Case Report

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Torsion of a Solitary Ovary Associated with a Paraovarian Cyst: A Rare Presentation with Spontaneous Detorsion

Radiology Section

SHIRISH VAIDHYA[1], SARASWATHULA BHARADWAJ[2]

ABSTRACT

Ovarian torsion is a prevalent gynaecological emergency in the juvenile population that necessitates immediate surgical intervention to preserve ovarian viability, while spontaneous detorsion is a rare and little-reported phenomenon. An unusual case of an 11-year-old girl presenting with acute pelvic pain and generalised weakness is reported. Initial pelvic ultrasonography revealed a solitary ovary with imaging features suggestive of ovarian torsion, which was subsequently confirmed on abdominal MRI at a higher centre. The patient was scheduled for emergency surgical exploration; however, intraoperatively, the afflicted ovary was discovered to have undergone spontaneous detorsion, resulting in normal morphology and vascularity. This case emphasises the necessity of early imaging in suspected ovarian torsion, the uncommon likelihood of spontaneous detorsion, and the possible role of conservative, ovary-preserving surgical techniques in juvenile patients when ovarian viability is maintained.

Keywords: Adnexal twist, Colour doppler ultrasonography, Intermittent vascular compromise, Paediatric gynaecology, Organ-preserving surgery

CASE REPORT

An 11-year-old premenarchal female reported with acute lower abdominal pain localised to the right iliac fossa and overall weakness that began around 12 hours before admission. The pain was sharp and severe, and persistent, unaffected by rest or oral painkillers. There were a few episodes of non-bilious vomiting. There were no associated symptoms, no history of trauma, gynaecological diseases, or major medical, surgical, or familial background. The patient had not attained menarche and had no history of medication use.

The patient was found to be alert but in pain. Her vital signs were steady, with a mild tachycardia. Abdominal examination indicated pain in the right lower quadrant with slight guarding, but no palpable mass or peritoneal symptoms. The first laboratory findings showed mild leucocytosis {White Blood Cell (WBC): 12,800/mm^3} and modestly elevated C-reactive protein (12 mg/L). The serum β-human Chorionic Gonadotropin (HCG) levels were negative, and the urine analysis was normal. Renal and liver function tests were within acceptable limits.

Pelvic ultrasonography initially revealed that the patient had a solitary ovary with a large cystic adnexal lesion on the right side measuring approximately 6.5×6.2×5.1 cm, with peripherally organised follicles as shown in [Table/Fig-1] and reduced central vascularity on colour doppler imaging as shown in [Table/Fig-2]. In addition, a well-defined anechoic structure near the only ovary, consistent with a paraovarian cyst, was discovered as shown in [Table/Fig-3]. These observations led to a suspicion of right ovarian torsion. An abdominal and pelvic MRI was conducted to confirm the diagnosis and characterise the adnexal pathology. MRI findings confirmed the diagnosis of right ovarian torsion as shown in [Table/Fig-4], revealing a twisted vascular pedicle (whirlpool sign) as shown in [Table/Fig-5], stromal oedema, and non-enhancement of the central ovarian stroma, as well as a right-sided paraovarian cyst as shown in [Table/Fig-6]. There was mild free fluid in the pelvic cavity.

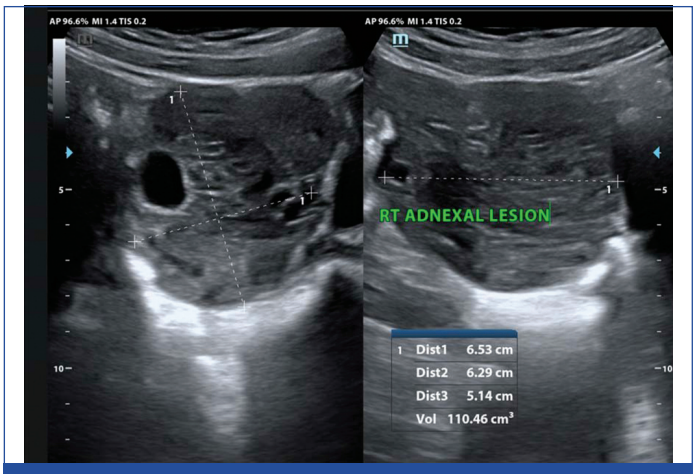
Given these findings, the patient was immediately scheduled for an emergency diagnostic laparoscopy. Intraoperatively, the right ovary was found to have undergone spontaneous detorsion. The ovary was enlarged but viable, with restored vascularity, indicating relief of the torsion [Table/Fig-7a-c]. A right paraovarian cyst was identified [Table/Fig-7d] and surgically excised [Table/Fig-7e]. The right ovary appeared normal following detorsion and was preserved without the need for further surgical intervention [Table/Fig-7f]. No further pelvic or abdominal abnormalities were discovered.

The patient had a smooth recovery after the procedure and tolerated it well. On the third postoperative day, she was released with instructions for regular follow-up. At the one-month follow-up, the patient remained asymptomatic. Follow-up ultrasonography revealed normal ovarian size, shape, and vascularity, with no recurrence of adnexal cysts.

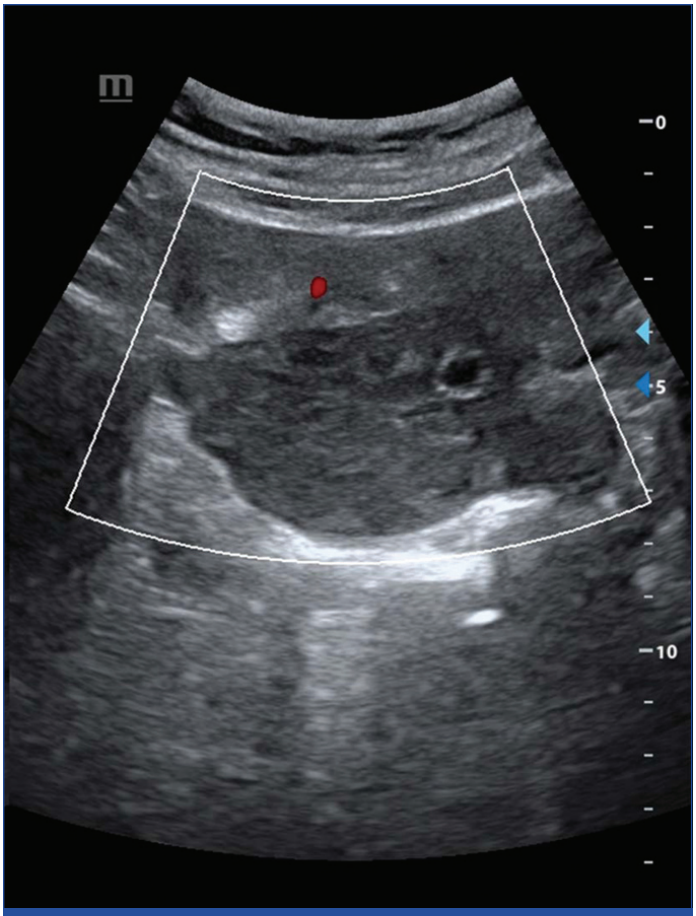
DISCUSSION

Ovarian torsion is one of the most common gynaecological emergencies requiring surgery, with a prevalence of 2.7% to 3% [1,2]. Ovarian torsion is an emergency characterised by the partial or total twisting of the ovary (usually associated with the fallopian tube) on its ligamentous support and vascular pedicle, resulting in ovarian ischaemia, infarction, and tissue necrosis [3,4].

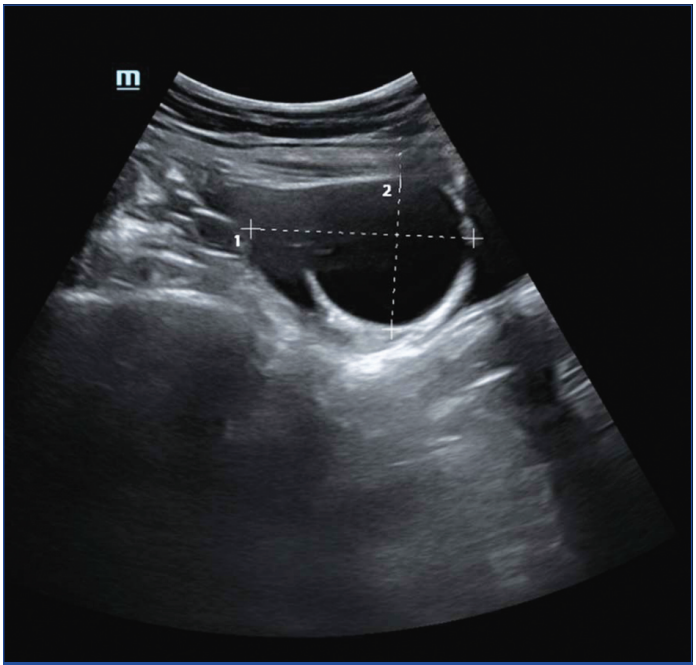
Ovarian torsion occurs when the ovary and vascular pedicle twist in the suspensory ligament, which connects the ovary to the pelvic



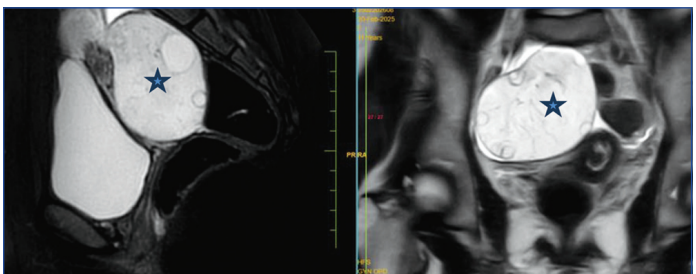
[Table/Fig-1]: A grey-scale B-mode ultrasonography image showing right adnexal lesion.



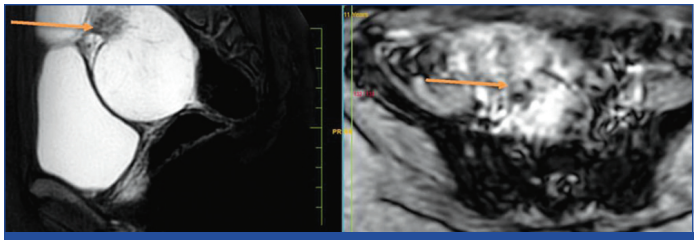
[Table/Fig-2]: Grey Scale B mode ultrasonography image showing decreased vascularity within the adnexal mass.



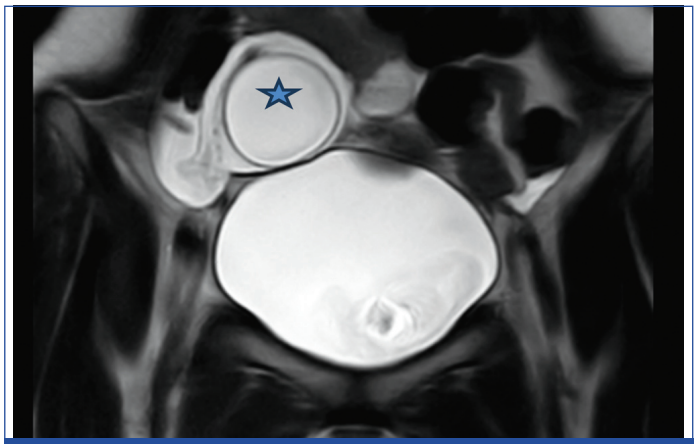
[Table/Fig-3]: Grey Scale B mode ultrasonography image showing right paraovarian cyst.



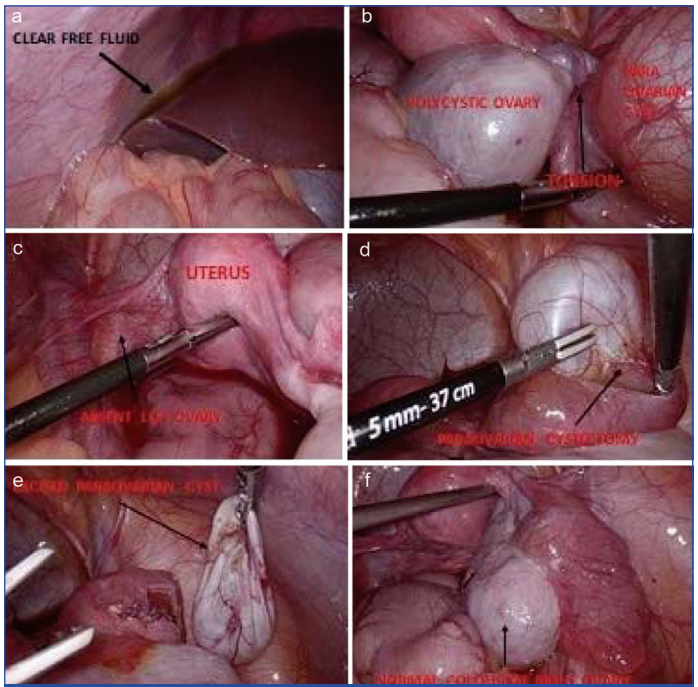
[Table/Fig-4]: T2W sagittal and coronal MRI images showing T2 hyperintense right adnexal cystic lesion (indicated by star) with internal peripherally arranged follicles.



[Table/Fig-5]: T2W sagittal and GRE MRI images showing twisted pedicle with foci of blooming on GRE (indicated by arrow) indicating whirlpool sign.



[Table/Fig-6]: T2W coronal MRI image showing right paraovarian cyst (indicated by star).



[Table/Fig-7]: Intra-op pics arrows indicating: a) clear fluid; b) point of torsion; c) absent left ovary; d) paraovrain cyst; e) excised paraovarian cyst; f) normal right ovary.

sidewall. Pathophysiology proceeds in stages. Torsion initially disrupts the low-pressure venous and lymphatic circulation, resulting in ovarian oedema and hypertrophy. Over time, arterial circulation deteriorates, leading to thrombosis, which causes ischaemia and haemorrhagic infarction [5]. Torsion is caused by an underlying ovarian mass in 50-90% of cases [6,7]. These masses include physiologic cysts, endometriomas, benign neoplasms (such as dermoid cyst, fibroma, or cystadenoma), and malignancies (primary or metastatic) [8].

Clinical assessment is ineffective for identifying ovarian torsion [9]. A "classic history" is one of acute colicky pain in a lower quadrant spreading to the ipsilateral flank or groin, with adnexal discomfort and the palpation of a mass on pelvic examination [10].

Imaging studies are crucial for diagnosis. Grey-scale ultrasonography observations include an enlarged ovary, an ovarian mass, free fluid,

follicles around an enlarged ovary, cyst wall thickening, and a twisted pedicle. Ovarian enlargement is defined as a maximum ovarian dimension of more than 4.0 cm or a volume of more than 20 cm^3 in a premenopausal woman and more than 10 cm^3 in a postmenopausal woman [11]. The most prevalent sign associated with torsion, with or without an associated mass, is ovarian enlargement, while up to 5% of torsed ovaries have been observed to be normal in size [12]. Thus, normal ovarian size on grey-scale imaging does not rule out the diagnosis of torsion.

Spontaneous detorsion and intermittent torsion are uncommon but well-documented events that involve brief twisting and untwisting of the vascular pedicle, resulting in fluctuating symptoms and reversible imaging results. Radiologic signs of intermittent torsion include restored ovarian vascularity, decreased stromal oedema, and resolution of the whirlpool sign on follow-up imaging.

Subacute ovarian haematoma and aberrant or missing ovarian enhancement are features that are more easily observed on CT or MRI. Other torsion-related Computed Tomography (CT) or MRI findings include ascites, uterine deviation to the twisted side, engorged vasculature on the twisted side, and fallopian tube thickness. The swollen oedematous ovary with peripheral follicles is most visible on i.v. contrast-enhanced CT or fast spin-echo T2-weighted MRI without fat saturation [13].

Several case reports and imaging investigations showed spontaneous or intermittent remission of ovarian torsion. Bitonti G et al., described a case of spontaneous adnexal detorsion in a pregnant woman identified using ultrasound, with imaging characteristics later normalising [14]. In an imaging series, Ghossain MA et al., found patients with clinical and radiologic symptoms of torsion who eventually returned to normal ovarian size and stromal signal on MRI, indicating spontaneous detorsion [15]. Furthermore, prior MRI-based case studies reinforced the likelihood of spontaneous detorsion by demonstrating normalisation of previously torsed ovarian stroma on follow-up imaging [16]. These cases corroborate the concept of intermittent torsion-detorsion and demonstrate that, even with apparent clinical recovery, timely surgical examination is required to establish viability and protect ovarian function.

Multimodality imaging was critical in diagnosing and managing our patient, with ultrasonography and MRI revealing classic features of adnexal torsion such as ovarian enlargement with peripheralised follicles, stromal oedema, reduced vascularity, an associated paraovarian cyst, and reactive pelvic free fluid.

CONCLUSION(S)

A high level of clinical suspicion and quick imaging are necessary for ovarian torsion, a major gynaecological emergency. This case emphasises how crucial prompt surgical investigation is, especially in cases where clinical improvement happens on its own. Ovarian preservation and removal of the related paraovarian cyst were made possible by intraoperative evaluation. Clinicians should prioritise organ-sparing techniques wherever feasible and remain vigilant for unusual presentations.

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PARTICULARS OF CONTRIBUTORS:
1. Associate Professor, Department of Radiodiagnosis, Datta Meghe Institute of Higher Education and Research, Wardha, Maharashtra, India.
2. Junior Resident, Department of Radiodiagnosis, Datta Meghe Institute of Higher Education and Research, Wardha, Maharashtra, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Dr. Shirish Vaidhya,
Associate Professor, Department of Radiodiagnosis, Jawaharlal Nehru Medical College, Wardha-442004, Maharashtra, India.
E-mail: drshirish283@gmail.com

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