

Ovarian Torsion at 18 Weeks of Gestation Detorted Laparoscopically: A Case Report

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ABSTRACT

Background: Ovarian torsion (OT) is a gynecological emergency that, if not managed promptly, can lead to irreversible ovarian damage. While adnexal torsion during pregnancy is rare, it occurs most frequently in the first trimester. Diagnosing OT during pregnancy can be challenging due to non-specific symptoms and unclear ultrasound imaging, often leading to delays in intervention. This case report describes the presentation and management of OT in the second trimester of pregnancy.

Case Presentation: A 37-year-old middle eastern woman at 18 weeks of gestation (G11P2+8) presented with right iliac fossa pain and nausea. Initial ultrasound was inconclusive. A subsequent pelvic MRI revealed an engorged, edematous right ovary with a volume of 60 ml and a tortuous fallopian tube, findings highly suggestive of acute ovarian torsion. The patient underwent urgent laparoscopic surgery, which confirmed a right ovary twisted three times around the infundibulopelvic ligament and appearing congested and nearly black. Successful laparoscopic detorsion was performed, upon which the ovary promptly regained its normal color. The patient and fetus remained in good health postoperatively.

Conclusion: This case highlights the presentation and management of OT during pregnancy. MRI is a valuable diagnostic tool when ultrasound findings are inconclusive. Moreover, laparoscopic detorsion is a safe and effective management option for preserving ovarian function in pregnant patients, even in the second trimester, with favorable outcomes for both the mother and fetus.

We present a case of a pregnant lady presenting with ovarian torsion at her 18th week of pregnancy.

List of Abbreviations

OT : Ovarian Torsion
MRI : Magnetic Resonance Imaging
US : Ultrasound

Keywords: Ovarian Torsion, Pregnancy, Laparoscopic Detorsion

Introduction

Ovarian torsion (OT) is a condition in which the ovary, often accompanied by its corresponding fallopian tube, rotates around its supporting ligaments resulting in subsequent venous and lymphatic flow impediment. OT is considered an emergency because of the risk of irreversible damage to the function of the affected ovary if not diagnosed and managed swiftly [1]. It is the fifth most common gynecological emergency during

pregnancy, with an incidence of 3% [2]. In addition, the right ovary is more frequently involved than the left ovary with a ratio of 3:2, and the most common cause of OT was found to be luteal cyst [3]. Although adnexal torsion during pregnancy is rare, its occurrence becomes even less frequent as pregnancy progresses into the second and third trimesters [4].

Diagnosing OT during pregnancy is challenging since the patients present with nonspecific clinical manifestations [1]. However, 90% of pregnant patients with OT present with abdominal pain which is often accompanied with nausea and vomiting [1-5]. The diagnostic imaging modality of choice is pelvic ultrasound (US) [1,6]. A Computerized Tomography (CT) and Magnetic resonance imaging (MRI) might be obtained if US is inconclusive [6]. The mainstay of treatment for OT is detorsion and preservation of the ovaries either through laparoscopy or laparotomy [1]. The advantages of laparoscopic detorsion are

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shorter hospital stay, lower infection rates, and early ambulation [7]. Moreover, the use of laparoscopic techniques reduces the risk of uterine irritability and therefore spontaneous abortion and preterm labor [7,8]. Pregnant patients are at an increased rate of torsion recurrence during the same pregnancy, particularly those with functional cysts [9,10].

While the principles of management are established, the optimal pathway for cases in the second trimester, where diagnostic uncertainty meets the technical challenges of a larger uterus and surgical intervention is approached with heightened caution, is less commonly documented. The case is distinctive for its successful use of MRI to achieve a definitive diagnosis after an inconclusive ultrasound, followed by a laparoscopic detorsion that preserved ovarian function without necessitating laparotomy or adnexectomy.

Case Presentation

This is 37 years of age middle eastern lady at 18 weeks of gestation confirmed by US (G11P2+8). Her obstetric history is significant for two Caesarean sections and eight spontaneous abortions. She had suffered from infertility for 11 years secondary to polycystic ovarian syndrome until she was treated 3 years ago. Moreover, she has hypothyroidism and is on 50 mg Levothyroxine. She is a married housewife, and she does not drink or smoke. She had also undergone a laparoscopic cholecystectomy 10 years back. The patient presented with complaints of sudden onset severe pain and nausea. On examination, she was vitally stable, and she exhibited rigid abdomen and positive tenderness over the right iliac fossa during palpation. Complete blood count was ordered, and it showed a markedly elevated WBC count of $15,000/\text{mm}^3$. An abdominal, pelvic, and inguinal US were done showing normal visualization of the appendix, and thus excluding appendicitis. Because of the inconclusive results of the US, a pelvic MRI was ordered. The MRI, using T2-weighted imaging, showed an engorged and edematous right ovary with a volume of 60 ml and a luteal cyst measuring 1.8×2.2 cm (Fig. 1A, 1B). A small volume of fluid was surrounding the congested ovary as well (Fig 1A, 1B).

The surrounding stroma was edematous and there was a tortuous tubular structure adjacent to the swollen right ovary which is likely to be the right fallopian tube. The left ovary was unremarkable. The MRI findings are strongly suggestive of an acute right OT. Thus, the patient was counseled on multiple treatment options such as laparotomy, adnexectomy, and laparoscopic detorsion. This included a detailed discussion of each intervention along with their risks, benefits, and potential outcomes. Moreover, the patient was informed about the possibility of requiring a subsequent adnexectomy if the symptoms did not resolve after detorsion. After understanding these options, the patient provided informed consent to proceed with laparoscopic detorsion.

The patient was given Cefazolin as a pre-operative prophylaxis but no tocolytics were prescribed. The surgery was started by introducing the port in the Palmer's point and introducing a 5 mm scope in the palmer port. A 20 mmHg CO₂ pneumoperitoneum was induced and then a left trocar was introduced, through the left lumbar region port. After that, the forceps were traversed on top of the uterus to reach the right adnexa under direct vision. The ovary was congested and bluish purple in color, 7 x 4 cm in size,

and twisted around the infundibulopelvic ligament three times (Fig 2). Another trocar was used from the right upper quadrant to help in manipulating the right ovary and detorting it. Afterwards, using the two atraumatic manipulators, the right ovary was successfully detorted and the infundibulopelvic ligament was straightened (Fig 3). After detorsion, the right ovary was observed for 2-3 minutes while removing the trocar and the color improvement by becoming less purple. The pneumoperitoneum was maintained at 14 mmHg throughout the procedure without any intra-operative hemodynamic or respiratory challenges. Post-operatively, the patient was satisfied and free of the agonizing pain with pain only in the trocar insertion sites. The patient was observed for 24 hours and discharged along with her viable fetus in good conditions. She was given regular follow-up appointments with the antenatal clinic. She attended all follow-up appointments and was free of pain in all of them. At 39 weeks of gestation during her scheduled Caesarean section, due to her 2 previous cesarian sections, the ovary was found to be normal.

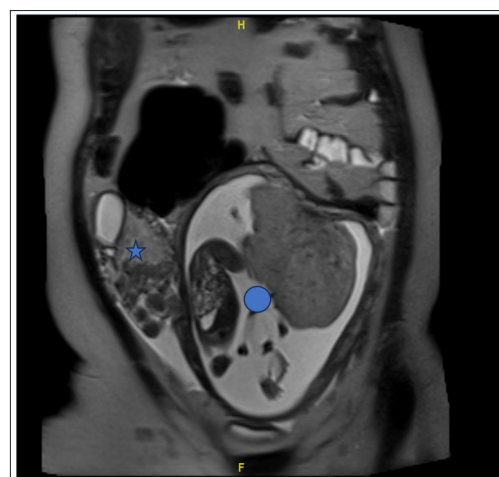


Figure 1A



Figure 1B

Figure 1A and 1B: Sagittal T2-weighted MRI of the pelvis. The circle marks the intrauterine pregnancy. The star marks the markedly enlarged, edematous right ovary with eccentric follicles, a classical finding in OT.

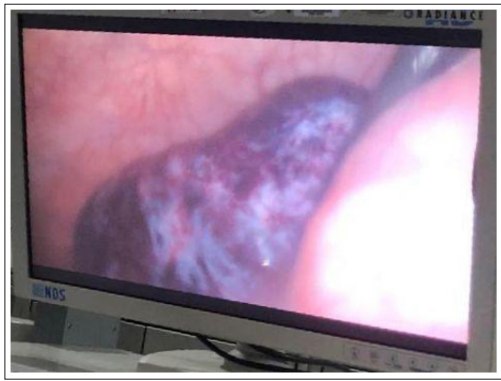


Figure 2: Intraoperative laparoscopic view of the tortorted ovary exhibiting bluish-purple discoloration and edema.

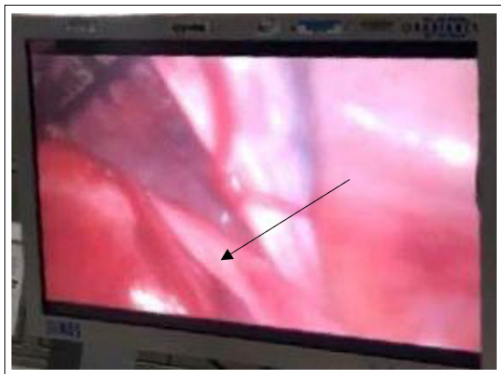


Figure 3: Head of the arrow showing the laparoscopic view of the infundibulopelvic ligament straightened following detorsion.

Discussion

Presentation: OT usually affects pregnant women early in gestation, most commonly during the first trimester [5]. A Chinese study conducted on all pregnant women presenting with OT at a single institution from 1997 to 2008 included twenty patients, the majority of whom presented in the first trimester [5]. Another retrospective study included 8 pregnant women with OT all of which were in the first trimester [11]. Another study concluded that pregnant women rarely get OT in the third trimester contributing the cause to the lower range of movement of the adnexa due to the large uterus unlike the first trimester [3]. Furthermore, there are multiple studies in which early detorsion was done during the first trimester where the uterus is small rather than the later trimesters during which the uterus is larger [5,6,11,12]. However, our case represents a rare occurrence of OT at the second trimester during which the uterus was relatively large.

Diagnosis: Many modalities can be used to assess the ovaries but initially ultrasound (US) is used to show the enlargement of the affected ovary. Additionally, other modalities are used, but MRI is rarely used in the diagnosis of OT unless the diagnosis is uncertain, and the ovaries are massively enlarged [13]. In our case, the patient underwent MRI, after an inconclusive US, showing engorged and edematous right ovary with a volume of 60 ml and a luteal cyst measuring 1.8 x 2.2 cm. This case underscores that MRI is a valuable and safe diagnostic tool for pregnant patients with suspected OT when initial sonographic findings are non-diagnostic.

Management: Following the diagnosis of OT, prompt surgical intervention is imperative for ovarian preservation. The principal surgical options are detorsion or oophorectomy, which can be approached via laparotomy or laparoscopy, with the latter being the preferred method in most scenarios due to its minimally invasive nature [12-14].

The management of OT in pregnancy, particularly in the later stages, presents unique challenges, with a tendency to favor laparotomy as gestation advances, primarily due to technical difficulties and the fear of injuring the enlarged uterus [1]. For instance, a prospective study from 2004-2008 that included seven pregnant women with OT intended laparoscopic management for all; however, two patients in the late second trimester ultimately required conversion to laparotomy due to these procedural challenges [12]. Another American population-based cohort study included approximately 8.5 million pregnant women and highlighted the rarity of OT among this population (incidence of 0.015%). This study found that 2/3 (66%) of pregnant women with OT were managed by laparotomy (including a 9% conversion rate from laparoscopy), 18% were managed non-surgically, and 16% were managed laparoscopically. Out of those managed laparoscopically, less than 5% underwent detorsion alone with the majority undergoing adnexectomy [15]. Another case report describes a patient in late pregnancy with OT who, despite being managed laparoscopically, ultimately underwent adnexectomy instead of detorsion [15]. Another study including 155 pregnant women with OT showed that around 1/3 of the patients underwent laparotomy while 2/3 underwent laparoscopy. Even though the majority (65%) underwent laparoscopic management, only (3.5%) of them were managed by detorsion alone with the remaining (96.5%) managed by the removal of adnexal cyst or the ovary altogether [16].

In our case, the patient was managed by laparoscopic detorsion only with preservation of the ovary, and the patient and her fetus were discharged in good health following the surgery. The successful laparoscopic management in this case demonstrates that laparoscopic detorsion is feasible and safe even in the mid trimesters, provided it is performed by a skilled surgical team. This aligns with research confirming that laparoscopic surgeries during pregnancy can be safe but emphasizes that careful techniques are paramount, especially with advanced gestational age [17]. Our experience adds to a small body regarding the evidence for the management of OT in the second and third trimesters, comprising cases such as one at 22 weeks managed with CT imaging and laparoscopic detorsion accompanied by cystectomy [18], and another at 33 weeks where intervention was delayed following MRI due to uncertain diagnosis [3]. In contrast, our case demonstrates that preoperative MRI can facilitate a direct and timely surgical approach with detorsion alone, without adjunctive cystectomy or diagnostic uncertainty.

Strengths

The principal strength of this case is its demonstration of an optimal and uncommon clinical pathway for a rare presentation of OT in mid-pregnancy. First, it highlights the diagnostic utility of MRI following an inconclusive ultrasound. Second,

it showcases a successful laparoscopic approach, which is technically more challenging than laparotomy in the second trimester and is consequently performed less frequently. Third, and most significantly, within the minority of cases managed laparoscopically, the vast majority undergo adnexectomy [15]. Our case is therefore distinctive for achieving a successful, ovary conserving laparoscopic detorsion followed by a favorable post-operative outcome for both mother and fetus.

Limitations

As a single case report, the findings and management strategy described here, while successful, cannot be generalized to all pregnant patients with OT as the outcome could be influenced by the patient's specific clinical circumstances, including the absence of severe comorbidities. Moreover, the surgical success was achieved in a tertiary care center with an experienced surgeon, and the outcomes might differ in settings with less familiarity with complex laparoscopic procedures in pregnant patients.

Conclusion

While adnexal torsion during pregnancy is rare, it occurs most frequently in the first trimester. Initial imaging study to rule out OT is US followed by other modalities if the results were inconclusive. The mainstay of the management is to detort and preserve the ovary in a prompt fashion with either laparotomy or laparoscopy. Even though laparoscopy is proven to be superior to laparotomy, an expert surgeon must perform the procedure due to the challenges of using laparoscopy in advanced pregnancy because of the uterine size.

Declarations

Ethical Approval and Participation Consent: Ethical approval for this case report was provided by the King Abdulaziz Medical City's Institutional Review Board. Informed consent was obtained for participation and publication.

Consent for Publication: Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

Availability of Data and Materials: Data sharing is not applicable to this article as no datasets were generated or analysed during the current study.

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F.N. is the consultant OBGYN in charge of the patient's care. A.A. and F.N. wrote the manuscript. F.N. and A.A. reviewed and finalized the manuscript.

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