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Case Series

Ovarian Torsion in Pregnancy - A Case Series

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Abstract

Ovarian torsion accounts to 1 - 6% of surgical treatment for adnexal masses. Its incidence rises during pregnancy, but is a rare event. There are varied predisposing factors, however, etiology remains unknown. Epidemiologically, torsion occurs commonly in the 2nd trimester of pregnancy. We are reporting four cases of ovarian torsion in pregnancy, suspected clinically and confirmed by ultrasound. 4 different treatment modalities were used, namely ovarian cystectomy for case 1, oophoro-pexy in case 2, oophorectomy for case 3 and laparoscopic cystectomy for case 4. Three out of the four cases occurred in the 1st trimester of pregnancy, out of which two patients had history of untreated ovarian mass prior to conception. Ovarian torsion is an urgent gynecological condition that needs prompt intervention during pregnancy. Modalities like laparotomy, laparoscopy or conservative management with detorsion can be the treatment of choice. However, if predisposing factors are caught in pre-conceptional period, risk of torsion in pregnancy may be reduced.

Keywords: *Acute Abdomen; Ovarian Torsion; Oophoro-Pexy; Cystectomy; Oophorectomy*

Introduction

Torsion of the ovary refers to the total or partial rotation of the adnexa around its vascular pedicle, so as to obliterate arterial or venous flow to the adnexa. Adnexal torsion is defined as rotation of > 45° in the long axis of the adnexa [1]. Etiological classification includes benign and malignant ovarian masses, non-ovarian masses like para-ovarian cysts and an additional subset of pathologies unique to pregnancy [2]. Etiology is often unknown, however, factors predisposing torsion are moderate sized cyst, long pedicle, increased or free mobility of adnexa. The underlying pathophysiology involves of complete torsion on its pedicle is reduced venous return, leading to lymphatic blockage and stromal oedema with the subsequent sequelae of venous congestion, stasis of blood, internal hemorrhage and infarction [3,4]. The usual presentation with ovarian torsion is often non-specific includes abdominal pain localized to the iliac fossa, nausea, vomiting, and fever, however the intensity, nature, location and duration of pain can vary from patient to patient [5,6]. Torsion is reportedly more common on the right-side due to absence of sigmoid colon, thus allowing the movement [7]. Ultrasound is the first-line imaging modality for the evaluation of adnexal masses. This may be supplemented with magnetic resonance imaging. Tumour markers support evaluation of malignant potential, but interpretation of results in pregnancy is challenging [2].

The patients with warning signs and symptoms of a suspected ovarian torsion were assessed on arrival in the casualty or opd and managed via varied modalities at a tertiary care hospital, MGM Women's Hospital, Kalamboli. Emergency ultrasound was carried out for each case and exploratory laparotomy was conducted in 3 but laparoscopy was performed for 1 case and pregnancy was preserved. Histopathological examination done. Post-operatively all patients were followed up as per pregnancy continued up to term after procedure. The patients were followed up according to WHO protocol in the antenatal period. Inj. Progesterone was given intramuscularly weekly upto 34 - 36wks of gestation. Patients were given steroid cover for foetal lung maturity and were induced at term, watchful expectant management of labor was done in order to avoid chances of rupture.

Case Reports

Case 1

A 21-year-old, Primigravida at 8 weeks, 1 day of gestation presented to emergency room with chief complaints of sudden onset right lower quadrant pain, sharp and non-radiating in nature with 3 episodes of emesis. Patient had reported history of ovarian cyst prior to pregnancy but was not sure about the size. However, the pregnancy had been uneventful. On examination, patient was afebrile, vitally stable with severe tenderness in right iliac fossa with guarding but no rebound tenderness. On sterile per speculum exam, cervix and vagina was healthy with no active bleeding. Uterus was noted to be 8 - 10 weeks in size with right adnexal fullness and tenderness on bimanual pelvic examination. Pelvic ultrasound revealed a single live intrauterine pregnancy of approximately 8 weeks 2 days (Figure 1a). A large adnexal cyst measuring 9.0 × 7.5 × 7 cm sized (Figure 1b) with no evidence of visible arterial or venous flow with mild free fluid in pouch of Douglas, suggestive of a right adnexal torsion. After obtaining informed consent, patient underwent exploratory laparotomy using a transverse suprapubic incision performed under spinal anesthesia. The right adnexal cyst appeared enlarged (around 9 cm) and necrosed (Figure 2). Ovary was separately visualized and healthy. After delivery of the adnexal structures, right ovarian cystectomy was performed without complication. Histopathology was consistent with serous cystadenoma.

Figure 1a: *Obstetric ultrasound.*

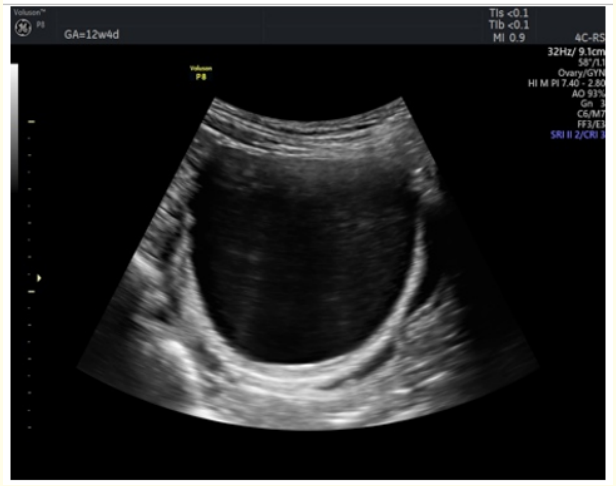

Figure 1b: *Ultrasound of ovarian cyst.*

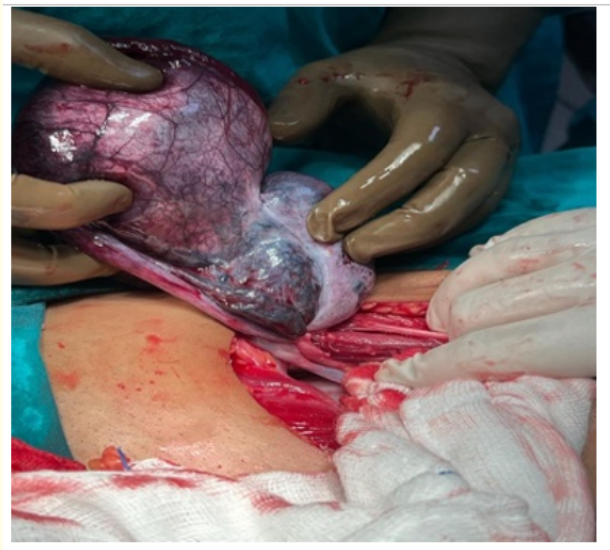

Figure 2: *Intra-operative ovarian cyst.*

Case 2

A 26-year-old, Primigravida at 11 weeks, 5 days of gestation presented to emergency room with chief complaints of left lower quadrant pain, waking her from her sleep, non-radiating. On examination, patient was afebrile, vitally stable with mild tenderness in left iliac fossa with guarding. On sterile per speculum exam, cervix and vagina was healthy with no active bleeding. Uterus was noted to be 12

weeks in size with left adnexal fullness and cervical motion tenderness on bimanual examination. Pelvic ultrasound revealed a single live intrauterine pregnancy of approximately 11 weeks 5 days. An ovarian cyst measuring 4 × 7 × 4 cm sized was noted with a twisted pedicle with evidence of vascularity (Figure 3) suggestive of acute left ovarian torsion. Patient underwent exploratory laparotomy using a transverse suprapubic incision performed under spinal anesthesia. The left ovarian cyst appeared enlarged (around 7 cm) and grossly near normal ovary was present with a pedicle. After delivery of the ovarian cyst, detorsion was performed with 2 rotations of the pedicle healthy ovary visualized separately (Figure 4). Ovarian Cystectomy was performed without complication and oophoro-pexy via plication of ovarian ligament was done. Histopathology was suggestive of Persistent Hemorrhagic Corpus Luteum Cyst.

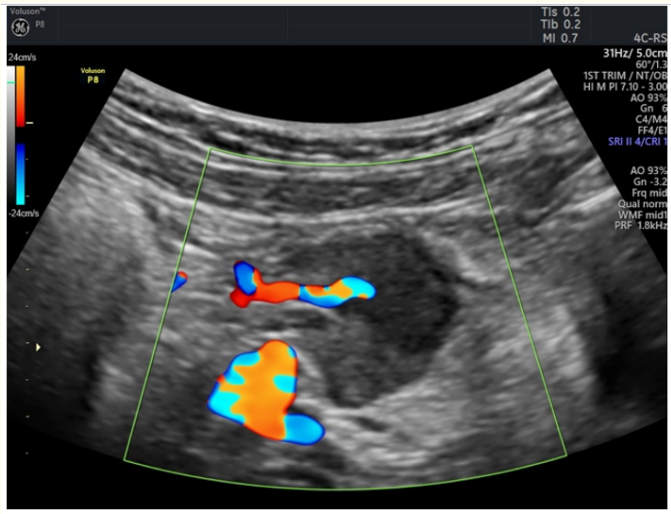

Figure 3: *Ultrasound of ovarian cyst with venous flow.*

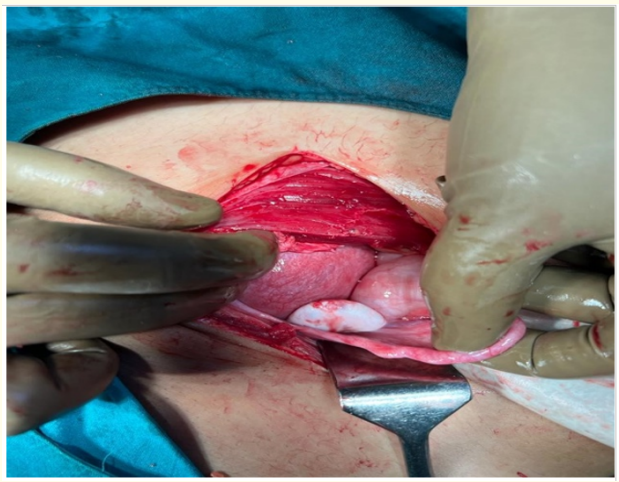

Figure 4: *Healthy ovary prior to oophoro-pexy.*

Case 3

A 30-year-old, Gravida 2, Para 1, Living 1 (previous normal vaginal delivery) at 10 weeks, 2 days of gestation presented to emergency room with chief complaints of right lower quadrant pain, dull-aching and non-radiating in nature associated with 10 episodes of emesis. Patient had reported history of ovarian cyst prior to pregnancy about 8.0 ×10.2 × 5.4 cm in size. On examination, patient was afebrile, vitally unstable with severe tenderness in right iliac fossa with rebound tenderness and guarding. On sterile per speculum exam, cervix and vagina were normal with no active bleeding. Uterus was noted to be 10 - 12 weeks in size with right adnexal fullness and tenderness on bimanual examination. Pelvic ultrasound revealed a single live intrauterine pregnancy of CRL corresponding to 10 weeks. An ovarian cyst measuring 8.4 × 10.5 × 6.0 cm sized was noted with no evidence of visible arterial or venous flow (Figure 5) suggestive of a right ovarian torsion. After obtaining informed consent, patient underwent exploratory laparotomy performed under spinal anesthesia. The right ovary appeared enlarged (around 10 cm) and necrosed. After delivery of the necrosed ovary from the incision, pedicle of the ovary clamped and right sided Oophorectomy (Figure 6) was performed without complication. Histopathology was consistent with serous cystadenoma.

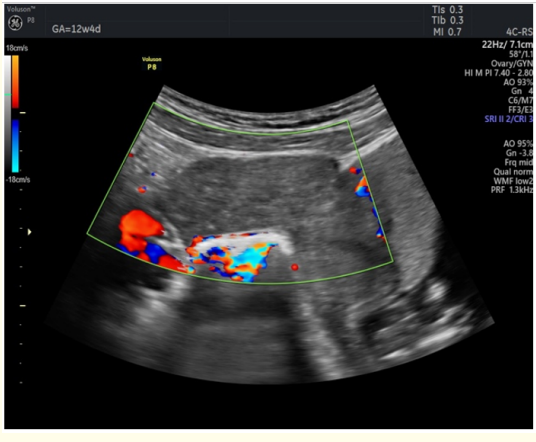

Figure 5: *Ultrasound of ovarian cyst with no evidence of blood flow.*

Figure 6: *Post-oophorectomy specimen.*

Case 4

A 33-year-old, Primigravida at 17 weeks, 1 day of gestation, with history of infertility conception with ovulation induction, presented to emergency room with chief complaints of right lower quadrant pain. On examination, patient was afebrile, vitally stable with tenderness in right iliac fossa. On sterile per speculum exam no active bleeding. Uterus was noted to be 18 weeks in size with right adnexal fullness and tenderness on bimanual examination. Pelvic ultrasound revealed a viable pregnancy of 17 weeks. An ovarian cyst measuring 4 × 7.4 × 6 cm sized was noted with healthy ovary seen separately. Laparoscopic right ovarian cystectomy performed after drainage of chocolate coloured cyst fluid under general anesthesia. Post-procedure ultrasound was within normal limits. Histopathology was consistent with endometriotic cyst.

Outcome

Each pregnancy was followed up through the course of the pregnancy and 3 of 4 delivered at term. 1 patient went into preterm labor. 2 out of the 4 patients were delivered via cesarean section. All neonates were healthy.

Discussion

Due to increasing awareness about obstetric ultrasound, incidental diagnosis of adnexal mass in pregnancy is rising. This accounts for about 30% of masses in pregnancy and usually regress spontaneously during the first or early second trimester of gestation [8]. Torsion of the ovary accounts for 1 - 6% of the surgical treatment for adnexal masses [9]. A study conducted by Hua., *et al*. suggests that its occurrence during gestation is reported as 2%, accounting for 2.7% of surgical emergencies in pregnant women [1].

Ovarian torsion has been reported to occur with masses from 1 to 30 cm (mean 9.5 cm) [10], but there is a diverse consensus on the size of the cyst that undergo torsion. A study by Senarath., *et al*. states that pregnant women with adnexal masses 4 cm or greater had a 1% - 6% lower incidence of torsion compared with non-pregnant women [2]. Two studies suggest that more than 80% patients with ovarian torsion had ovarian masses of 5 cm or larger, indicating that the primary risk in ovarian torsion is an ovarian mass [9,10]. However, the most recent study suggests that ovarian cysts less than 6 cm and appearing benign on ultrasound are generally treated conservatively as they may undergo spontaneous resolution but cyst more than 10cm is usually resected due to increased risk of malignancy, rupture or torsion. Management of cysts between 5 to 1 cm is controversial [3].

The incidence is higher at 13 - 17 weeks of gestation with ovarian masses larger than 4 cm [11,12], which doesn't correspond with this study, since 3 out of 4 cases were in the first trimester. The most common types of ovarian cysts are dermoid cysts and serous cystadenomas [3], however, in this study, 2 out of 4 cases had serous cystadenoma but none showed evidence of dermoid cyst.

This study is supports previous data on pre-existing adnexal masses or ovulation induction for treatment of infertility leading to multiple large ovarian follicular cysts; the large cysts have an increased risk of torsion due to enlarged ovary in pregnancy [7,13].

Treatment modalities are diverse in ovarian torsion depending on the residual vascularity of the ovary. Those with simple cystic appearance may be managed expectantly with serial ultrasound surveillance [3]. Conservative treatment of ovarian torsion via ultrasound-guided trans-abdominal cyst aspiration and body repositioning represents a reasonable alternative to surgical intervention in the pregnant patient [14]. Laparoscopy is preferred owing to shorter operative time, quicker recovery and resultant lower thrombotic risk [2]. If the cysts contain septate, nodules, papillary excrescences or solid components then resection is recommended [3].

There is a risk of recurrence after detorsion, but the incidence and causes are unknown [15]. According to recent research, several methods can be used to decrease the risk of recurrence. One method is suppression of ovarian cysts by oral contraceptives, and another is an oophoro-pexy, as conducted in case 2 [16-21].

A study by Yen CF., *et al*. suggest that surgical intervention is primarily done in the second trimester between 16 - 18 weeks unless torsion, rupture or malignancy is suspected [11]. Following procedure post-viability, fetal wellbeing and assessment must be considered. Management of the pregnancy may include cardiotocography, non-teratogenic antibiotics and tocolytics [2].

Conclusion

Ovarian torsion is an urgent gynecological condition that needs prompt intervention during pregnancy. Modalities like laparotomy, laparoscopy or conservative management with detorsion can be the treatment of choice. However, if predisposing factors are caught in pre-conceptional period, diagnosis of torsion in pregnancy can be increased.

Few noteworthy findings in this case series were that all except one case had a right sided ovarian torsion, three different pathologies were noticed in 3 of the 4 cases and all cases were managed with different modalities of surgery.

Conflict of Interest

Nil.

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