

Ovarian Salvation in Pediatric Ovarian Torsion: A Case Report

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ABSTRACT

An accurate diagnosis of ovarian torsion is critical because of the possible long-term impact on fertility. Ovarian torsion is challenging to diagnose due to a generic clinical presentation and a wide range of imaging appearances. The pediatric group is even more challenging to serve since young people typically fail to define their symptoms or provide a thorough medical history. Imaging is, therefore, critical in diagnosing ovarian torsion in young people. A fourteen-year-old female went to the emergency room complaining of acute left lower quadrant stomach discomfort. She arrived hemodynamically stable with an acute abdomen. Transabdominal ultrasound revealed a primarily anechoic formation spanning 5x5 cm from the left adnexa, with the intact arterial flow but limited lymph node involvement. Transabdominal ultrasound revealed a primarily anechoic formation up to 5x5 cm in size from the left adnexa, with the maintained arterial flow but restricted venous outflow. The patient had an exploratory laparotomy, which revealed a left ovarian cyst (5.2 cm 5.4 cm 2.2 cm) with the left adnexa twisted 720°. The torsion was repaired with a simple cystectomy. Pathology results indicated that the cystic contents were benign. This juvenile patient's ovarian function was preserved thanks to an accurate diagnosis and prompt surgical surgery.

Keywords: Ovarian torsion, preserve ovarian, transabdominal ultrasound.

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I. INTRODUCTION

Idiopathic ovarian torsion in children is a rare condition (under 18). Most torsions in women between the ages of 20 and 40 occur during their reproductive years [1]. Torsion has an estimated incidence of 4.9:100,000 in children, according to a 2006 Kids' Inpatient Database (KID) study [2]. The average age of their 1232-patient cohort was 14.5 years, and 51 percent of those with racial data were Caucasians.

Oophorectomy, oophoropexy, and detorsion are surgical treatments for treating ovarian torsion. Despite these and countless other early reports of detorsion efficacy, most

patients continue to undergo oophorectomy. According to a recent study on adolescent patients in the National Inpatient Sample (NIS), 78 percent received oophorectomy, 15 percent underwent detorsion, and 6 percent underwent detorsion with oophoropexy [3]. Oophorectomy rates were higher in nonteaching institutions and among younger individuals in this group. Despite accumulating evidence of the benefits and security of ovarian preservation, the authors noted that the oophorectomy rate has remained constant.

A single-institutional study of 34 children discovered that only 6% of ovarian detorsion surgeries were performed by a general pediatric surgeon and 94% by a pediatric gynecologist [4]. Research undertaken by Pediatric Health

Inpatient Services (PHIS) that investigated 43 independent children's hospitals revealed that pediatric surgeons were substantially more likely than gynecologists to perform oophorectomy (rather than detorsion) [5]. Furthermore, despite accumulating data supporting the benefits and safety of ovarian preservation, the oophorectomy rate has not been reduced.

II. CASE PRESENTATION

A 14-year-old girl arrived at the ED with a one-day history of left lower quadrant discomfort, accompanied by her parents. She complained of persistent pain not eased by changing positions or taking an analgesic. During a physical examination, the patient's vital signs were within normal limits for her age. On room air, her oral temperature was 36.7°C, her heart rate was 88 beats per minute, her blood pressure was 110/70, her respiratory rate was 20, and her oxygen saturation was 99 percent. The left lower quadrant, pelvic, and suprapubic portions of the patient's abdomen were somewhat swollen and painful. She experienced some guarding but no rebound soreness, hepatosplenomegaly, or costovertebral angle discomfort. The rest of the test was routine, with normal heart tones, lung sounds, capillary refill, and skin turgor.

Her catheterized urine sample revealed no protein, ketones, nitrites, or leukocyte esterase; the microscopic UA revealed no red blood cells, white cells, or bacteria. The patient's white blood count, hemoglobin, hematocrit, and platelets were all within normal ranges. A simple chemistry panel was typical.

A Doppler abdominal ultrasound further investigated the left lower quadrant revealed a 3.66 x 3.31 cm left ovarian tumor with no preserved arterial or venous outflow. The uterus and right ovary were both fine.

A left ovarian cyst (5.2 cm 5.4 cm 2.2 cm) with the left adnexa twisted 720° was discovered during an exploratory laparotomy. The torsion was repaired with a simple cystectomy. The patient was released without additional difficulties on postoperative day two. The pathological tests revealed a hemorrhagic cyst.

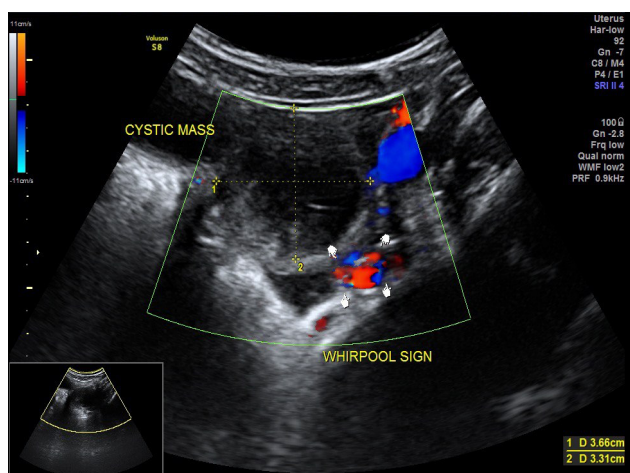


Fig. 1. Left ovarian cyst with no arterial and venous flow appearance, whirpool sign, or "twisted pedicle" was positive.

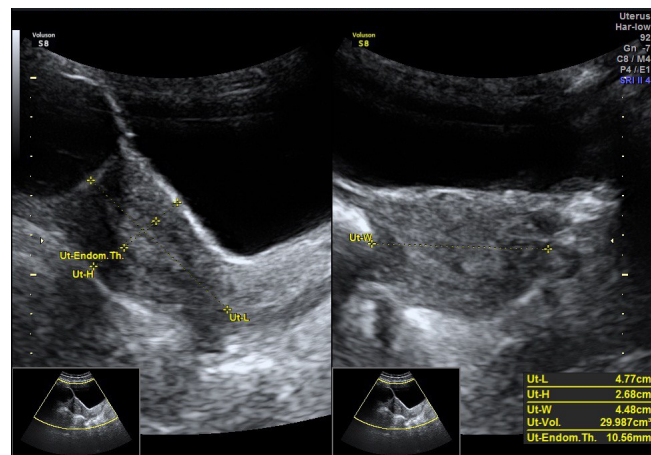


Fig. 2. The uterine sonogram revealed a normal appearance.

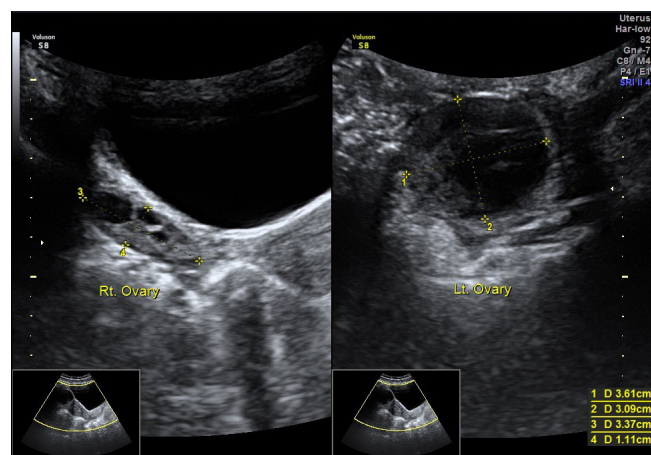


Fig. 3. The right ovary appeared to be average size and anatomy.

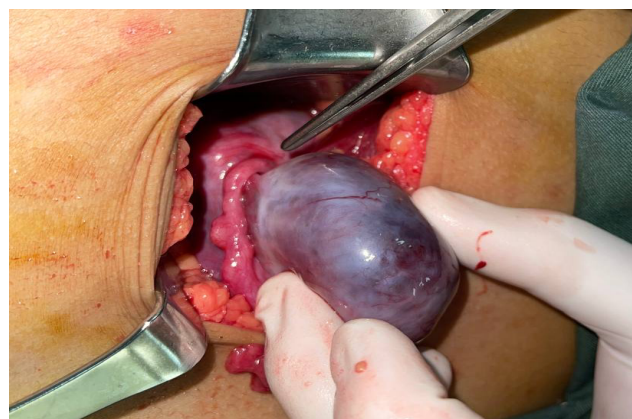


Fig. 3. Left ovarian cyst with the left adnexa twisted.

III. DISCUSSION

20 to 30 percent of young patients between the ages of 9 and 14 who require ovarian surgery have ovarian torsion [6]. The fifth most frequent gynecologic emergency is adnexal torsion. In this case, a young girl who had just undergone menarche exhibits ovarian torsion due to an ovarian cyst on the left side. As the descending colon shields the left side, 64 percent of adnexal torsion occurs on the right side. Although studies indicate a significant decline in ovarian function about 72 hours following symptom start, it is unknown exactly when vascular blockage causes irreversible damage to the ovary [7]. Six hours following the commencement of the symptoms, this patient visited the emergency room. Symptoms typically include intermittent, sudden-onset non-

radiating stomach discomfort accompanied by nausea and vomiting. Compared to postmenarchal patients, premenarchal patients are more likely to present with widespread pain rather than localized discomfort, fever, restlessness, a palpable pelvic mass, a blue or black ovary following surgery, and symptoms that continue longer.

According to this patient's pathology reports, benign teratomas and benign functional ovarian cysts are the most common diagnosis for teens with adnexal torsion. Adnexal torsion in juvenile and adolescent girls can include the ovary without an accompanying adnexal mass in up to 46% of cases [8]. Extended utero-ovarian ligaments enabling excessive movement may enhance the risk of adnexal twisting and torsion. As the pubertal years go by, the ligaments get shorter. The pediatric and teenage population typically does not require or tolerate a bimanual examination. Due to the absence of abnormalities in most cases, laboratory testing is generally useless for diagnosing ovarian torsion [9].

Diagnostic laparoscopy, computed tomography, magnetic resonance imaging, endorectal ultrasound, and a pelvic ultrasound with color Doppler are all possible techniques. Due to the lack of ionizing radiation, pelvic ultrasonography is the preferred modality when torsion is suspected, particularly in premenopausal women, with an overall diagnostic accuracy of 79 percent compared to 42 percent with CT [10]. Even though there are no clinical or imaging criteria to verify the preoperative diagnosis of adnexal torsion, the sensitivity for ovarian torsion is 83 percent in patients who regularly appear with pain and have a pelvic mass measuring 5 cm or larger on imaging. An enlarged ovary is the primary (and occasionally the only) ultrasonography sign of adnexal torsion (53-85 percent of confirmed cases). A premenarchal child's ovarian volume should be between one and two cm³. Increased central echogenicity, which occurs in 40-85 percent of confirmed cases and is assumed to be attributable to stromal edema and bleeding, is the second most frequent ultrasonography result [11]. Doppler examinations can assist in diagnosis when results show limited or no flow, but they should not be used to make clinical decisions. The vascular flow in a torsed ovary with periodic torsion and detorsion may be expected. Many ovarian follicles should be detected on ultrasonography, even in premenstrual patients. Torsion is indicated by abnormally few or small follicles and peripherally misplaced follicles inside the ovary. The patient's cyst displaces the ovarian tissue on Doppler scans, with no visible follicles or vascular activity. The whirlpool signal is a particular yet seldom encountered Doppler diagnosis of twisted blood vessels in the pedicle [12].

An immediate surgical examination is advised if the results point to adnexal torsion. If the results do not mean adnexal torsion, alternative causes should be evaluated rather than observation and safety measures for intermittent torsion [13]. Patients with suspected torsion are not candidates for CT. The CT imaging characteristics frequently show an asymmetrically enlarged ovary. Regular CT scans show a significant negative predictive value when both ovaries are visible. MRI should only be used when the outcome is uncertain because it delays treatment. The best way to see MRI imaging features is on T2-weighted sequences without fat saturation. Hemorrhages can be recognized using fat-

saturated T1-weighted lines [14].

A laparoscopic approach is strongly recommended to safeguard ovarian function and future fertility in an emergency case with a notable clinical exam (i.e., sudden-onset severe pelvic pain and acute abdomen). Torsion is not diagnosed during laparoscopy in 50% of patients [15]. Minimally invasive surgery with detorsion and preservation of adnexal tissues is the accepted standard of care for adolescents with adnexal torsion, independent of ovary form. Even if intraoperative findings of a black or blue ovary imply necrosis, as was the case in this patient, this is not a reliable indicator of ovarian life, and oophorectomy is usually unnecessary.

Numerous studies show that ovarian function continues despite significant intraoperative ischemia. The color of the ovary may not improve for nearly 36 hours after detorsion. Due to considerable edema and concerns that dissection may compromise vascular perfusion, this patient's aspiration of the cyst was preferred over cystectomy. A two-staged procedure is a possibility if necessary. This would allow the edema to diminish and the reperfusion to occur, allowing for a safer separation of the cyst wall from the ovarian cortex. Oophorectomy should be avoided unless the ovary is nonviable, malignancy is found, or the patient is postmenopausal. Oophorectomies are also not recommended to prevent venous thromboembolism after detorsion because there is no evidence in the literature to support this method [16]. Ovulation suppression with oral contraceptives or depot medroxyprogesterone acetate may be explored to halt reoccurring physiologic cysts. Even though long-term follow-up fertility studies are still being conducted, oophoropexy may be required to avoid recurrence.

Surgical treatments include adnexectomy, cystectomy, salpingectomy, oophorectomy, detorsion with cyst fluid aspiration, and cystectomy. If a cystectomy is not necessary or suitable, consider incision and drainage of large cysts with repeat ultrasonography at 6-12 weeks [17]. Ovarian torsion is a medical emergency that requires immediate surgical intervention to safeguard ovarian function and future fertility. Conservative treatment should be seriously considered when there is no underlying ovarian disease. This case study indicates that ovarian function may be maintained and conserved with early detection of ovarian torsion and rapid surgical intervention.

IV. CONCLUSION

Depending on the surgical expertise, ovarian torsion in children and teenagers is managed differently. Studies have also revealed geographical variations in how pediatric patients with ovarian torsion are managed. Despite evidence supporting the safety of detorsion of the ovaries, oophorectomy is still the procedure that pediatric surgeons carry out the most frequently. According to this research, ovarian detorsion and preservation should be the treatment of choice for pediatric patients with ovarian torsion. The so-called hazards of detorsion, such as thromboembolic incidents and cancer, are either hypothetical or extremely unlikely. The physical look of the ovary alone should not be a reason for oophorectomy because the blood supply to the ovary allows follicles to survive despite apparent necrosis.

Further proving the value of ovarian salvage are verified pregnancies from detorsed ovaries. Patients undergoing ovarian preservation should have an ultrasound three months after detorsion to establish ovarian function and rule out an underlying tumor or cancer.

CONFLICT OF INTEREST

Authors declare that they do not have any conflict of interest.

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