

Isolated torsion of the fallopian tube: A case report and review of the literature

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Summary

Introduction: Isolated torsion of the fallopian tube is a very rare condition. It occurs without ipsilateral ovarian involvement associated with pregnancy, haemosalpinx, hydrosalpinx, ovarian or paraovarian cysts and other adnexal alterations or even with an otherwise normal fallopian tube. We document a case of isolated torsion of the right fallopian tube associated with hydrosalpinx.

Case: The patient was a 39-year-old female, para 2, gravida 4, who was presented with acute pelvic pain, nausea and vomiting. Her medical history included an appendectomy and right hydrosalpinx diagnosed five months before admission by hysterosalpingography because of investigation for secondary infertility. The urinary pregnancy test was negative. Pelvic ultrasonography showed a dilated folded right tubular structure measuring 7.8 x 2.7 cm with thickened echogenic walls and mucosal folds protruding into the lumen; the ovaries and uterus were unremarkable. No free fluid in the cul-de-sac was noted. Preoperatively, a diagnosis of twisted right fallopian tube was suspected and an exploratory laparotomy confirmed the diagnosis of isolated torsion of the oviduct. The ipsilateral ovary appeared normal, but the fallopian tube was gangrenous and right salpingectomy was performed. The patient became pregnant three months after surgery.

Conclusion: Isolated torsion of the fallopian tube should be considered in the differential diagnosis of patients with acute abdomen and previous medical history of hydrosalpinx.

Key words: Isolated torsion; Fallopian tube; Hydrosalpinx; Ultrasonography; Diagnosis.

Introduction

In 1890 Bland-Sutton published the first description of torsion of a fallopian tube [1]. Since then, there have been sporadic reports of fallopian tube torsion without ovarian involvement associated with pregnancy, haemosalpinx, hydrosalpinx, ovarian or paraovarian cysts and other alterations of the adnexa or even with an otherwise normal fallopian tube [2]. Advice from the literature states that tubal torsion should be suspected as one of the underlying causes of acute abdomen in patients with an adnexal mass. Although newer technologies such as vaginal probe ultrasonography and color Doppler imaging assist in the clinical evaluation of tubal torsion, preoperative diagnosis is very difficult and in most cases it is identified during the operation [3-6].

The purpose of the present study is to describe an extremely rare case of isolated torsion of the right fallopian tube associated with hydrosalpinx. The ultrasonographic and histopathologic findings are presented and the aetiology, symptoms, diagnosis and differential diagnosis are discussed.

Case Report

A 39-year-old female, para 2, gravida 4, was admitted with a history of lower abdominal pain, nausea and vomiting of four hours duration. The pain had had a sudden onset, was located in the right iliac fossa and radiated to the proximal part of the right leg.

Her menstrual cycle was regular every 28 days and her last menstruation had begun two weeks before admission. No contraceptive precautions were taken. Her past history included an appendectomy and right hydrosalpinx diagnosed five months before admission by hysterosalpingography because of investigation for secondary infertility (Figure 1).

On admission the patient was in general good health; her temperature was 36.5°C and her pulse rate was 85 beats per minute. Abdominal examination revealed tenderness in the right iliac fossa, with rebound and muscular resistance mainly in the right iliac fossa. Bowel sounds were present. On bimanual examination a normal sized uterus was found; cervical motion was very tender. Also, tenderness in the right adnexa was found while the pouch of Douglas was free of tender. Complete blood cell count at this time showed haemoglobin 14.4g/dl, haematocrit 42.3%; white blood cell count was 14,000 cells/mm³ with 78.2% polymorphonuclear leukocytes. The urinary pregnancy test was negative. Values for serum electrolytes, urea, creatinine and liver function were normal as was the mid-stream urine microscopy. Transabdominal pelvic ultrasonography showed a right tubular structure posterior to the uterus. The ovaries and uterus were unremarkable (Figures 2 and 3). No free fluid in the cul-de-sac was noted. Transvaginal ultrasonography showed a dilated folded right fallopian tube measuring 7.8 x 2.7 cm with thickened echogenic walls and tubal mucosa protruding into the lumen (Figure 4). Preoperatively, a diagnosis of twisted right fallopian tube was suspected because of the acute abdomen, the normal body temperature and pulse rate and the patient's previous medical history of appendectomy and right hydrosalpinx. At exploratory laparotomy through a Phannestiel incision the right fallopian tube was grossly distended, gangrenous and twisted three complete turns around its longitudinal axis. Free fluid in the pelvis was not found. The uterus, left fallopian tube

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Figure 1. — Hysterosalpingography shows the presence of right hydrosalpinx.

and both ovaries appeared normal. An intraoperative diagnosis of isolated fallopian tube torsion was made and right salpingectomy was performed. Figure 5 shows the twisted fallopian tube after removal.

Pathological examination showed a 7 x 4 cm fallopian tube. Microscopic examination revealed a fallopian tube showing extensive haemorrhagic necrosis of the tubal wall (Figure 6). There was no evidence of a discrete cyst and no evidence of endometriosis.

The postoperative course of the patient was uneventful and she was discharged home on the seventh postoperative day. The patient became pregnant three months after surgery.

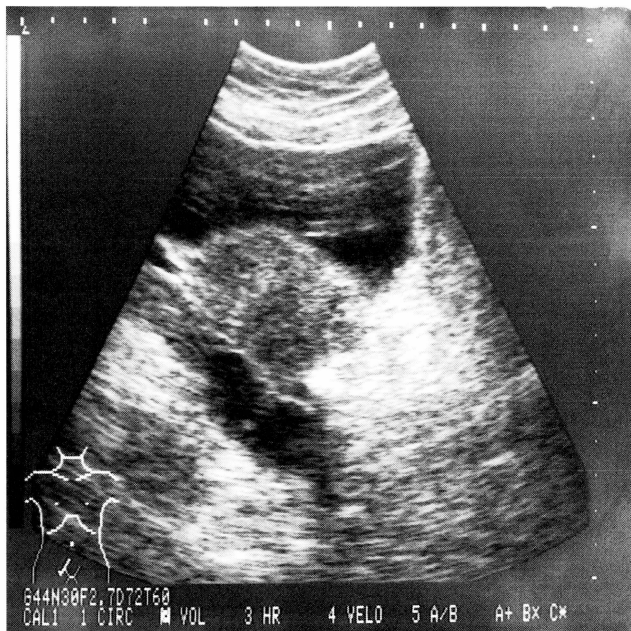
Discussion

Torsion of the uterine adnexa is an infrequent surgical emergency and may involve the ovary, the fallopian tube or both structures. Varras *et al.* reported that adnexal torsion is more commonly associated with benign processes (89%) and usually occurs in patients under 50 years of age (80%). The spectrum of ultrasonographic findings varies due to different adnexal pathologies and the degree or the duration of adnexal torsion [7]. An unusual complication of twisted solid adnexal tumours is haemoperitoneum due to internal bleeding secondary to passive blood congestion and rupture of superficial tumour vessels [8]. Cul-de-sac fluid is found at a rate fluctuating from 55% to 87% [7, 9]. The cul-de-sac fluid is possibly a transudate from the ovarian capsule secondary to obstructed veins and lymphatic vessels [9].

Isolated torsion of the fallopian tube is a very uncommon event [6]. Hansen estimated the annual incidence of isolated fallopian tube torsion in Denmark to be one in 1.5 million women [10]. Isolated torsion of the fallopian tube occurs in abnormal fallopian tubes; however, it might develop in normal tubes [11]. The causes of abnormal fallopian tubes have been subdivided into intrinsic and extrinsic [12] and they have been summarised as follows:

(A) Intrinsic causes [2, 6, 13, 14]

1. Tortuosity, excessive length of spiral course of the fallopian tube
2. Haematosalpinx or hydrosalpinx
3. Neoplasm of the fallopian tube
4. Ligation of the fallopian tube.
5. Long mesosalpinx
6. Autonomic dysfunction with abnormal peristalsis of the fallopian tube.



Figures 2 & 3. — Transabdominal ultrasonography shows right tubular structure posterior to the uterus. Both ovaries appear normal.

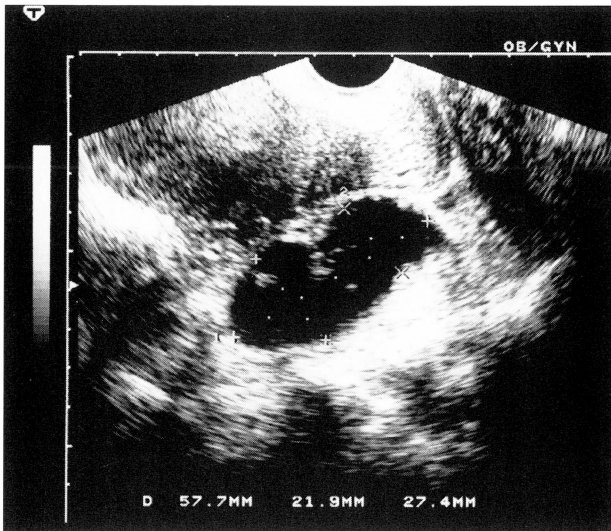


Figure 4. — Transvaginal ultrasonography shows a dilated folded right fallopian tube measuring 7.8 x 2.7 cm with thickened echogenic walls and tubal mucosa protruding into the lumen.

(B) Extrinsic causes [2, 6, 10, 13-15]

1. Ovarian or paraovarian masses
2. Uterine enlargement by pregnancy or tumor
3. Adhesions to the fallopian tube
4. Sudden changes in body position
5. Abdominopelvic trauma
6. Pelvic congestion leading to spiraling of veins of the mesosalpinx
7. Autonomic dysfunction or drug disturbances of the normal peristaltic movements of the fallopian tube, possibly in the form of hypermobility or spasm of the fallopian tube.

All the above factors contribute to the development of torsion of the fallopian tube [6]. Isolated torsion of the fallopian tube occurs more frequently at the time of ovulation or premenstrually, according to the pelvic congestion theory [2, 13]. According to that theory, the long veins of the mesosalpinx adopt a spiral course in the

event of venous congestion resulting in torsion of the fallopian tube [10, 12]. Postmenopausal torsion of the fallopian tube is extremely rare [13] and this may perhaps be due to the postmenopausal atrophy of the tube and its vascular supply [10]. The right tube is involved more often than the left, apparently because of the inhibiting presence on the left of the sigmoid colon [2, 12, 13].

The most reliable symptom of isolated tubal torsion is lower abdominal pain that may be sharp, colic-like with a sudden onset in cases of acute torsion, or it may be periodical with different intervals from a few days up to six months [10, 13]. The pain may radiate to the flank, groin and thigh. Nausea and vomiting often accompany the pain. Our patient presented with sudden onset of sharp pain in the right iliac fossa, which radiated to the proximal part of the right leg. In cases with isolated torsion of the fallopian tube body temperature and pulse rate are usually normal or slightly elevated, which may help to distinguish this condition from acute appendicitis and pelvic inflammatory disease (PID) [13]. The general condition is usually good aiding to differentiate tubal torsion from conditions like twisted ovarian cyst or bleeding ectopic pregnancy [13]. Physical findings include abdominal tenderness with or without peritoneal signs and adnexal tenderness on bimanual gynaecologic examination. The pouch of Douglas is usually free from the marked tenderness found in ectopic pregnancy. A specific mass is not always palpable [6, 13]. Laboratory values are usually nonspecific [6]. The differential diagnosis of tubal torsion includes ovarian torsion, acute appendicitis, ectopic pregnancy, acute salpingitis, tuboovarian abscess, urolithiasis, ruptured ovarian cyst and degenerated leiomyoma which mimics the symptoms and findings of tubal torsion [3-5, 12, 16-18]. The ultrasonographic appearance of tubal torsion includes a dilated tubular structure in a folded configuration with thickened echogenic walls (as in our case) and internal debris. The structure should be located between the ovary and the uterus. The ipsilateral ovary has a normal appearance or might show signs of torsion, including increased size, decreased echogenicity, small peripheral cystic struc-

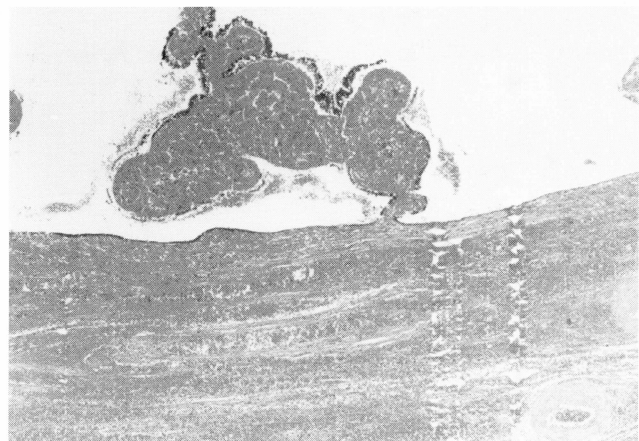
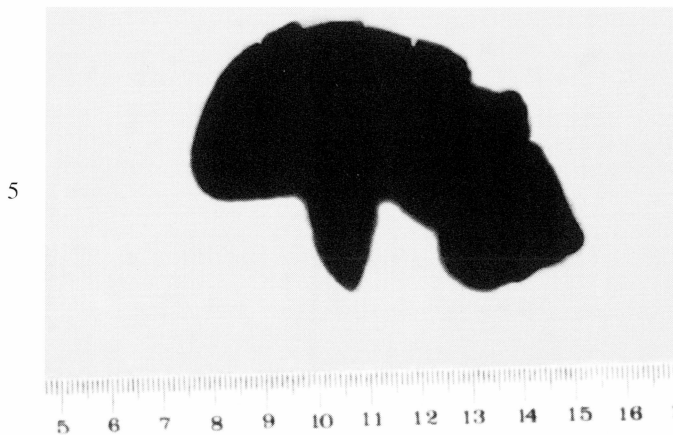


Figure 5. — The twisted fallopian tube after removal: gangrenous appearance.

Figure 6. — Histopathology shows haemorrhagic necrosis in the wall of the fallopian tube with papillae of tubal mucosa (H&Ex40).

tures, and peritoneal free fluid [19]. Colour Doppler sonography may show a high impedance waveform with reversal of diastolic flow in the affected tube. Such findings should increase clinical suspicion of isolated tubal torsion, especially if the ipsilateral ovary is visible and appears normal [6].

Preoperative diagnosis of tubal torsion is very difficult. Our patient had had appendectomy and the possibility of acute appendicitis was excluded. The patient's medical history of right hydrosalpinx raised our suspicion of a twisted fallopian tube. The normal body temperature and pulse rate helped in distinguishing torsion of the fallopian tube from pelvic inflammatory disease (PID), although elevated temperature has been reported only in 60% to 80% of the cases of tubo-ovarian abscesses [20]. Finally, the negative pregnancy test raised the possibility of a twisted fallopian tube.

In most cases isolated torsion of the fallopian tube is identified during the operation [3-5]. The fallopian tube is often oedematous with or without haemorrhaged infarction. Necrosis can develop depending on the time of the diagnosis and intervention [5]. Detorsion might be attempted in a fallopian tube which has no sign of infarction in cases with early diagnosis and intervention or with incomplete torsion [5]. However, salpingectomy is performed in most cases as the fallopian tube has a necrotic appearance. The ovaries should always be preserved, unless their perfusions are severely deteriorated and necrosis develops [5].

In conclusion, although rare, isolated torsion of the fallopian tube should be considered in the differential diagnosis of patients presenting with acute or colicky lower abdominal pain and a cystic adnexal mass on ultrasonographic scan even if the ipsilateral ovary appears normal ultrasonographically. Suspicion of this rare condition should be higher when the past medical history of the patient includes a diagnosis of hydrosalpinx.

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