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Original Studies

Emergency Management and Conservative Surgery of Ovarian Torsion in Children: A Report of 40 Cases

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Abstract. *Introduction:* The authors describe and discuss the clinical and therapeutic features of 40 ovarian torsions (OT) in children with its urgent treatment that has advanced in recent years.

Materials and Methods: A retrospective study of 40 cases of OT in 38 children under 16 years of age, excluding adnexal torsions in neonates.

Results: Abdominal and/or pelvic pain was the presenting symptom ; 8 of these children had pain between 2 to 9 months prior to surgery and 27/40 (67.5%) had associated vomiting. Before the procedure, ultrasound (US) diagnosed 29 ovarian lesions, related to 14 mature teratomas (MTE) and 10 cystadenomas (CA), one association of MTE and CA in the same ovary, 2 functional cysts and 2 malignant neoplasms. 19/40 torsions could benefit from conservative management. Eleven torsions occurred, 10/11 of these ovaries had an increased volume, and 5/11 had US evidence of small subcortical cysts. Three detorsions with incomplete removal of CA were followed by enlargement of the tumor and re-torsion in 2 of them. Five children had bilateral ovarian pathology which led to unilateral ovariectomy, while the other benefited from conservative treatment.

Conclusions: In any girl presenting with abdominal pain, the diagnosis of an ovarian torsion must be considered. US is performed emergently, but only surgery, most often a laparoscopic procedure, assures diagnosis. The treatment of the torsion is an emergency and must be as conservative as possible in order to preserve the ovarian function. Bilateral torsions are not unusual.

Key Words. Ovarian torsion—Children—Conservative surgery

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Introduction

Adnexal torsion is a rare pathology in children, but it must be treated when young girls present with abdominal or pelvic pain or when an abdominal mass is discovered. Clinical imaging and presentation do not offer certain diagnosis but rather indications of such. The course of action when confronted with adnexal torsion is still debated.[1,2] From a homogeneous series of 40 adnexal torsions in children, the authors discuss the epidemiology, the clinico-radiological features, and the treatment of this unusual pathology.

Clinical Material and Methods

Medical files of 38 girls with 40 ovarian torsions (OT) managed in our department during 19 years (1985–2003), were studied retrospectively. Neonatal torsions were excluded. We analyzed: age, pubertal status (prepubescent $<$ S2 and pubescent $\geq$ S2, according to Tanner), clinical and radiological signs, follow up, and possible post-operative or late treatment. Patients were followed for an average of 19 months (2 months to 11 years).

Results

At the time of the diagnosis, the patients' average age was 11 years (range 3–14 years), 23 girls were prepubescent, 17 pubescent. Fig.1 shows the children's age and their puberty status at the time of OT.

All girls presented after or during acute abdominal or pelvic pain. Twenty-seven of 40 (67.5%) children presented with vomiting during the painful episode. Seven abdominal masses could be palpated before surgery. The time between the onset of pain and the diagnosis was known for 35/40 OT. It was less than

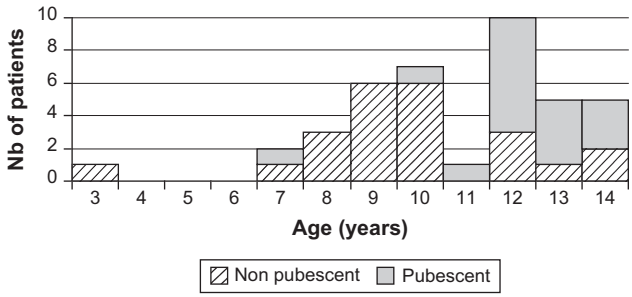

Fig 1. Age and puberty status at the time of ovarian torsion.

24 hours for 9/35 torsions, 1−3 days for 15/35 and more than 3 days for 11/35.

Thirty-nine of 40 OT had an ultrasound (US) examination emergently, completed in 4 cases with Doppler, yet it did not change the surgical indication. The 29 tumors associated with OT were seen with US. Ten of 11 OT unlinked to a tumor had an increased size related to the age (5−11 cm diameter, average = 8.1 cm). Five of 11 revealed on US small cortical cyst between 5 and 10 mm in diameter (Fig. 2). Those 5 children were pubescent.

Standard abdominal x-ray examinations were performed on 12/15 teratomas; 2/3 showed ossified images, most often teeth.

Only 9 children underwent CT scan examination, which did not add any diagnostic information except in one case where an ovarian bulk with ossifications was seen several days after an appendectomy. Eighteen of 40 surgical procedures were done under laparoscopy, including 4 laparoscopic procedures that had to be converted into open surgery. There were 29 ovarian lesions associated with OT, 15 mature teratomas (MTE), 11 cystadenomas (CA) and 2 malignant tumors (Table 1).

Nineteen of 40 OT had a conservative management, ovariectomy was reserved to non-resectable tumors and to gangrenous necrosed ovaries that did not bleed on incising them 15 minutes after detorsion. For the 10 OT operated within the 24 hours, 80% had conservative ovarian surgery; for the 15 OT operated between 24−72 hours from the onset of pain, 47% had conservative ovarian surgery; and for the 11 OT treated more than 3 days after onset, there was only 9% conservative ovarian surgery. 23/40 (57.5%) OT were located on the right side, and 17/40 (42.5%) on the left side. When the OT occurred on a normal ovary, the ratio right/left was 7:2 or 78%. The median size of the ovaries with OT, measured during surgery, was 7.78 cm (3−15 cm). Seventy-four percent of OT were linked to tumors in prepubescent girls, compared with 45% in pubescent ones.

Fig 2. Ultrasound showing ovarian cortical cysts of a twisted non-tumoral ovary.

Table 1. Surgical Procedure and Type of Ovarian Pathology for 41 Tumors in 38 Children. Two Recurrences and One Ovary with Two Tumors (Cyst Adenoma and Mature Teratoma)

Pathology	Surgical procedure	Laparoscopic/Open
15 Mature Teratoma	Conservative: 7 Radical: 8	6 Open − 1 Laparoscopy 5 Open − 3 Lap. (1 conversion)
11 Cystadenoma	Conservative: 6 Radical: 5	2 Open − 4 Laparoscopy 3 Open − 2 Laparoscopy (1 conversion)
9 Normal	Conservative: 5 Radical: 4	3 Open − 2 Laparoscopy 2 Open − 2 Laparoscopy (1 conversion)
2 Functional cyst	Conservative: 1 Radical: 1	Open Laparoscopy (1 conversion)
2 Necrotized Ovaries: Not reconizable tissue	Radical: 2	1 Laparoscopy − 1 open
1 Dysgerminoma	Conservative: 1	Open
1 Carcinoma	Radical: 1	Open

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