

***Ovarian Torsion Due to an Immature Ovarian Teratoma in a Prepubertal Girl: A Case Report*****Amal Abudouleh^{1*}, Malak Sondoqah¹, Rand Soudan² and Amer Elbaba³**¹Mediclinic Airport Road Hospital, Abu Dhabi, United Arab Emirates²College of Medicine, University of Sharjah, Sharjah, United Arab Emirates³Department of Obstetrics and Gynecology, Mediclinic Airport Road Hospital, Abu Dhabi, United Arab Emirates

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Abstract

We report a rare presentation of ovarian torsion caused by an immature ovarian teratoma in a prepubertal girl. Ovarian torsion in this age group is typically associated with benign lesions, making malignant causes uncommon and often unsuspected preoperatively. We report the case of a 12-year-old prepubertal girl who presented with acute right lower quadrant abdominal pain, nausea, and vomiting. Imaging suggested a benign dermoid cyst; however, urgent laparoscopy for persistent pain revealed ovarian torsion, and cystectomy demonstrated a Grade 2 immature teratoma confined to the ovary (FIGO Stage IA). The ovary was preserved, and the postoperative course was uneventful. The patient remains asymptomatic with no evidence of recurrence at one-year follow-up. This case underscores the potential for malignant pathology despite reassuring imaging and highlights the role of histopathology and the feasibility of fertility-sparing surgery with close surveillance in selected early-stage cases.

***Corresponding author:** Amal Abudouleh, MBBS, Mediclinic Airport Road Hospital Abu Dhabi, United Arab Emirates.

Submitted: 21.08.2026**Accepted:** 26.08.2026**Published:** 16.09.2026**Keywords:** Neoplasms, Germ Cell and Embryonal, Ovarian Neoplasms, Ovarian Torsion, Teratoma**Introduction**

Ovarian torsion (OT) is a rare but critical gynecological emergency in children, with an estimated incidence of approximately 4.9 cases per 100,000 girls per

year [1]. Delayed diagnosis and treatment may result in ischemia and loss of ovarian function [1]. While OT usually arises from benign ovarian lesions, malignant tumors such as immature ovarian teratomas (IMTs) can

rarely present in this manner, creating important diagnostic and management challenges.

IMTs are rare malignant germ cell tumors, accounting for approximately 1% of ovarian neoplasms [2]. They primarily affect children and adolescents, with a peak incidence between ages 15 and 19 years [3]. Most patients present with abdominal pain or a rapidly enlarging mass, while acute complications such as rupture, hemorrhage, or torsion are uncommon, occurring in approximately 10% of cases [4].

This report describes a rare case of acute OT caused by a Grade 2 IMT in a prepubertal girl and highlights the diagnostic challenges while demonstrating the feasibility of fertility-sparing surgery in early-stage disease.

Case Presentation

A 12-year-old prepubertal girl presented to the emergency department with acute right lower quadrant abdominal pain associated with nausea and vomiting. She denied urinary or bowel symptoms. Her past medical, surgical, family, and psychosocial history were unremarkable. On arrival, she was alert and afebrile with stable vital signs. Abdominal examination revealed localized tenderness over the right iliac fossa without rebound or guarding. Bowel sounds were normal, and there were no peritoneal signs. Laboratory investigations, including complete blood count and urinalysis, were within normal limits.

Pelvic computed tomography (CT) demonstrated a 6.6×4.7 cm cystic lesion in the mid-posterior pelvis containing fat and calcification, features suggestive of a benign dermoid cyst (mature cystic teratoma) (Figure 1). The appendix appeared normal, with no free fluid or peritoneal abnormalities. Preoperative tumor markers, including alpha-fetoprotein (AFP), were not obtained as imaging suggested a benign lesion. Other cystic ovarian lesions, such as hemorrhagic or functional cysts, were considered but deemed unlikely.

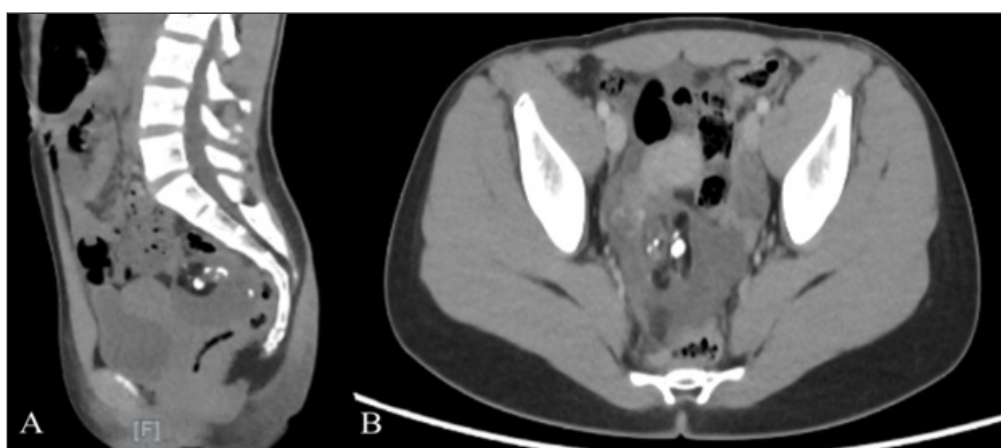


Figure 1: Pelvic CT Showing Cystic Ovarian Lesion

(A) Sagittal CT and (B) axial CT images demonstrating a 6.6×4.7 cm cystic lesion in the mid-posterior pelvis containing fat and calcification, consistent with a dermoid cyst.

Persistent severe pain despite these reassuring findings prompted urgent diagnostic laparoscopy. Intraoperatively, the right ovary was enlarged by a 7 cm cyst and twisted twice around the infundibulopelvic ligament. The ovary appeared congested but viable. The uterus, left ovary, and fallopian tubes were normal, with no ascites, adhesions, or peritoneal implants. Laparoscopic detorsion and ovarian cystectomy were performed, preserving the right ovary, and the specimen was retrieved intact in an endoscopic bag.

Histopathologic examination revealed an ovarian lesion composed of mature teratomatous elements, including sebaceous glands, hair follicles, adipose tissue, cartilage, bone, neural tissue, and benign thyroid tissue. Within this background, multiple foci of immature neuroepithelium were identified and confirmed by GFAP

immunostaining. The proportion of immature neuroepithelium (approximately two foci per low-power field) was consistent with a Grade 2 IMT. The capsule was intact, with no surface involvement or extra-ovarian spread, corresponding to FIGO Stage IA.

The postoperative recovery was uneventful, and the patient was discharged on postoperative day one. She continues structured surveillance with pelvic ultrasonography every three months. At one-year follow-up, she remained asymptomatic with no evidence of recurrence, and both she and her family expressed satisfaction with the outcome and preservation of fertility potential. The complete clinical course from initial presentation through one-year surveillance is summarized in Figure 2.

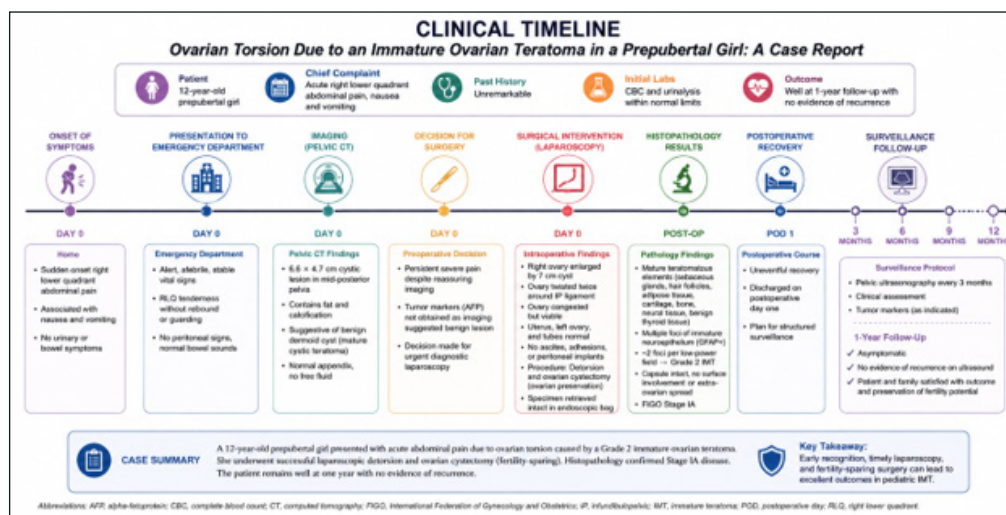


Figure 2: Clinical Timeline of Presentation, Diagnosis, Treatment and Follow-Up

Timeline illustrating the patient's clinical course from the acute onset of right lower quadrant abdominal pain through diagnostic imaging, urgent laparoscopic detorsion and ovarian cystectomy, histopathologic diagnosis of a Grade 2 immature ovarian teratoma (FIGO Stage IA), postoperative recovery, and surveillance at three-month intervals through one year.

Discussion

This case highlights the diagnostic and management challenges when OT presents with an underlying IMT in a prepubertal patient. Although both conditions are uncommon, malignant ovarian tumors can closely mimic benign lesions, complicating preoperative assessment and surgical decision-making.

Rarity and Diagnostic Challenges

Children's adnexa are particularly susceptible to torsion due to relatively lax and elongated supporting ligaments. Clinically, torsion typically presents with sudden onset lower abdominal pain and vomiting, but physical examination findings are often nonspecific. Early diagnosis of OT may be challenging due to variable clinical presentation and nonspecific imaging findings [1]. Laparoscopy is considered the best diagnostic and therapeutic modality, allowing both confirmation of torsion and prompt detorsion. In our patient, persistent pain despite benign imaging prompted urgent laparoscopy.

Preoperative diagnosis of IMT is challenging because clinical, biochemical, and imaging findings are often nonspecific. Tumor markers, including AFP, CA-125, and beta-human chorionic gonadotropin (β -hCG), may be normal or only mildly elevated in pure IMTs. Imaging typically demonstrates a mix of cystic and solid components with fat and calcifications but cannot reliably differentiate mature from immature elements [2]. Definitive diagnosis therefore requires histopathologic examination. In our case, CT suggested a benign dermoid cyst, whereas histopathology revealed an IMT, underscoring the limitations of imaging and the importance of

histologic evaluation.

Grading and Management

Tumor grade is the primary prognostic factor for IMT, determined by the amount of immature neuroepithelium, with Grade 1 considered low-grade and Grades 2-3 high-grade [4]. Grade 1 tumors have excellent outcomes, with no recurrences reported, whereas higher-grade tumors have recurrence rates of approximately 20% in pediatric patients [4]. Stage is also prognostic, with early-stage disease demonstrating excellent survival.

Management of pediatric Stage I IMTs is primarily surgical with fertility-sparing approaches. Grade 1 tumors are treated with surgery alone, and selected Stage I Grade 2 tumors may also be managed with surgery and close surveillance [5]. The standard fertility-sparing procedure is unilateral salpingo-oophorectomy; however, ovarian cystectomy may be considered in carefully selected cases to preserve ovarian tissue [6,7]. In this case, ovarian cystectomy alone was performed for a Stage IA, Grade 2 tumor, followed by close surveillance. This approach deviates from standard unilateral salpingo-oophorectomy and highlights the potential for ovarian preservation in carefully selected patients.

Fertility Preservation and Follow-Up

Preserving ovarian function is a priority in pediatric patients with IMT. In our patient, laparoscopic cystectomy achieved complete tumor removal while sparing viable ovarian tissue. In selected early-stage pediatric IMTs, cystectomy has been reported not to compromise oncologic outcomes and may preserve fertility [6,7]. Postoperative follow-up includes regular clinical assessment, imaging, and tumor marker monitoring. Our patient continues structured surveillance and remains asymptomatic at one year, supporting the feasibility and safety of fertility-sparing management in carefully selected cases.

Strengths and Limitations

This case is notable for three reasons: the occurrence of a Grade 2 IMT in a prepubertal patient, its presentation as OT mimicking a benign lesion, and the successful use of ovarian-sparing cystectomy with surveillance instead of standard oophorectomy. It highlights the diagnostic limitations of imaging, underscores the

importance of histopathology for definitive diagnosis, and supports the feasibility of fertility-sparing surgery in selected early-stage cases. Limitations include the absence of preoperative tumor markers and reliance on CT imaging alone, which restricted preoperative lesion characterization. The relatively short follow-up period also limits assessment of long-term outcomes, including recurrence and fertility.

Conclusion

This case highlights that ovarian torsion may be the first manifestation of malignant ovarian tumors, such as IMTs, even in the pediatric population. Histopathology remains the definitive diagnostic tool, and timely laparoscopic cystectomy can effectively treat early-stage disease while preserving fertility. Early recognition of such presentations is essential to guide management and achieve favourable outcomes.

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Conflicts of Interest

The authors declare that there is no conflict of interest.

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