Journal of Pediatric Surgery (2005) **40**, 704–708

ELSEVIER

Journal of Pediatric Surgery

www.elsevier.com/locate/jpedsurg

Long-term results of conservative management of adnexal torsion in children

Ahmet Çelik*, Orkan Ergün, Hakan Aldemir, Coşkun Özcan, Geylani Özok, Ata Erdener, Erol Balýk

Department of Pediatric Surgery, Ege University Faculty of Medicine, 35100 İzmir, Turkey

Index words:
Adnexal torsion;
Child;
Conservative management;
Detorsion;
Oophoropexy

Abstract

Background/Purpose: Adnexal torsion is a condition that may result in serious morbidity including adnexal removal. However, conservative management with preserving the torsed adnexa is not justified, and long-term outcomes remain unclear.

Methods: The records of 14 girls with ovarian torsion whose adnexal structures were preserved after detorsion were reviewed to evaluate the long-term results of conservative management. Data including age, previous history, duration of complaints, surgical findings and type of intervention, color Doppler ultrasound findings performed in the early and late postoperative periods, and final outcomes were collected.

Results: Mean age of patients was 11.5 ± 2.8 (range 6 to 15) years. Time interval between the onset of pain to surgery was 46.78 ± 35.5 (range 12 to 126) hours. Seven patients had a benign solitary cyst as an underlying cause for adnexal torsion. The intervention performed by open surgery in 9 and by laparoscopy in 5 patients included detorsion, simple cyst aspiration, unroofing and/or cystectomy in 7 patients with ovarian cysts, and oophoropexy in 9 of 14 patients. Follow-up ranged from 3 to 66 (mean 21.9 ± 20.1) months. Thirteen patients resumed normal size and folliculogenesis, whereas in 1 patient, the involved ovary atrophied. No recurrence or contralateral adnexal torsion was observed on follow-up.

Conclusions: Conservative management with untwisting the ovary and pexing both retained detorsed and contralateral ovaries especially in idiopathic torsions should be considered in cases of ovarian torsion in children.

Torsion of normal ovaries more commonly occurs in young and adolescent girls than in women [1]. The signs and symptoms of ovarian torsion are often similar to those of acute appendicitis; therefore, ovarian torsion is often misdiagnosed, especially in young girls. A number of theories on the etiology of torsion of normal ovaries have been proposed, including impeded venous return causing vascular stasis and adnexal congestion, excessive mobility of the adnexa because of long fallopian tubes and mesosalpinx, and long utero-ovarian ligaments [2,3].

Traditional management has been oophorectomy for hemorrhagic ovary representing nonviable tissue and the

* Corresponding author. Tel.: +90 232 388 14 12; fax: +90 232 342 21 42.
E-mail address: celika@med.ege.edu.tr (A. Çelik).

0022-3468/05/4004-0016$30.00/0
doi:10.1016/j.jpedsurg.2005.01.008

fear of future malignant transformation if left in place [4,5]. We have previously reported 2 cases whose torsed ovaries were removed and later presented with metachronous contralateral torsions; they were treated with detorsion and fixation after which folliculogenesis and development of secondary sex characters were observed in the long-term follow-up [6]. The purpose of this study was to evaluate our experience with adnexal torsion in 14 children managed conservatively. To the best of our knowledge, this is the second report with a larger number of patients to address the long-term outcome of conservative management of adnexal torsion in children.

1. Materials and methods

After approval of the institutional review board, records of patients who had undergone surgery because of torsion of uterine adnexal structures between January 1997 and December 2003 were reviewed. Those with a malignant cause as an underlying etiology that required oophorectomy were excluded. Fourteen patients managed conservatively were included in the study, and their long-term results were assessed. The conservative management in the present study referred to preserving adnexal structures after surgical detorsion and fixation of adnexa. The adnexal pexy was performed by fixing the gonad to the lateral pelvic wall with interrupted nonabsorbable sutures.

The preoperative diagnosis of adnexal torsion was made based upon patients' symptoms, physical examination, and imaging studies when and as required. Color Doppler ultrasonography (CDU) was used to verify the viability of the ovarian tissue, especially in the follow-up. Age, duration of symptoms before admission, side of involvement, type of the surgical procedure, and outcome were evaluated.

Operative approach was made by laparotomy (9 cases) or laparoscopy (5 cases). The procedures included detorsion of adnexa, resection of additional pathological structures (ie, ovarian cysts) that seemingly lead to torsion, and oophoropexy of torsed and contralateral adnexa in idiopathic torsions or suspected anatomic predisposition.

Early postoperative follow-up included CDU on first postoperative day and routine clinical parameters. Patients were seen at the clinic at postoperative weeks 2 and 4 and then every 3 months.

2. Results

Mean age of the patients was 11.5 ± 2.87 (range 6-15) years. Time elapsed from the initial onset of symptoms to hospital admission was 42.5 ± 35.2 (range 9-120) hours. Two patients had the history of previous contralateral salpingo-oophorectomy because of idiopathic adnexal torsion in our institution [6] and presented with metachronous torsions. One patient had open cardiac surgery because of atrial septal defect, and another patient had Von Willebrand disease diagnosed 2 years ago.

All patients presented with lower abdominal pain. Onset of pain was abrupt in all cases, and 4 of them reported similar previous episodes. Nausea and vomiting were present in 71% of cases, and in 5 patients, a pelvic mass was palpable in abdominal or rectal examination. Fever was present in only 1 patient. Laboratory data were noncontributory, and the white blood cell count ranged from 6000 to 20.300/mm^3, with a mean count of 11.985 ± 4275/mm^3. Plain abdominal radiograms obtained in all patients were also nonspecific.

Abdominal-pelvic ultrasonography obtained in all cases confirmed the presence of a mass in all but 1 patient.

Table 1 Perioperative and postoperative properties of patients

No	Age/ side	Macroscopic appearance	Degree of torsion	Additional pathology	Surgical procedure	Postoperative course	Pathologic result	Early postoperative CDU (day 1)	Late postoperative CDU	Follow-up (months)	Final outcome
1	13/L	black-blue	900°	SC	DET/CE	N/S	LC	Min AS	Normal	6	Good
2	9/L	black-blue	720°		DET-FIX	N/S	HI	No AS	Normal	66	Good
3	15/L	blue	270°	SC	DET/CE	N/S	SCA	Min AS	Normal	60	Good
4	14/R	blue	180°	SC	DET/CE	N/S	LC	Min AS	Normal	6	Good
5	13/L	black-blue	720°		DET-FIX	N/S	–	Min AS	Normal	36	Good
6	11/L	black-blue	1080°		DET-FIX	Fever	–	Min AS	Normal	26	Good
7	14/R	black-blue	540°	SC	CE/DET-FIX	N/S	IO	Min AS	Normal	22	Good
8	13/R	blue	180°	SC	DET/CE	N/S	–	Min AS	Normal	20	Good
9	11/R	black-blue	360°		DET-FIX	N/S	IO	Min AS	Normal	24	Good
10	6/L	black-blue	720°		DET-FIX	N/S	IO	Min AS	Normal	18	Good
11	12/R	black-blue	720°	SC	CE/DET-FIX	Fever	–	Min AS	Atrophy	14	Atrophy
12	10/R	black-blue	900°		DET-FIX	Fever	IO	Min AS	Normal	3	Good
13	6/R	black-blue	540°		DET-FIX	N/S	HI	No AS	Min AS	3	Good
14	14/R	blue	180°	SC	DET/CE	N/S	HC	Min AS	Normal	3	Good

AS indicates arterial signals; CE, cyst excision; DET, detorsion; FIX, fixation; HC, hemorrhagic cyst; HI, hemorrhagic infarction; IO, ischemic ovary; LC, lutein cyst; N/S, not significant; SC, solitary cyst; SCA, serous cyst adenoma.