

Laparoscopic management of neonatal ovarian cysts

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ABSTRACT

The first prenatal detection of an ovarian cyst was by Valenti in 1975. Since then antenatal and neonatal ovarian cysts are encountered more frequently due to the improvement of imaging techniques as well as routine antenatal ultrasound scanning. We discuss here the laparoscopic management of three cases of neonatal ovarian cysts. This approach is well tolerated by neonates, and it may overcome the controversy between the 'wait and see' policy and early surgical intervention, as laparoscopy has both diagnostic and therapeutic value with minimal morbidity, and ovarian salvage whenever possible.

KEY WORDS: Laparoscopy, neonate, ovarian cyst, ultrasonography

Before the introduction of ultrasonography, ovarian cysts in the newborns were thought to be rare. With the extended use of real time ultrasonography, prenatal detection has increased.^[1] The first prenatal observation of an ovarian cyst was by Valenti in 1975.^[2] Ovarian cysts are the most frequent among the intraabdominal cysts in newborns. The etiology of fetal ovarian cysts has not been entirely clarified.^[2] Ovarian cysts arise from mature follicles. The distinction between a mature follicle and an ovarian cyst is based on size alone: cysts larger than 2 cm are considered pathological. The gestational age at diagnosis is usually beyond 28 weeks. Symptomatic cysts and complex cysts should be removed regardless of size.^[1] Controversy exists regarding management of asymptomatic, uncomplicated cysts. We share our experience with the usefulness of laparoscopy in the management of neonatal ovarian cysts.

CASE REPORTS

We encountered three neonatal ovarian cysts, which we managed laparoscopically between March 2003 and March 2004. [Table 1]

In the present study, all patients underwent surgery because all the cysts were more than 5 cm.

In case 1, laparoscopy done using 2 mm hand instruments with 5-mm telescope revealed a right cystic ovarian mass. The left ovary, tubes, and uterus were normal. Aspiration revealed 25 ml of straw-colored fluid. With an intention to salvage the ovary, the cyst was deroofed. Postoperative recovery was uneventful and the child was discharged on the second day.

In case 2, laparoscopy revealed a twisted left ovarian cyst [Figure 1] with normal right ovary, tubes and uterus. In this case, 5 mm instruments were used. In view of torsion, the cyst was initially aspirated and then left laparoscopic oophorectomy was done. The child was discharged on the fourth postoperative day

In case 3, USG and CT of the abdomen revealed a cyst occupying the whole abdomen [Figure 2]. Laparoscopy revealed a cystic mass completely occupying the abdomen. Aspiration revealed straw-colored fluid (100 ml), which was completely aspirated and deroofing of the cyst

Table 1: Summarized case details

Age	Weight	History	Postnatal USG and CT	Abdominal examination	Child (AFP, B-HCG) maternal (T3,T4,TSH FBS)
4 days	2.1 kg	Detected by antenatal USG	6.1 × 4 × 5.2 right side	Mass occupying the lower abdomen	Normal
25 days	2.6 kg	Detected by antenatal USG	7.6 × 6.5 × 6 left side	Mass occupying whole abdomen	Normal
2 days	2.8 kg	Abdominal distension	10 × 10 × 8 cyst	Mass occupying whole abdomen	Normal



Figure 1: Laparoscopy showing torsion of the ovarian pedicle

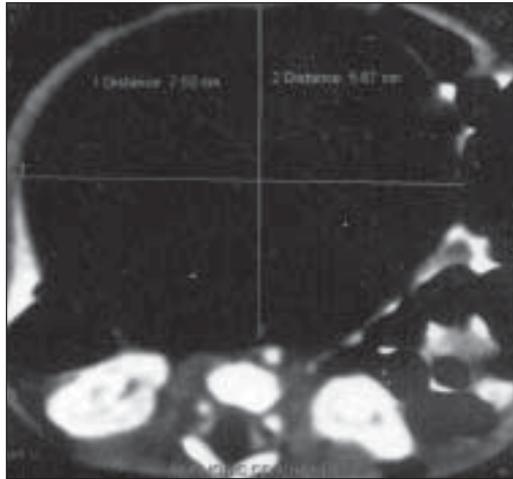


Figure 2: CT Scan of the abdomen showing cyst occupying the whole abdomen done.

The mean operating time was 40 min. Histopathologically all the three cysts turned out to be Follicular cysts. There was no recurrence of the cyst with a mean follow up of 9 months until now.

DISCUSSION

Neonatal ovarian cysts result from fetal exposure to maternal and fetal gonadotrophins and found often in newborns whose mother had increasing levels of HCG (diabetes, Rh isoimmunization, Toxemia).^[1] Placental insufficiency, in addition to incomplete maturation of the gonadostat, has been suggested to account for ovarian hyperstimulation in full-term infants. An immature hypothalamus-pituitary-ovarian feedback is thought to be responsible for gonadal hyperstimulation in severely premature fetuses. Fetal hypothyroidism has also been reported as a risk factor.^[2] At birth, maturation of the central nervous system and regulation of anterior pituitary function lead to a negative-biofeedback mechanism decreasing hormonal stimulation and arrest of follicular maturation, and development.^[1] Neonatal ovarian cysts

according to Nussbaum's classification are divided into simple or uncomplicated (completely anechoic) and complex or complicated (characterized by fluid debris level, clot, septa, and echogenic wall) suggesting torsion.^[2] The complications associated with ovarian cysts are torsion with loss of ovary, rupture, hemorrhage, and compression of other viscera. Torsion is the most common (50-78%) complication because the newborn ovary has a long pedicle. Torsion is more common in larger cysts but has also been reported in those less than 5 cm.^[1] Torsion may also result in adhesion of necrotic ovary to the bowel or other organs, with possible intestinal obstruction or perforation, urinary obstruction and even sudden infant death. Torsion has been observed to occur more frequently during fetal life than postnatally. Therefore, to effectively prevent torsion, treatment of fetal ovarian cysts should be performed antenatally, although criteria for prenatal decompression still need to be evaluated.^[2] Antenatal aspiration is less likely to be successful because continued hormonal stimulation leads to recurrence of the cyst.^[1] Ultrasound-guided needle aspiration of an ovarian cyst in a neonate has been described as an alternative to surgery, but the chances of cyst rupture and peritonitis are more. Even the chances of recurrence will be more with needle aspiration.^[3] A rare complication of ovarian cysts is autoamputation, which presents as a wandering mass in the abdomen.^[2] Malignant change in a neonatal ovarian cyst is extremely rare and is seen usually in complex lesions.^[4] In very large cysts, pulmonary hypoplasia or polyhydramnios has been described due to the pressure of the mass on the small intestine, which interferes with fetal swallowing.^[1] In newborns, ultrasound has proven to be non-specific in evaluation of ovarian torsion and clinical evaluation is difficult and often unremarkable.^[2] Symptomatic and complex cysts should be removed regardless of the size.^[1] Controversy exists regarding the management of asymptomatic, uncomplicated cysts.^[4] Small simple ovarian cysts under 4 cm in diameter can be observed carefully with serial ultrasonography. However, all complicated ovarian cysts and simple cysts over 5 cm in diameter in addition to smaller cysts less than 5 cm showing no decrease in size should be considered for surgical indication to rescue the ovarian tissue.^[5] Most authors have recommended early surgery in newborns with ovarian cysts, but this procedure often leads to the removal of normal ovarian tissue. Recently, a good outcome has been achieved with conservative management because of spontaneous remission within a few months.^[4] In the management of asymptomatic ovarian cysts, either laparoscopic exploration or a policy of 'wait and see' might be proposed. The former might turn out to be an overtreatment, whereas the latter might not prevent possible complications.^[2] Laparoscopy is both diagnostic as well



as therapeutic. It is well tolerated by newborns. It demands some adjustments in instruments and insufflation pressures (6-8 mm Hg) with constant monitoring of end-tidal CO₂.

CONCLUSION

The laparoscopic approach avoids the disadvantages of large scars, adhesion formation and the danger of life-threatening complications that are present in conservative approaches.^[6] In addition to confirming the diagnosis, laparoscopy can be used for aspiration, deroofting, cystectomy and oophorectomy in cases of ovarian cysts. Laparoscopy thus has become an important tool in the management of neonatal ovarian cysts.

REFERENCES

1. Chiaramonte C, Piscopo A, Cataliotti F. Ovarian cysts in newborns. *Pediatr Surg Int* 2001;17:171-4.
2. Bagolan P, Giorlandino C, Nahom A, Bilancioni E, Trucchi A, Gatti C, *et al*. The management of fetal ovarian cysts. *J Pediatr Surg* 2002;37:25-30.
3. Shozu M, Akasofu K, Iida K, Harada T. Treatment of an antenatally diagnosed fetal ovarian cyst by needle aspiration during the neonatal period. *Arch Gynecol Obstet* 1991;249:103-6.
4. Widdowson DJ, Pilling DW, Cook RC. Neonatal ovarian cysts: Therapeutic dilemma. *Arch Dis Child* 1988;63:737-42.
5. Mizuno M, Kato T, Hebiguchi T, Yoshino H. Surgical indications for neonatal ovarian cysts. *Tohoku J Exp Med* 1998;186:27-32.
6. Van der Zee DC, van Seumeren IG, Bax KM, Rovekamp MH, ter Gunne AJ. Laparoscopic approach to surgical management of ovarian cysts in the newborn. *J Pediatr Surg* 1995;30:42-3.
7. Brandt ML, Luks FI, Filiatrault D, Garel L, Desjardins JG, Youssef S. Surgical indications in antenatally diagnosed ovarian cysts. *J Pediatr Surg* 1991.

