifications of the Abbe McIndoe procedure, including methods that use peritoneum 5, amnion,6,7 artificial dermis and recombinant basic fibroblast growth factor, 8 intercede 9 and rotational flap procedures using the pudendal, gracilis myocutaneous, labia minora and other fasciocutaneous flaps,2 autologous buccal mucosa10. Williams vaginoplasty, in which the labia are used to create a pouch is another technique of creating neovagina.11 In addition bowel vaginoplasty using segment of intestine to line newly formed vaginal...
canal is also used and some centers are now using laparoscopic approach for it. Latest technique include robotic sigmoid vaginoplasty. We present a case report of creation of neovagina by modified Abbe McIndoe method using amnion as graft material in a patient with type-II MRKH syndrome. The aim was to create functionally and cosmetically normal neovagina with simple available technique and to bring this operation in the notice of gynecologists.

CASE REPORT
A 22 year old young married woman reported to OPD with history of primary amenorrhea. On clinical examination she had well developed secondary sexual characteristics with a small blind vaginal pouch of 1.5 cm in length. On pre operative workup apart from the routine investigations, serum prolactin, FSH & LH showed normal values whereas TSH was found to be raised. USG &MRI revealed absence of uterus and upper 2/3rds of vagina but with normal functioning ovaries & crossed ectopic left kidney. IVP showed evidence of crossed ectopic left kidney in right lumbar region. Karyotype revealed 46XX without visible chromosomal anomaly. Patient diagnosed to have type-II MRKH syndrome. Patient and attendants were explained about surgical method of vaginoplasty and its possible complications. Amniotic membrane was collected under sterile conditions from elective caesarian section after screening the donor for hepatitis B, hepatitis C, HIV and syphilis. Inner amniotic membrane was separated from outer membrane and was placed in sterile normal saline solution containing cephalosporin injection. Under general anesthesia, patient was kept on lithotomy position, after painting and draping the abdomen and perineum, diagnostic laparoscopy was done which revealed absent uterus with normal tubes and ovaries embedded into lateral pelvic wall. Foley’s catheterization was done. Later a transverse incision was given below the dimple and a potential space was created in between urethra, bladder and rectum by blunt dissection carefully palpating the catheter in front and with a finger in the rectum to protect against the injury. A cavity with size of depth 7-8 cm in length and about 4-5 cm in diameter was achieved. Vaginal mould was made with 20 ml syringe wrapped with sponge and covered with latex condom and was then wrapped with amniotic membrane and sterilized in normal saline with injection cephalosporin and placed in the constructed cavity. The amnion graft was fixed to mould by suturing the edges of amnion to the mould. The labia majora was then sutured together with silk sutures to hold the mould in position and T-bandage was applied. This was further secured by adhesive plaster on the top. Foley’s catheter was left intact for seven days. Prophylactic antibiotics were given for 7 days. Topical application of Gentamycin drops over the graft was given for 7 days. Mould was removed on day 8 along with the catheter. The graft was retained in the vagina and was well taken. Meticulous vaginal douche was done and 2nd mould made with 20 ml syringe wrapped with sponge covered with latex condom and was kept in place. Patient was counseled about the method of placement, removal and cleaning of mould and to facilitate further change of mould herself. Patient was discharged with the advice to wear mould continuously for 1 month followed by night insertion for another 3 months to prevent contractions. Four weekly follow up visits were advised for 6 months. Physical relationship was allowed after 3 months.

RESULT
Vaginoplasty using amnion graft was successfully performed in this case. The functional result was quite satisfactory. Post surgical result was acceptable to the patient sexually and emotionally.

Figure 1: Karyotype showing 46XX
Figure 2: IVP showing Crossed ectopic left kidney
Figure 3a: Transverse incision below dimple to create potential space
Figure 3b: Preparation of vaginal mould with amniotic membrane
DISCUSSION

We selected amnion as graft for vaginoplasty over skin or other grafts because it is easily available. As amniotic membranes do not express HLA-A, B or DR antigens therefore immunological rejection is less likely to occur. Antifibroblastic activity cell migration and growth promoting activity have been demonstrated which enhances epithelialisation. Amniotic membranes have also antimicrobial properties that reduces the risks of postoperative infection. The method of preparation of the graft is simple and less time consuming. Other methods using skin and buccal mucosa and peritoneum may cause scarring. Use of a segment of intestine can cause continuous profuse secretions and unpleasant odour and prolapse of neovagina. Dilation techniques although simple, require considerable time and patient compliance and are not always effective. Laparoscopic techniques are lengthier and require specialized skills and training in laparoscopy. Although few studies have used amnion as a graft in the creation of neovagina, the results are extremely satisfactory. A study by Sarwar et al, in 2010 among 28 patients showed 89% success rate. A study conducted in Germany in 2009 on 7 patients showed 85.7% success rate. Another study conducted at Lahore in Pakistan among 10 patients in the year 2006 showed as high as 90% success rate. Advantage of this procedure is that it is safe, economical and easy to perform. Epithelial lining of the neovagina resembles normal vaginal epithelium facilitating a comfortable sexual life.

CONCLUSION

The ideal method for vaginoplasty is yet to be defined and all of the available methods have potential advantages, disadvantages or complications. Although new techniques of vaginoplasty have evolved over the years using laparoscopic approach and by use of different materials as graft, but in developing country like India where facilities and expertise for newer techniques are not readily available, vaginoplasty by modified Abbe-McIndoe procedure using amnion graft is still a safe, relatively simple and effective procedure. However peri-operative counseling is most essential to have good results.

REFERENCES