Case Report

Laparoscopic Management of Auto-Amputated Ovarian Cyst in an Infant

T. K. Jayakumar, Rahul Saxena, Taruna Yadav[1], Neha Satyaprakash Mathur[2], Arvind Sinha

Departments of Pediatric Surgery and [1]Radiology, All India Institute of Medical Sciences, [2]Department of Gynecology, Shri Ram Hospital, Jodhpur, Rajasthan, India

Abstract

The routine schedule of antenatal ultrasound scans has led to an increased frequency of detection of foetal ovarian cysts. Although most of them regress spontaneously, some may grow into large cysts and undergo torsion followed by auto-amputation. However, pre- and post-natal scans may fail to identify this event. We report a case of a prenatally diagnosed ovarian cyst that failed to resolve conservatively and was increasing in size in post-natal ultrasounds. Pre-operative ultrasound and magnetic resonance imaging failed to detect the auto-amputation. The diagnosis was confirmed on laparoscopy which offers a safe and effective method for the removal of ovarian cysts in neonates and infants.

Keywords: Auto-amputation of ovarian cyst, foetal ovarian cyst, laparoscopy

Introduction

Foetal ovarian cysts are being frequently diagnosed with the advent of ultrasonography (USG) and magnetic resonance imaging (MRI). Nussbaum *et al*. classified congenital ovarian cysts into simple and complex.[1] The cyst with hetero-echoic contents, septations or flocculent material is called complex cysts, while those with anechoic content and thin walls are called simple cysts.[2] The large cysts can lead to ovarian torsion and loss of ovary. The cysts > 4 cm are particularly at higher risk of causing ovarian torsion. However, it is not uncommon to find torsion of the adnexa along with the ovary. Here, we describe the case of an infant with a prenatally diagnosed ovarian cyst that underwent auto-amputation and was successfully managed by laparoscopy.

Case Report

A term born, normally delivered 3-month-old baby was referred to our institute for the antenatally detected pelvic cyst. The mother did not have any history of polyhydramnios or gestational diabetes. At 35 weeks of gestational age, the ultrasound study of the foetus detected a cyst of size 4 cm × 3 cm, within the abdomen, just below the level of the right kidney. On the 2nd day of life, the post-natal ultrasound study showed a suspected right ovarian cyst with hypo-echoic contents. The left ovary, uterus and both kidneys were normal. As the cyst was < 4 cm in size, the baby was kept under watchful management, and on follow-up ultrasound at the age of 1 month, the cyst was relatively larger (3.6 cm × 2.6 cm × 4.6 cm), with floating echogenic contents and without any evidence of vascularity in the colour Doppler. The right ovary was not separately visualised. These findings were suggestive of a complex ovarian cyst. The MRI pelvis confirmed the findings of the ultrasound showing a complex heterogeneous cystic lesion in the right ovary [Figure 1]. It showed heterogeneous contents on T2-weighted imaging, containing T2 hyper-intense fluid-filled areas with dependent T2 hypo-intense contents and T1 hyper-intensity. There was no blooming on susceptibility-weighted imaging. Peripheral cystic wall enhancement was present on post-contrast imaging. Therefore, differential diagnoses of the complex haemorrhagic cyst and ovarian dermoid cyst were considered based on imaging findings.

The values of serum alpha-fetoprotein (AFP) (192 IU/mL), beta-human chorionic gonadotropin (b-HCG) (5 IU/L) and

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Address for correspondence: Dr. Rahul Saxena, Department of Pediatric Surgery, All India Institute of Medical Sciences, Jodhpur - 342 005, Rajasthan, India.
E-mail: drrahulsaxena@gmail.com

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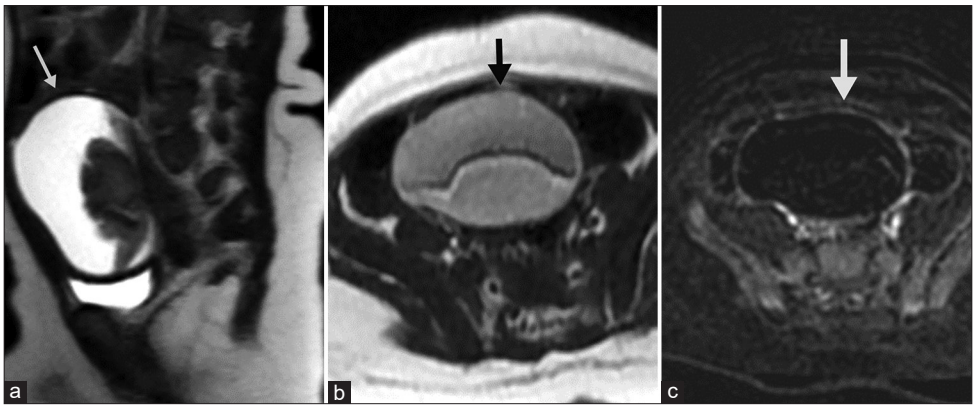


Figure 1: Magnetic resonance imaging pelvis. (a) Sagittal T2-weighted image showing a heterogeneous cystic lesion in the right ovary (arrow) with dependent hypo-intense contents. (b) Axial T1-weighted image showing internal hyper-intense contents (arrow). (c) Axial post-contrast T1-weighted subtracted image depicting peripheral cyst wall enhancement (arrow)

lactate dehydrogenase (LDH) (339 IU/L) were within normal limits for the age. An elective diagnostic laparoscopy was done. Three 5-mm ports were placed with one each in supra-umbilical, right, and left hypochondriac regions. Pneumoperitoneum was maintained at a pressure of 10 mmHg and a CO_2 insufflation rate of 2 L/min. A large chocolate brown-coloured cystic structure was found within the abdomen [Figure 2a]. It was weakly adhered to the pelvic peritoneum and detached on manipulation becoming freely mobile. The right fallopian tube's proximal part appeared like a stump, the rest of the distal portion was atretic and the right ovary was not separately visualised [Figure 2b].

The left ovary, fallopian tube and uterus appeared normal. The cyst was placed in the endobag which was exteriorised through one of the port sites, and the chocolate brown fluid content of the cyst was aspirated without any spill or contamination. The endobag and the residual cyst were then removed from the port site. The histopathological examination of the specimen showed necrotic material, with the cyst wall showing areas of a few primordial follicles, calcification and a remnant fallopian tube wall. The post-operative period was uneventful, and the child was discharged after 2 days. The child is thriving well and remained asymptomatic in a 1-year follow-up.

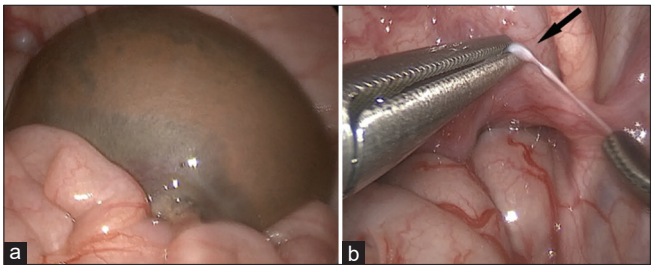


Figure 2: (a) Chocolate-coloured ovarian cyst. (b) The atretic portion of the fallopian tube (arrow)

Discussion

The ovarian cysts in neonates are mostly simple and tend to resolve with time. The maternal hormones stimulate the foetal ovaries, causing disordered folliculogenesis, leading to the formation of these cysts. Although smaller simple cysts can resolve within 6–8 months due to hormonal changes, surgical intervention is indicated in larger cysts, especially those bigger than 40 or 50 mm which can undergo ovarian torsion, rupture and adhesions.[3,4]

The majority of the complex ovarian cysts (either diagnosed ante- or post-natally) have higher chances of undergoing torsion (89% of the operated cysts) compared to simple ovarian cysts.[5] The complex ovarian cysts, especially those that underwent torsion, can lead to intestinal obstruction due to adhesions or volvulus. Auto-amputated ovarian cysts are defined as cystic masses that are free from tubo-ovarian pedicle and freely mobile within the peritoneal cavity. It is a rare phenomenon and Kennedy *et al*. were the first to report an auto-amputated ovarian cyst.[6] The chronic torsion of adnexa due to large cystic mass, and subsequent devascularisation is the possible cause of the same. In our patient, the right fallopian tube was atretic and the cystic mass was free from other peritoneal structures and filled with old haemorrhagic fluid. These features suggest that there was torsion of the right ovarian and adnexal complex followed by detachment from the pedicle.

Ultrasound may detect an auto-amputated ovarian cyst as a free-floating partially calcified cystic mass. A fluid-debris level is commonly seen in auto-amputated ovarian cysts. The calcified solid part of the auto-amputated cyst may raise the suspicion of teratoma. The vascular proliferation in the surrounding fibrotic tissue may lead to the false appearance of vascularity on Doppler ultrasound and thus it is not possible to rule out torsion on basis of this finding.[7] There are reports in the literature of the auto-amputated teratoma cysts undergoing malignant transformation and forming omental masses.[8] The other possible complications include spontaneous rupture of the ovarian cysts, infection, intestinal obstruction, urinary tract obstruction, implantation in the omentum and rarely sudden death.[9]

In our patient, the USG and MRI findings suggested a non-resolving complex ovarian cystic lesion which led to early intervention, rather than management conservatively. The laparoscopy provides the benefit of being minimally invasive and the opportunity to visualise the opposite side ovary and fallopian tube and the uterus. Zampieri *et al*. reported the successful laparoscopic management of 16 patients with neonatal ovarian cysts, with seven of them having complete amputation.[4] The contralateral oophoropexy is a controversial aspect; however, when the surgeon decides to do it, it can be done during the same laparoscopic procedure.[10]

Conclusion

Foetal ovarian cysts are important differentials of ante-natal intra-abdominal cysts. Auto-amputation can rarely occur due to torsion of the cyst and is followed by ischaemia and necrosis of the ovary, tube and pedicle. Minimal invasive approach by laparoscopy is the treatment of choice as it allows confirmation of the diagnosis and safe removal with minimal morbidity, short hospital stay and early postoperative recovery.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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