Laparoscopic detorsion of isolated idiopathic Fallopian tube torsion: conservative treatment in a 13-year-old girl

Burak Ardıçlı¹, Saniye Ekinci¹, Berna Oğuz², Mithat Haliloğlu², F. Cahit Tanyel¹, İbrahim Karnak¹
Departments of ¹Pediatric Surgery, and ²Radiology, Hacettepe University Faculty of Medicine, Ankara, Turkey. E-mail: ikarnak@hacettepe.edu.tr


Isolated fallopian tube torsion (IFTT) is a rare entity in adolescent girls. Invasive surgery, salpingectomy, was used during the initial surgery or at the time of recurrent torsion in 87% of previously reported cases. Herein, the authors present an adolescent premenarcheal girl with idiopathic IFTT, which was treated by laparoscopic detorsion, to emphasize that tubal torsion should be included in the list of differential diagnoses of abdominal pain in adolescent girls. Minimally invasive, organ-saving surgery should be done, and the child should be followed up for recurrent torsion.

Key words: Fallopian tube, torsion, idiopathic, isolated, adolescent, child, laparoscopy, minimally invasive surgery.

Torsion of a fallopian tube is usually seen as a part of en-bloc torsion of the adnexal structures. Torsion of the tube without association with an ovarian torsion is termed as isolated fallopian tube torsion (IFTT)¹. Isolated torsion of a fallopian tube can be precipitated by intrinsic and extrinsic etiologies². The reported intrinsic pathologies are pelvic inflammatory disease, hydrosalpinx, prior tubal surgery, and primary fallopian tube malignancy. The extrinsic pathologies are scarring from endometriosis, prior pelvic surgery, gravid uterus, malignancy or tumor of the adjacent structures, and paraovarian or paratubal cysts. The term “idiopathic” refers to the absence of the above-mentioned precipitating etiologic factors. IFTT is a very rare pathology that is encountered in one in 1.5 million women³. Only 43 pediatric cases of IFTT had been reported to date in the English-language medical literature, and interestingly, 80% of the cases were treated with salpingectomy during the initial surgery or at the time of recurrent torsion after detorsion²⁻²⁷. This case is reported to illustrate that IFTT can be encountered as a cause of abdominal pain in adolescent girls; conservative management, as laparoscopic detorsion of the tube without salpingectomy, should be preferred.

Case Report
A 13-year-old girl presented with left-sided abdominal pain for three days. She reported having regular menstrual cycles, and was on the first day of her cycle at the time of her admission. Her urinary and bowel habits were normal. She received no benefit from antibiotic treatment commenced in another hospital with the presumptive diagnosis of urinary tract infection.

The physical examination revealed no tenderness, defense or mass. Laboratory examinations showed white blood cell count, 10800 (N: 4100-11200); alpha fetoprotein, 1.77 IU/ml (N: 0-5.8); and β-human chorionic gonadotropin, <1.20 mIU/ml (N: 0-5). Blood biochemistry and urinalysis were also normal. Plain erect and supine abdominal X-rays were normal. Pelvic ultrasonography (US) revealed an edematous, enlarged, tortuous, and cystic left fallopian tube (hydrosalpinx) (Fig. 1), free pelvic fluid, and minimally enlarged left ovary (5x3x2 cm). The uterus, right tube and right ovary were normal. The differential diagnosis between pelvic inflammatory disease and torsion could not be made. Magnetic resonance imaging revealed a tubular, tortuous, cystic left adnexal mass (6x3x4 cm) and normal left ovary (Figs. 2a, 2b). The mass was assumed as hydrosalpinx.
Laparoscopy demonstrated a 720° torsion of the left fallopian tube. The left ovary was mildly edematous. Detorsion was performed by using two additional port entries. The circulation and color of the tube were quite normal after reduction. No additional pathology was encountered in the pelvis or abdomen.

The postoperative course was uneventful with complete improvement. Follow-up pelvic US revealed a mild residual dilation of the left tube and normal left ovary on the first postoperative day. The patient was discharged on the second postoperative day. Repeated follow-up pelvic US also revealed normal left ovary (3x4x4 cm) and a simple cyst (25x35x35 mm) within the left ovary in the first postoperative two weeks. The left fallopian tube was also seen as normal. Follow-up pelvic US at the end of the third postoperative month showed completely normal pelvic organs.

Discussion
Isolated fallopian tube torsion (IFTT) is a rare entity and comprises a minor group among etiologies of abdominal or pelvic pain in adolescents. Forty-three pediatric cases have been reported to date. To the best of our knowledge, a precipitating factor that may cause torsion of a fallopian tube was reported in more than half of the cases. Adnexal or paratubal cysts have been reported as an accompanying pathology in these articles. The remaining cases can be assumed as idiopathic tubal torsion, including the present case.

The exact mechanism is not known in idiopathic cases. Intrinsic abnormalities such as abnormal length of the mesosalpinx or a spiral course of the salpinx may be more likely. The proposed mechanisms have included activation of ovarian and tubal function by stimulation of the reproductive axis with high follicle stimulating hormone (FSH) levels long before the onset of menses in a case with asymptomatic distal occlusion of the tube and asymptomatic pelvic inflammation in the adnexal area, which causes distal obstruction of the tube. However, it is not clear whether hydrosalpinx developing as a result of tubal obstruction due to various etiologies precipitates torsion or if hydrosalpinx is the expectant result of IFTT. We think hydrosalpinx is a secondary finding in IFTT cases and not to be blamed as an
underlying anatomical factor in light of the findings of our case. We clearly determined that the hydrosalpinx resolved promptly after laparoscopic detorsion and did not recur.

The diagnosis of IFTT usually cannot be made preoperatively. The typical presentation is acute lower abdominal pain associated with nausea and vomiting\textsuperscript{4,6}. However, these features are not specific clinical signs and cannot help in the differential diagnosis.

Abdominopelvic US may help by showing the hydrosalpinx resulting from a torsioned tube, which is seen as a tortuous fluid-filled tubular structure that folds onto itself forming an S or C shape. The finding of an S- or C-shaped hydrosalpinx in association with normal ovaries and the absence of associating adnexal mass shortens the list of differential diagnoses. Magnetic resonance imaging can also show similar findings but should be reserved as a further radiological examination method.

The predilection side of adnexal torsion is the right side, with a 3 to 2 rate in childhood\textsuperscript{28}. Currently, the exact ratio for the IFTT side cannot be known because of the limited number of cases.

The most striking information derived from the current literature about the subject is the type of treatment used in IFTT cases. Salpingectomy had been used in most cases (87%). We think that this type of management reflects an old understanding on this issue and should be revised. Salpingectomy may solve the problem radically in children with IFTT through prevention of recurrence. Additionally, theoretically, one fallopian tube is sufficient for normal fertilization. However, the decision of unilateral salpingectomy may cause the child to face an infertility issue if the remaining tube becomes diseased by torsion, infection including perforated appendicitis, or ectopic pregnancy. Similar discussion has been widely made on the treatment options for ovarian torsion. Many pediatric surgeons performed oophorectomy for apparently necrotic ovaries due to torsion. However, recent reports changed the protocols from excision to simple detorsion\textsuperscript{28,29}. The ciliated cells of the fallopian tubes have been found viable in half of the salpingectomy specimens in a relatively large series of IFTT\textsuperscript{6}. This finding also encourages the pediatric surgeon to choose conservative management. After pondering all this scientific information, we definitely favor tubal conservation by using minimally invasive treatment methods.

Laparoscopy is undoubtedly the method of choice for both the definitive diagnosis, with thorough evaluation of surrounding structures, and the treatment of IFTT. We performed detorsion using a triple-port technique.

Puncture of the hydrosalpinx was used by some authors in previous reports\textsuperscript{6,30}. We felt that it was unnecessary in the present case. We determined complete resolution of hydrosalpinx with repeated US examinations. The hydrosalpinx had resolved completely within two weeks. Therefore, we strongly suggest postoperative US follow-ups after detorsion. A second-look laparoscopy would have been planned if the hydrosalpinx had not resolved.

The high recurrence rates were another interesting point following conservative treatment. Recurrent torsions were encountered within 43 to 83 days following detorsion in a previous series\textsuperscript{6}. This observation raises a question, “Is salpingopexy required in IFTT cases undergoing detorsion?” The answer to this question remains unknown at the moment but will become clearer when the number of conservatively treated cases increases.

Isolated tubal torsion should be included in the list of differential diagnoses of abdominal pain in adolescent girls. Since the medical history and physical examination findings may not be suggestive, pelvic US and/or magnetic resonance should be used. Definite diagnosis and conservative treatment can be done using minimally invasive methods. Laparoscopic detorsion and follow-up with US to document resolution of the hydrosalpinx are recommended as means of conservative treatment that should be attempted in every patient. High recurrence rates after detorsion may prompt salpingopexy in the future.
REFERENCES


