Isolated fallopian tube torsion in prepubertal females – A report of 2 cases

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SUMMARY

Isolated fallopian tube torsion is an uncommon diagnosis. It is particularly rare in the paediatric and post-menopausal age groups. It lacks pathognomonic symptoms, signs and imaging findings, yet each of these diagnostic steps plays a crucial role in early diagnosis. We describe two cases of isolated fallopian tube torsion in prepubertal females.

KEY WORDS:
Acute abdominal pain, Fallopian Tube, Torsion, Pre-pubertal

CASE 1

An 11-year-old Caucasian girl presented to the paediatric emergency with history of acute, severe, colicky, right lower abdominal pain of one day's duration. The pain radiated to the right thigh, and was associated with fever and vomiting. There was no history of regular periods or cyclical abdominal pain to suggest menarche. She did not report any urinary symptoms, diarrhoea or abnormal vaginal discharge. No relevant past medical or surgical history was noted. On examination, the abdomen was tender in the right iliac fossa and suprapubic regions. There was no rebound tenderness or guarding. Digital rectal examination revealed no palpable mass or bleeding.

An urgent transabdominal pelvic ultrasound demonstrated a "U" shaped distended tubular avascular cystic structure of 2.1 cm diameter in the right adnexa, over the most tender region (Figure 1a). This structure was situated between the normal appearing right ovary and uterus at the expected location of the fallopian tube. It demonstrated a "beaked-appearance" at its ends, suggesting torsion. A usual hydrosalpinx appeared less likely given the clinical context and patient's age, and the diagnosis of 'twisted' right fallopian tube was suggested by the duty radiologist.

A low dose protocol limited CT scan of the pelvis was performed for a more confident diagnosis. This confirmed the presence of a fluid density tubular structure in the right adnexa, likely a dilated right fallopian tube (Figure 1b). The normal appendix and both ovaries were seen separately. Patient's full blood counts and urinalysis revealed no abnormality. Urine pregnancy test was negative.

Due to high suspicion of right fallopian tube torsion on imaging, an emergency diagnostic laparoscopy was performed. Intra-operatively, a right hydrosalpinx was noted with tubal torsion. The fallopian tube had 3 twists of 360 degrees each and was ischaemic in appearance (Figure 2). After detorsion, the fallopian tube appeared viable but the fimbriae remained ischaemic looking. A right salpingectomy was performed. Peritoneal fluid culture and cytology were negative for bacterial growth and malignancy respectively. Post-operative recovery was uneventful and the patient was discharged on second post-operative day.

CASE 2

An 11-year-old Malay girl presented with right lower abdominal pain and vomiting for one day. The pain was constant and severe. She had no history to suggest menarche, or history of vaginal discharge. Her previous medical and surgical history was unremarkable. On examination, her abdomen was significantly tender in the right lower quadrant, with no guarding, rebound tenderness, or palpable mass. Digital rectal examination revealed an empty rectum.

Transabdominal pelvic ultrasound revealed a right adnexal convoluted tubular cystic structure, measuring 2 cm in diameter with no intrinsic vascularity on colour Doppler (Figure 3a). It had a spiral configuration (Figure 3b). Overall features were highly suspicious for right fallopian tube torsion. Both ovaries and the appendix were not well visualised. There was minimal clear free fluid noted in the right iliac fossa. Blood tests including the full blood count, urea and electrolytes, and urine pregnancy tests were unremarkable.

In view of the ultrasound findings suspicious for fallopian tube torsion, an emergency diagnostic laparoscopy was performed. Intra-operative findings revealed distension and torsion of the right fallopian tube to 720 degrees, which looked congested and viable (Figure 4a). Normal bilateral ovaries were visualised. Detorsion of the fallopian tube was performed, and it returned to a healthy pink colour (Figure 4b). The hydrosalpinx was drained and the serous fluid obtained was sent for culture and cytology. An appendicectomy was also performed in the same sitting. Post-operative recovery was unremarkable. Fluid culture and cytology were negative for bacterial growth and malignant cells. She was discharged well on post-operative day 2.

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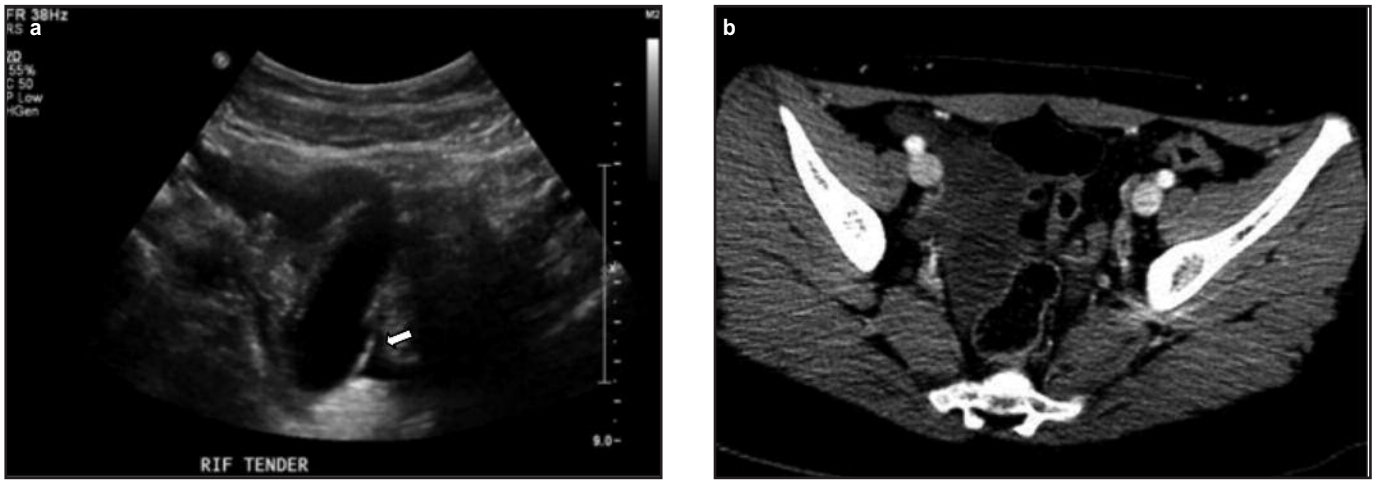

Fig. 1: a: Ultrasound showing right hydrosalpinx with "beaked-appearance" (white arrow) at the ends. b: Computed tomography of pelvis showing dilated right fallopian tube.

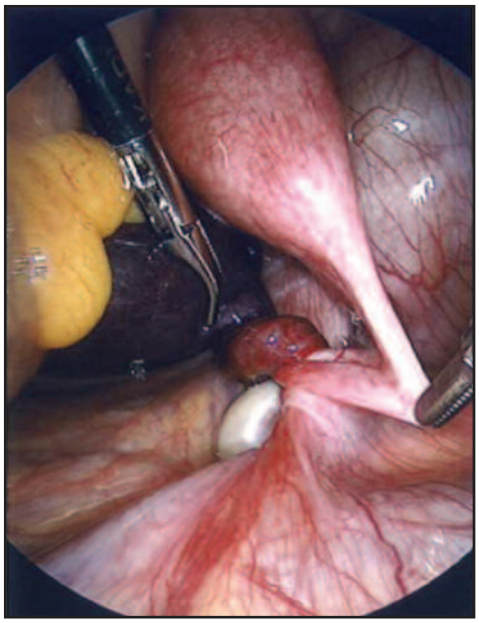

Fig. 2: Laparoscopic view of right tubal torsion with 3 twists of 360 degrees each and ischaemic appearance.

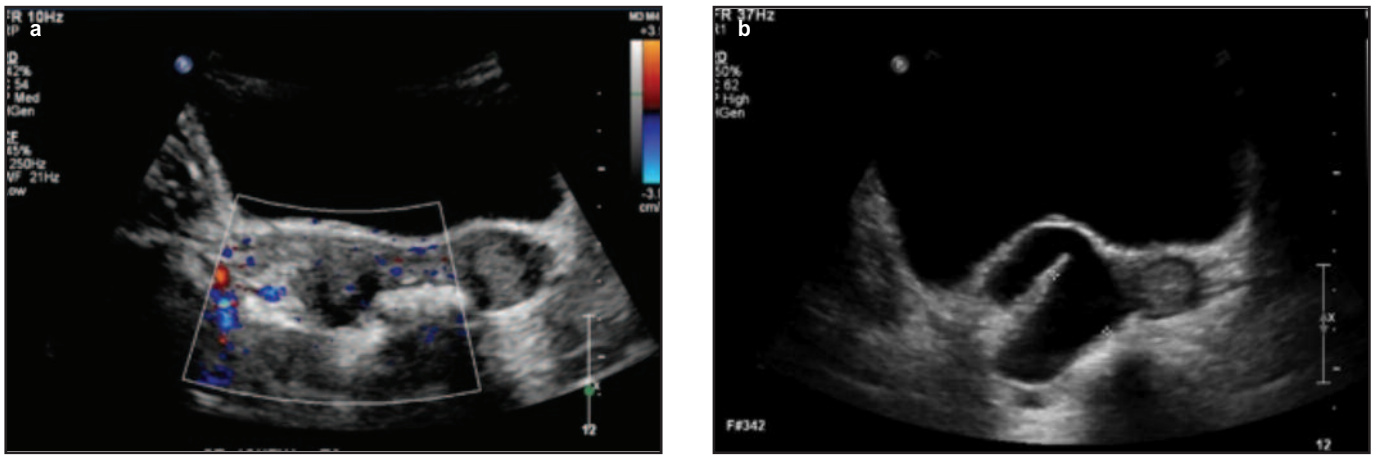

Fig. 3: a: Pelvic ultrasound showing convoluted tubular cystic structure with no intrinsic vascularity. b: Pelvic ultrasound showing spiral configuration of the torted fallopian tube.

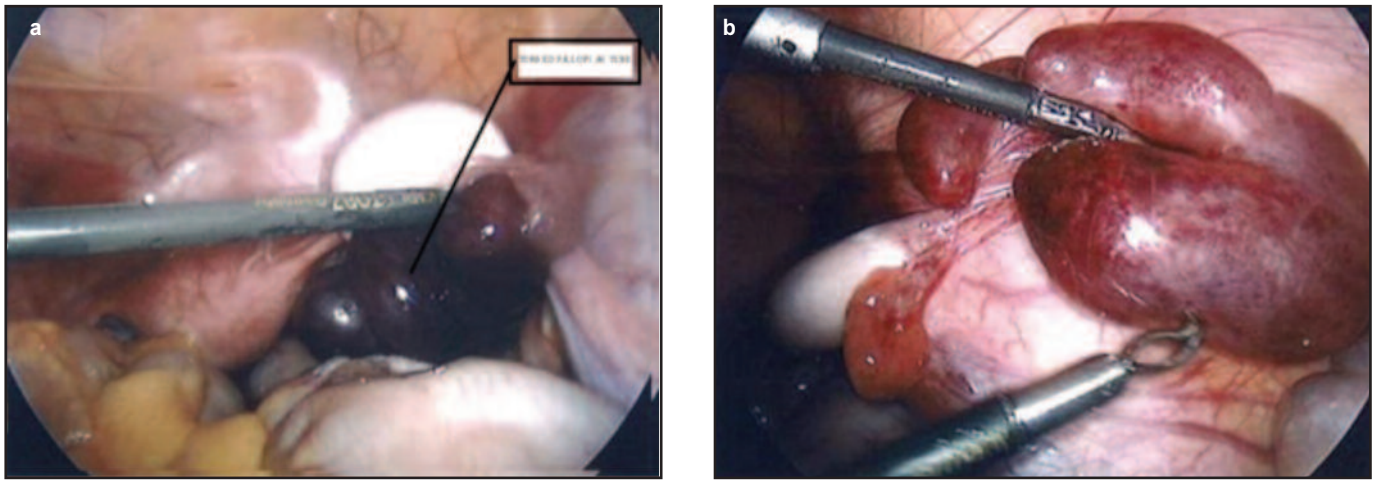

Fig. 4: a: Surgical picture of torted right fallopian tube, which looked congested and viable. b: Healthy pink colour of the right fallopian tube after de-torsion.

DISCUSSION

Isolated fallopian tube torsion is far less common as compared to the better known entity of ovarian torsion. It has an incidence of about 1 in 1.5 million women, mostly encountered in those in the reproductive age group.[1] It is relatively uncommon in paediatric patients, the largest case series reporting only 13 cases in this age group. While most cases are considered idiopathic, abnormal length of the mesosalpinx or a spiral course of the salpinx, and premenarchal hormonal changes leading to activation of ovarian and tubal function, have been proposed as factors for fallopian tube torsion in paediatric patients.[2] Other postulated risk factors include intrinsic factors like hydrosalpinx, hematosalpinx, paraovarian cysts, neoplasms, previous surgery, and extrinsic factors such as neoplasm in neighbouring organs, adhesions, pregnancy, trauma to the pelvic organs, and pelvic congestion.[3, 4] In our cases, a pre-existing hydrosalpinx may have been a factor, although this is considered unlikely in a prepubertal female.

Clinically, most patients complain of lower abdominal pain on the side of torsion. There is lower abdominal tenderness with possible rebound tenderness on palpation. Adnexal and cervical motion tenderness is commonly seen on bimanual examination in adults, but it cannot be elicited in paediatric patients. Laboratory markers like white blood cells and C-reactive protein may be elevated.

Differential diagnoses of fallopian tube torsion include appendicitis, ruptured ovarian cyst, ovarian torsion, ectopic pregnancy, endometriosis, pelvic inflammatory disease, urinary tract disease and renal colic.

Imaging features can be useful indicators of diagnosis in many cases of isolated tubal torsion, especially in paediatric age group. It is more common on the right side, possibly due to partial immobilization of the left tube by its proximity to the sigmoid mesentery.[5] Transabdominal ultrasound of the abdomen-pelvis is the first line imaging investigation and sonographic findings include normal appearing uterus and ovaries with preserved flow, possible free fluid, and a dilated, folded appearing adnexal tube with echogenic walls. A more specific sign that has been described on ultrasound is the 'whirlpool' sign.[6] In a case of acute pelvic pain with normal ovaries and dilated fallopian tube, a whirlpool mass in proximity to the tube is more specific, but difficult to confidently elicit in most patients. Another, more indicative feature is a beaked appearance of the dilated tube with the vertex centered in the right adnexa, described by Gross et al. This sign was demonstrated in our case 1.

CT may show additional findings such as intraluminal haemorrhage (attenuation of >50 HU), peritubular fat stranding, thickening of broad ligament, and regional ileus. CT may also be useful to exclude other possible differentials such as appendicitis, urinary tract disease and renal colic. However, CT is not always indicated particularly in the paediatric age group patients due to risk of radiation.

Isolated fallopian tube torsion is a gynaecological emergency and early surgical intervention is critical for preservation of the fallopian tube. Delay in diagnosis can lead to irreversible necrotic changes and gangrenous transformation, leading to superinfection and peritonitis. Urgent laparotomy or laparoscopy should be performed once the suspicion is raised, with detorsion and subsequent drainage of hydrosalpinx or hematosalpinx. The decision to proceed with salpingectomy is controversial, and is currently considered only in cases with significant tubal damage or scarring,[7] as in our Case 1. Tubal damage, scarring, or hydrosalpinx is associated with reduced fertility outcomes. However, there have been good outcomes with tube conservation surgery if the tube is viable, with successful future pregnancies reported.[8]

CONCLUSION

Isolated fallopian tube torsion is a rare event that should always be considered in female patients presenting with acute abdominal pain, regardless of their age and sexual status. High index of suspicion, both on part of the clinician, and the radiologist involved, is key to early diagnosis and treatment. As in cases of more commonly encountered ovarian and testicular torsions, aim in these cases should be timely diagnosis and tubal preservation.

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