Case reports

Laparoscopic resection of a giant paraovarian cyst in pediatrics

DOI: 10.5377/alerta.v5i1.12802

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Extirpación laparoscópica de quiste paraovárico gigante en pediatría

Suggested citation:
González Ramos JR, Márquez JA. Laparoscopic resection of a giant paraovarian cyst in pediatrics. Alerta. 2022;5(1):6-11. DOI: 10.5377/alerta.v5i1.12802

Received:
October 4, 2021.

Accepted:
December 14, 2021.

Published:
January 27, 2022.

Author contribution:
JRGR[1]: bibliographic review and discussion elaboration. JAM[2]: clinical summary elaboration and bibliographic review.

Conflicts of interest:
The authors declare there is no conflict of interest.

Abstract
Case presentation. An 11-year-old female patient with a history of one year. In the clinical evaluation a mass was located in the right hemiabdomen, it had soft consistency and painful to deep palpation. Ultrasonographic and abdominopelvic computed tomography studies confirmed the diagnosis of a cystic mass of right ovarian origin. The mass measured 13 × 9 cm. **Treatment.** A video-laparoscopy defined the paraovarian cyst and proceeded its resection and ipsilateral salpingectomy and preservation of the right ovary. **Outcome.** Post-operative nutrition started after six hours . The patient had analgesic treatment and was discharged the following day. Follow-up was performed in an outpatient clinic at one month and at three months later, without complications. In the last control ultrasound was performed, which did not show any recurrence.

Keywords
Laparoscopy, paraovarian cyst, pediatrics.

Resumen
Presentación del caso. Paciente femenina de 11 años con historia de un año de crecimiento abdominal progresivo, acompañado de dolor tipo cólico. En la evaluación física se encontró una masa en el hemiabdomen derecho, de consistencia blanda y dolorosa a la palpación profunda. Los estudios ultrasonográficos y la tomografía axial computarizada abdominopélvica confirmaron el diagnóstico de una masa quística de origen ovárico derecho con medidas de 13 × 9 cm. **Intervención terapéutica.** En la exploración laparoscópica se detectó el origen paraovárico del quiste y se procedió a la resección del quiste y se decidió la salpingectomía ipsilateral con preservación del ovario derecho. **Evolución clínica.** Se inició la alimentación por vía oral seis horas posteriores a la intervención. Se manejó con analgesia y fue dada de alta al día siguiente. Se continuó con el seguimiento ambulatorio por uno y tres meses posteriores a la cirugía sin detectarse complicaciones. La biopsia reportó un cistoadenoma seroso papilar paraovárico derecho y la ultrasonografía de control no mostró recidivas.

Palabras clave
Laparoscopía, pediatría, quiste paraovárico.

Introduction

The paraovarian cyst develops in the broad ligament, between the fallopian tube and the ovary[1]. They are rounded structures with a smooth wall, filled with serous fluid, which are located in the mesosalpinx, the broad ligament or on the uterine tube6. They have an incidence of approximately 1 in 1, 500, 000[2], are frequent in the third and fourth decade of life; they rarely occur in paediatric age. They are generally benign[1] and have a slow and progressive growth, they are usually asymptomatic thereby diagnosis is usually incidental[3]. In cases of large volume cysts, the symptoms are pelvic pain or abdominal tumor[4]. They are usually clinically diagnosed and confirmed by ultrasonographic images[5]. The importance of this case is the low frequency of these tumors in the pediatric age and their timely identification by health professionals.

Presentation of the case

An 11-year-old female patient, referred by a private doctor, with a history of approximately one year of progressive growth of her right hemiabdomen, which was accompanied by abdominal pain of mild to moderate intensity colic type that subsided spontaneously. She denied other symptoms such as fever, vomiting, constipation, urinary symptoms, menstrual disorders and weight loss. With a history of menarche at the age of ten and her last menstruation a month before the consultation. There was no significant family history.

In the clinical evaluation, a hemodynamically stable patient was found with a heart rate of 84 beats per minute, respiratory rate of 20 breaths per minute and blood pressure of 100/60 mmHg. Her abdomen was observed globose, without scars or complementary circulation, was soft and depressible with present and normal peristalsis and a circumscribed mass, little mobile, of approximately 12 x 12 cm was palpated that compromised the right flank, mesogastrium, hypogastrium and right iliac fossa, painful on deep palpation and of soft consistency. No signs of peritoneal irritation were observed. The female external genitalia without abnormalities or blood remains. It presented a stage of Tanner III of pubertal development. The rest of the physical exam is without abnormalities.

Laboratory tests reported: hemoglobin of 13.5 gr/dL, hematocrit of 40%, white blood cells of 7800 x mm^3, neutrophils of 65%, lymphocytes of 30%, partial thromboplastin time of 32 seconds, prothrombin time and value of 12 seconds, 90%, general urine examination without abnormalities, carcinogenic antigen 125 of 16.6 U/ml, carcinoembryonic antigen of 2.6 ng/ml, alpha-fetoprotein of 0.54 IU/ml and chorionic gonadotropin hormone beta fraction of 0.98 mIU/ml.

A cystic mass 13 × 9 cm, of liquid content, with an intracavitary septum without solid components was described by the Pelvic ultrasonography and abdominopelvic computed tomography. The left ovary with normal features and the right ovary were not observed (Figure 1).

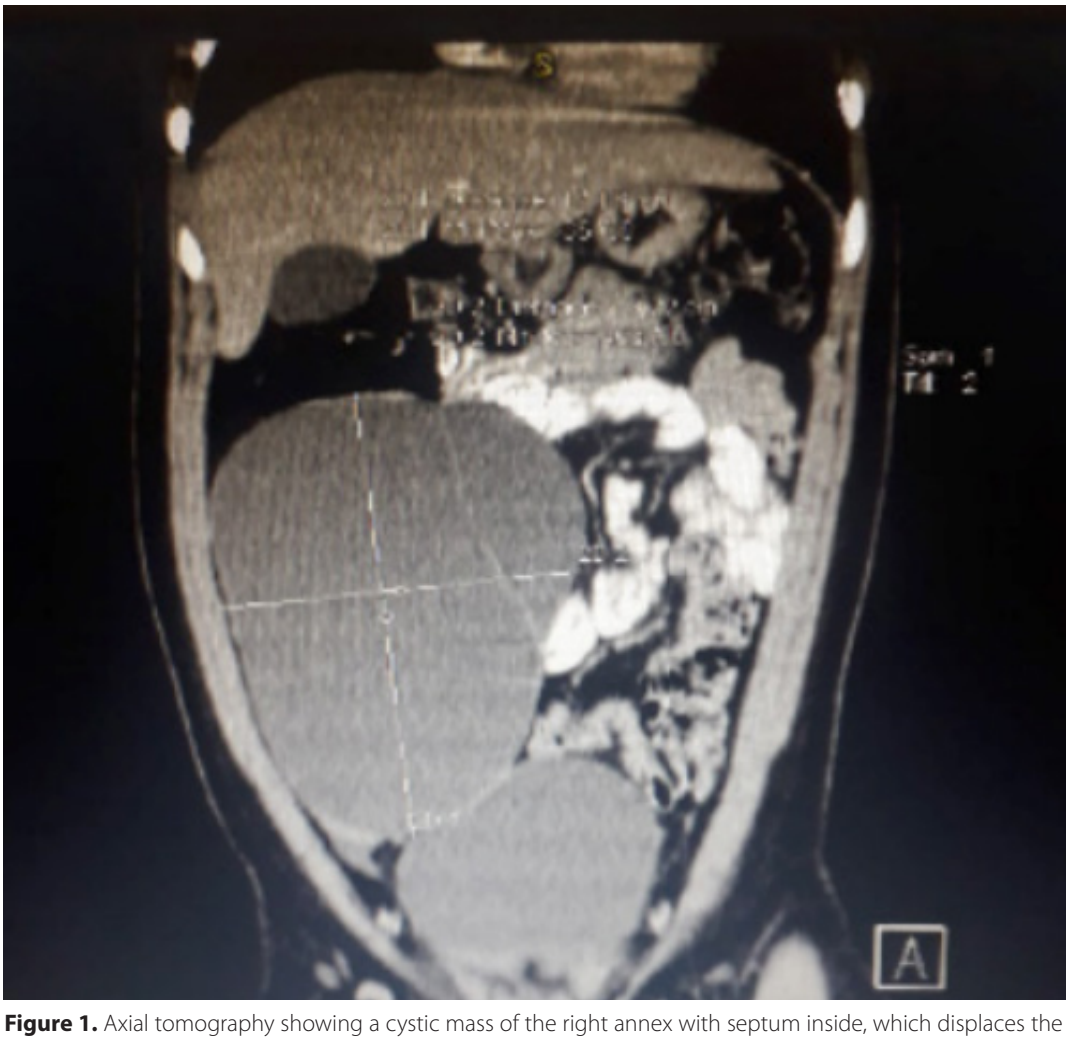

Figure 1. Axial tomography showing a cystic mass of the right annex with septum inside, which displaces the intestinal loops.

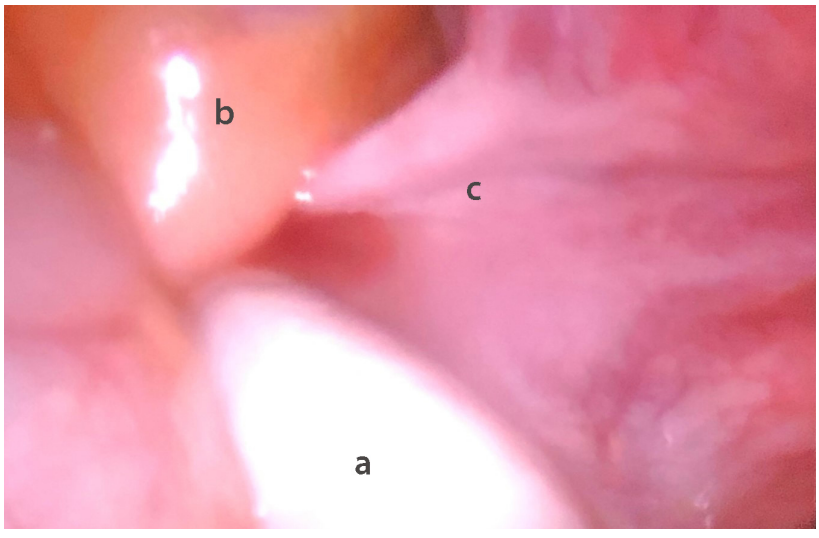

Figura 2. The right ovary (a), uterus (b), and fallopian tube (c) are observed.

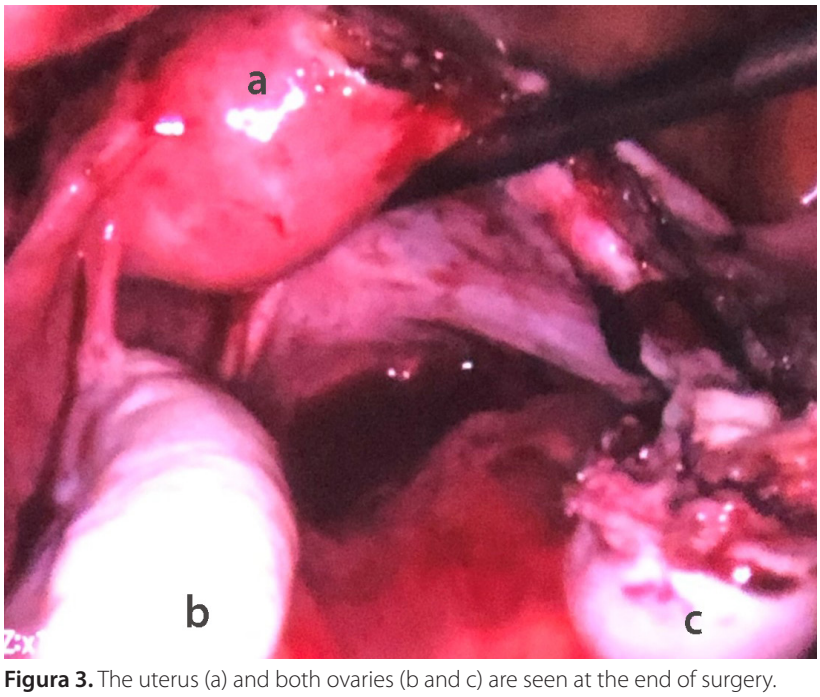

Figura 3. The uterus (a) and both ovaries (b and c) are seen at the end of surgery.

The surgical intervention was performed two weeks later after having the study results. She did not receive any medical treatment during this time.

Therapeutic intervention

The patient was admitted to the pediatric service one day before her surgery. Prophylaxis with cefazolin 1 gr intravenously was performed 30 minutes before the start of surgery.

The surgical procedure was a laparoscopic removal. Initially an attempt was made to establish pneumoperitoneum by open technique through an umbilical incision in which a 10 mm trocar was placed in the navel, but the size of the mass did not allow it, so the cyst was punctured with a Veress needle and 1200 ml of clear liquid, citrine, was drained, without macroscopic remains. This allowed to form the pneumoperitoneum with abdominal pressure of 12 mmHg and initial flow of 5 l / min. A 5 mm trocar was placed on the lower right flank and another on the lower left flank. Then, the mass from the right mesosalpinx was identified, which compromised the ipsilateral uterine tube and both healthy ovaries were observed (Figure 2 and 3).

Clinical evolution

The patient was treated with ketorolac 30 mg and paracetamol 500 mg every six hours, both intravenously, and began oral feeding six hours after surgery. She was discharged from hospital the next day with ibuprofen 400 mg every eight hours and without antibiotics. Follow-up was given one week, one month, and three months after surgery. The biopsy was reported that showed a right paraovary serous cystadenoma in the weekly control. In the last control, a pelvic ultrasonography was taken without finding evidence of recurrence of the cyst.

Clinical diagnostic

Right paraovaric papillary serous cystadenoma.

Discussion

Paraovarian cysts represent approximately 10 % of diagnosed adnexal lesions and 3 % of all gynecological emergencies. They have a mesothelial origin in 68 % of cases and rarely occur in paediatric age[5,7]. They are histologically classified as serous or simple cysts, their usual size is from one to eight cm, but cysts larger than ten cm in diameter have been described[6]. This description of the anatomohystological characteristics of paraovarian cysts coincides with our patient's findings.

The etiology of paraovarian cysts is unknown, it is likely due to the secretory action of the tubal epithelium, as a result of hormonal activity after puberty[8]. There are few reports of paraovarian cysts in patients with premature ovarian failure, which is characterized by low levels of estrogen and androgens[8].

These are usually unilateral, moving and smooth. The clinical symptomatology of these patients can manifest chronically

or acutely. The first one is characterized by frequent digestive symptoms, such as the feeling of heaviness in the lower abdomen along with pain, which can be light, temporary or sometimes frequent, but tolerable. Other young women manifest urinary symptoms such as pollakiuria, sometimes accompanied by fever[5,9]. On the other hand, the acute picture can be characterized with marked abdominal sensitivity produced by intracystic hemorrhages, perforation of the cyst with hemoperitoneum or the twisting of the tumor or the fallopian tube on the same side. Differential diagnosis of paraovarian cyst should include: intestinal duplication, internal hernias, intestinal lymphangioma, and peritoneal inclusion cysts. Before an acute abdominal condition, complicated appendicitis of several days of evolution, hydrosalpinx, ovarian torsion and ectopic pregnancy should be discarded[5,6,9].

Recurrence seems to occur more commonly on the same side. It does not seem to be associated with other pathologies, as well as the size of the cyst, its number, body mass index or stage of puberty[8].

It is difficult to establish the accurate preoperative diagnosis of paraovarian cysts. Initially the clinical picture is non-specific and, when it is complicated, it appears as an acute abdominal picture. It is radiologically complex to distinguish them from ovarian cystadenomas, ovarian cysts or follicular cysts. The first diagnostic approach is ultrasound. The presence of a paraovarian cyst should be suspected when a cyst located on the side of the uterus is observed and both ovaries cannot be identified[6,12]. Computed tomography and magnetic resonance imaging have limitations to determine the origin of large paraovarian cysts. Only 30 to 44 % of paraovarian cysts are correctly identified before surgery[6,9,10,12].

In the study prior to surgery, the determination of tumor markers is important to distinguish between malignant and benign tumors[13]. The most useful tumor markers for excluding malignancy include alpha-fetoprotein, human chorionic beta gonadotropin, cancer antigen 125, and lactate dehydrogenase. Underperforming tumor markers include inhibin A and B[14].

Complications of paraovarian cyst, such as bleeding, perforation, twisting and the risk of malignancy, are due to fast growth and large size and appear as acute abdominal pictures. Malignancy occurs in 2,9 % of cases and cystadenocarcinoma and papillary carcinoma are described as the main secundary neoplasms[6]. There is an increased risk of ectopic pregnancies in the long term10. Adnexal torsion is a common complication that is diagnosed in girls undergoing surgery for paraovarian cysts and is not associated with the ultrasound appearance or diameter of the cyst. Therefore, surgical removal of paraovarian cysts should be considered in girls who undergo other interventions and are found as fortuitous findings during this to prevent torsion[14]. These surgical interventions should be cautious, trying to preserve both the fallopian tube as well as the ovary involved to preserve fertility and hormonal function[17]. It was not possible in this case to preserve the tube because, due to the size of the cyst, a safe surgical plane could not be established for its dissection, but it was possible to preserve the right ovary as shown in Figure 3. Another important point is the surgical behavior in the face of the finding of torsion and necrosis of the adnexal tissues. Normally, when the evidence of necrosis of the ovary and annexes is observed macroscopically, the decision of removal is made during surgery, but there are reports that show expectant management in these cases with complete functional recovery after unwinding the ischemic annexes regardless of the macroscopic appearance[12,13]. That is why the removal of the cyst is recommended in the incidental finding during surgery performed for other reasons[10]. The benign nature of the mass is confirmed by histological study[6,10,11].

Surgical treatment of the adnexal mass can be performed through a laparotomy or laparoscopy. This depends on factors associated with both the patient and the tumor. The advantages of laparoscopy are as follows: less postoperative discomfort, minor blood losses, less tissue trauma, decreased hospital stay and lower care costs[12]. Its disadvantages appear in cases , for instance,malignant pathology; if the cyst size is bigger or if skills and necessary equipment to perform this pathway are absent[12,17].

Several methods of approaching giant cysts are described, such as transdermal drainage under ultrasonographic control; decompression of the cyst by minilaparotomy and aspiration of the cyst under laparoscopic control[17], as was done in this case.

There are alternatives to traditional laparoscopic surgery such as LESS single site (Laparoendoscopy Single Site) single-port surgery and isobaric laparoscopic surgery. Single-site surgery consists of making a single umbilical incision through which, by means of a trocar designed for this purpose, the necessary instruments are introduced to perform the procedure[16].

On the other hand, laparoscopic isobaric surgery consists of creating the abdominal workspace with retractors of the abdominal wall and not with carbon dioxide[17,18,19].

The technological progression of medical science has allowed the use of robotic technology for the removal of adnexal masses in pediatric age and has shown to be a simple surgical procedure, safe and effective for selected patients[20].

Ethical aspects

For the publication of this case, the informed consent of those people responsible for the patient was obtained for both the hospital care in which the physical examination of the patient was carried out and the publication of this article, with the commitment to maintain the privacy of the patient, as established in the declaration of Helsinki.

Acknowledgments

To Dr. Sidney Abarca, gynecologist at San Rafael National Hospital, for his support in surgical procedure.

Funding

Authors' own resources.

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