Intraabdominal Cystic Swelling in Children—Laparoscopic Approach, Our Experience

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The aim of the study was to evaluate the results of Laparoscopic treatment of intraabdominal cystic swellings and follow up with imaging modalities.

Sixteen cases of intraabdominal cystic swellings were managed laparoscopically over a period of 2\(\frac{1}{2}\) years from June 2000 to December 2002. This included 1 case of Multicystic Kidney, 4 cases of Ovarian cysts, 4 cases of Urachal cyst, 1 case of Mesenteric cyst, 1 case of pseudocyst of Pancreas, 3 cases of Hydro Hemato colpos, 1 case of Splenic cyst, and 1 case of Duplication cyst. There was no recurrence in 15 cases on ultrasound follow up. However, there was recurrence in 1 patient of ovarian malignancy.

Operating time ranged from 60 to 90 minutes. There were no perioperative complications. The mean hospital stay was 4 days.

Laparoscopic management of intra abdominal benign cysts was a simple and effective alternative to open surgery. There was no recurrence.

Key words: Intraabdominal cystic swelling, laparoscopic excision, cysts.

Intraabdominal cystic swellings are more common in the new born and children. The masses may be intra peritoneal or retrpperitoneal.

Among retroperitoneal masses, 55% were of renal origin. In 1951 Gross published a text book, The Surgery of Infancy and Childhood; in it there was a great deal of information concerning terminology, frequency, distributions and surgical treatment of neonatal abdominal masses.

After a long interval of 3 decades, 3 principal advances have increased our knowledge about these masses. 1. Development of sophisticated imaging modalities like ultrasound, CT and MRI scans. (2) Antenatal detection of ovarian cyst and choledochal cyst. (3) Development of Minimal access technique—laparoscopy and thoracoscopy. Both these techniques confirm diagnosis and allow extirpation of the mass. The perinatal diagnosis allows us to understand the natural history of abdominal masses like hydronephrosis,
ovarian cyst, choledochal cyst and mesenteric cyst. Patients of antenatally diagnosed cysts are kept on close follow up and surgery is advised when indicated. When surgery is deemed necessary recent advances in minimal access surgical techniques and instrumentations have allowed the removal of masses even in the new born with superior cosmetic results and perhaps lessened postoperative morbidities.

Materials and Methods
Sixteen cases of abdominal cystic swelling were managed laparoscopically over a period of 2 years from June 2000 to December 2002. The different types of lesions found are ovarian cyst 4, mesenteric cyst 1, urachal cyst 4, pseudo-pancreatic cyst 1, hemato metrocolpos 3, splenic cyst 1, duplication cyst 1 and multicystic kidney 1.

Among the 16 cases there were 9 females and 7 males. Of the 9 females one had mesenteric cyst, one had urachal cyst, 4 had ovarian cyst and 3 had hydrometrocolpos. Of the 7 males one had mesenteric cyst, 3 had urachal cyst and one each had pseudopancreatic cyst, splenic cyst and duplication cyst. All were between newborn to 12 years.

In all cases, we used a 4mm umbilical port for a videoscope with the 30" telescopes. Two or three 5 mm working ports on lateral sites were introduced depending upon the diagnosis, site and feasibility of extirpation of the lesion. Intraabdominal insufflation with CO2 of pressure of 10-12 mm of mercury were utilized in all cases.

Individual cases were managed laparoscopically according to the pathology. Nephrectomy was done intraperitoneally in multicystic kidney. Complete excision of urachal cyst and ovarian cyst were done with pedicle being divided by cauterization. Mesenteric cyst was excised in toto after aspiration of its contents and ligation of pedicle intracorporially. Pancreatic Pseudocyst and duplication cyst after aspiration, were converted to open method for adequate drainage in pancreatic pseudocyst and for restoration of bowel continuity in duplication cyst. Splenic cyst was excised in toto with bipolar electrocautyry. Hydrometrocolpos was aspirated through laparoscopic hysterotomy and vagina was recanalised by excision of the transverse vaginal septum followed by vaginal dilatation.

Results
Operation time ranged from 60 mts to 90 mts. There were no immediate complications. The mean hospital stay was 4 days. Except in 1 case of ovarian malignancy, others are asymptomatic and free from complications. They are periodically evaluated by serial US, CT and MRI. The ovarian cyst which was found to be malignant, received postoperative follow up chemotherapy. After 6 months she developed intractable malignant ascites and died.

Discussion
Ovarian Cyst
Ovarian cysts are the most common ovarian masses found in newborn females. Spontaneous regression occurs in 25% to 50% of cases and is more frequent with smaller cysts. Ovarian cyst can produce a variety of striking clinical findings, clearly descibed prior to the sonographic era.1,2,3 At
times, the patients have an obvious visible or readily palpable soft and fluctuant abdominal mass with no symptoms. Pre and postnatal complications are common. These complications are intracystic bleeding, torsion of the cyst or corresponding adnexa or self-amputation of the cyst. Ovarian cyst may be large enough to cause respiratory complication.

Cysts less than 4cm diameter should be followed-up. They may resolve spontaneously. Bigger cysts require surgery. Although ovarian salvage is touted widely for ovarian cyst, aspiration alone or partial cystectomy may be satisfactory. Ovariectomy, even with salpingo ovariectomy has been performed most frequently.

**Mesenteric Cyst**

Mesenteric cysts are rare, benign, intraabdominal lesions without typical clinical findings. Treatment is indicated if they become symptomatic due to enlargement of the cyst. A mesenteric cyst can be successfully managed laparoscopically.

The preferred mode of treatment of mesenteric cyst is enucleation. The cyst can often be shelled out from between the two leaves of the mesentery. But open procedure is preferable if enucleation fails.

A bowel resection is necessary in only 1/3 of adults, but becomes necessary in 50%-60% of children with mesenteric cyst.

**Multicystic Kidney (MCK)**

It is the second most common cause of flank mass in a newborn. It occurs once in 4300 live births. The unilateral MCK is an isolated, non-syndromic congenital anomaly. The diagnosis is often made in utero with identification of multiple disconnected cysts, not associated with a central large cyst. No renal parenchyma is identifiable. The MCK can be differentiated from obstructed cystic renal dysplasia associated with hydronephrosis or other obstructive uropathies, by renal scintigraphy. The MCK shows complete non-function on renal scans.

The complications of MCK are rare but includes hypertension and infection. Spontaneous involution can occur without bleeding, infection or malignancy, prompting some to question the need for surgery. However removal is recommended at 6-12 months of age to prevent complications.

**Urachal Cyst**

The mucosa lining the patent Urachus may secrete significant amount of mucus to produce a suprapubic cystic abdominal mass in a newborn. The diagnosis is confirmed with an US scan. An urachal cyst should be excised in continuity with its entire tract to prevent recurrence.

**Pseudocyst of Pancreas**

Pseudocyst of Pancreas is the most common type of cyst occurring in the pancreas in childhood. They occur either secondary to trauma or follow acute pancreatitis resulting from other causes.

Recently US or CT guided needle aspiration and drainage had been used successfully to establish external drainage. A transgastric approach for percutaneous catheter drainage has been advocated because it provides a safe route of access and mimics the open surgical technique by allowing a mature tract to form between the cyst and stomach.
Hydro/HematoMetrocolpos

The most common cause of vaginal obstruction is imperforate hymen. Its incidence is 0.1% of all live births. It is usually detected in the neonatal period, when the baby presents with lower abdominal swelling caused by a pelivic mass and a bulging introital membrane.\(^{17,18}\)

Prenatal US can detect the hydrocolpos as early as at 25 weeks of gestation.\(^{19}\) Congenital vaginal obstruction is a result of incomplete canalization of the vaginal plate or a lack of complete union of the uro genital sinus and the uterovaginal canal. The presence of transverse vaginal septum is the most common congenital vaginal lesion. The incidence of upper, middle and lower third vaginal obstruction is 45%, 40% and 14% cases respectively.\(^{20}\)

The treatment of imperforate hymen is incision of the membrane, after identification and catheterization of the urethra.\(^{19}\) The cut edges of the hymen ring are sutured to the vaginal mucosa. An isolated vaginal septum may be amenable to excision with or without subsequent dilatation. By laparoscopic technique, hydrometrocolpos has been drained by hysterotomy followed by lap-guided excision of transverse vaginal septum and periodic vaginal dilatation.

Splenic Cyst

It may be solitary or multiple which can be excised by laparoscopic electro cauter y. A small cyst can be excised in toto while a large cyst should be excised with partial splenectomy.

Conclusion

Laparoscopic management of intra abdominal benign cystic swellings is a simple, safe and effective alternative to open surgery.

References

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