



## Torsion Ovarian Cyst with Impending Rupture During Early Pregnancy and Outcome of Laparoscopic Management

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### Abstract

A young primigravida at 10+4 weeks of gestation suffered from acute onset of pain abdomen of 4 days duration with vomiting. She was suspected to have torsion Ovarian cyst with pregnancy and undergone USG elsewhere which showed free fluid in abdomen and an echogenic adnexal mass along with intrauterine pregnancy and hence she was referred to our tertiary care Institute. After 12 hours of admission, she developed tachycardia and hypotension and had guarding and rigidity of abdomen. Abdominal USG showed left sided complex adnexal mass with absent arterial blood flow on Doppler. Live Intrauterine pregnancy corresponded to 9+2 weeks. Emergency Laparoscopy showed impending rupture of Ovarian mass which was edematous and bluish black with breach in the capsule and there was hemorrhagic fluid in pelvis. Detorsion was done successfully gently and cystectomy was deferred as it appeared very friable. Pregnancy support was given with vaginal progesterone and she was discharged after 5 days. She was followed up by teleconsultation due to COVID pandemic and she was admitted at 38 weeks with PROM and delivered an alive healthy male baby without any congenital malformations which weighed 2.8 kg.

**Keywords:** First Trimester; Pain Abdomen; Adnexal Mass; Torsion; Laparoscopy

### Introduction

Adnexal torsion during pregnancy presents with two common symptoms of normal pregnancy such as pain abdomen and vomiting. High index of suspicion is necessary to diagnose early as complete torsion causes lymphatic obstruction venous congestion, hemorrhage and necrosis [1]. This may result in morbidity and mortality if not recognized and treated. Detorsion or adnexectomy is necessary for management and is mostly performed as an emergency by laparotomy and surgery during first trimester can result in pregnancy loss. Laparoscopy during pregnancy can cause fetal problems because of pneumoperitoneum which is created by using Carbon dioxide [2]. The effect of laparoscopic procedure during first trimester of pregnancy and outcome of pregnancy of this case will add to the literature about affects of laparoscopy during pregnancy. Outcome of Conservative management of de-

torsion in presence of haemorrhage and partial ischaemic necrosis also reported rarely.

### Case

A young primigravida at 10+4 wks was referred as suspected ovarian cyst torsion. She complained of left sided abdominal pain 4 days. Pain was continuous, moderate intensity aggravated by change in position and moment and not relieved by rest. History of 3 months amenorrhea and excessive vomiting since one month. She underwent USG for pain abdomen on 31.1.2020 which was reported as an intrauterine gestation of 8+2 weeks with hypoechoic mass measuring 63x53 mm adjacent to right ovary. USG was repeated 4.2.2020 and diagnosed to have free fluid in the abdomen and referred to tertiary care with suspicion of torsion ovarian cyst.

There was no significant personal or family history. She attained menarche at 13 years of age and cycles were regular with 7 days of flow occurring every 30 day associated with pain and clots. She is married since one year, non-consanguineous and her LMP was 22.11.2019.

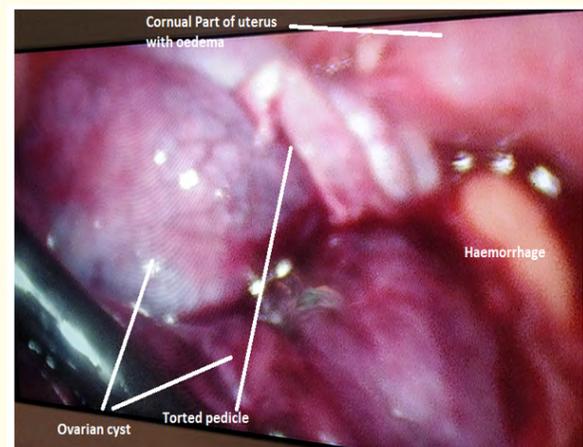
On examination, she was conscious, mildly pale, pulse was 127/min regular, respiratory rate 24/min and BP was 116/80 mmHg. Per abdomen there was tenderness in left iliac fossa and a vague mass of 6x8cm felt in hypogastric and left iliac region. There was no organomegaly and there was no guarding and rigidity. On per speculum examination, vagina was healthy and cervix was not visualised. On per-vaginal examination cervix was felt high up under symphysis pubis and uterine size was not made out and there was left forniceal tenderness. She was hospitalised and was treated with intravenous fluids, antiemetic and analgesics. Her pain did not get relieved and she had 2 bouts of vomiting and developed hypotension (BP--92/62 mm Hg) after 12 hours of admission.

A review examination by consultant (5.2.20) revealed toxic look of the woman with a temperature of 101<sup>o</sup>F and clinical features of guarding and rigidity. Transabdominal USG revealed 9+2 weeks intrauterine pregnancy with left sided adnexal mass of 10 x 8 cms close to left iliac vessels. Doppler flow was reduced (no arterial flow) and she was planned for Laparoscopic de-torsion/ cystectomy after explaining the risks of pregnancy loss.

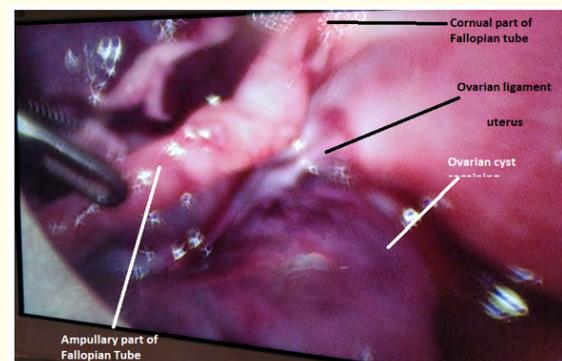
Her per-operative investigations are as follows: Hb-9 gm% TC 16,320/mm<sup>3</sup>; Neutrophils 80.9% E-1% B-1% L-8.1 Platelet count -2.45 lakhs/mm<sup>3</sup>, Na<sup>+</sup> - 135 meq/L; K<sup>+</sup> - 3.42 meq/L. Liver Function Tests: AST- 24IU/L, ALT-16 IU/L, Total protein 6.2 gm%; Serum Albumin -3.1 gm%, LDH-246 IU/L.

Emergency laparoscopy showed a left sided bluish black cyst with partial discontinuity suggestive of ischaemic necrosis (Figure 1) and haemorrhagic fluid in pelvis. The mass was slowly and gently detorted by introducing the Maryland forceps under the cyst and rotating it anti-clockwise. The fallopian tube and the Cyst were involved in torsion. Figure 2 shows the status after detorsion. It was observed for 15 minutes and there was evidence of restoration of blood flow though slow. Saline wash was given and the procedure was completed in 30 minutes. She was started on empiric intravenous antibiotics (Inj. Ceftriaxone, Amikacin and Metronidazole). Her post-operative investigations are as

follows: Hb-8.2 gm%; WBC-9411/mm<sup>3</sup>; N-83.7% E-0.5% L-7.8%; Platelet count - 2.9/mm<sup>3</sup>. Urine C/S - *E. coli* -sensitive to Amikacin, Cefaperazone+Sulbactam, Nitrofurantoin Cervical swab C/S - Sensitive to Amikacin, Cefaperazone+Sulbactim and Gentamycin. Her temperature normalised on 3<sup>rd</sup> post-operative day. Antibiotics were continued for 5 days. Repeat USG on 4<sup>th</sup> post-operative day showed presence of fetal cardiac activity and reduction in size of Ovarian mass with blood flow. She received vaginal progesterone and was discharged home on 5<sup>th</sup> post-operative day. She was on follow up via Teleconsultation due to COVID-19 Pandemic and she delivered normally at 38 weeks after induction for premature rupture of membranes (PROM). An alive male 2.8 kg was born which did not show any anomalies.



**Figure 1:** Shows the bluish black left Ovarian cyst with torsion and haemorrhage and part of the uterus (Utero-tubal junction).



**Figure 2:** Shows the medial part of the fallopian tube and ovarian cyst after detorsion.

## Discussion

Adnexal torsion occurs more commonly during pregnancy than in non-pregnant state. The incidence varies from centre to centre and in a report of 135 cases of adnexal torsion in a teaching hospital, 17% were found to occur during pregnancy [3]. Its incidence is reported to increase 5 times during pregnancy and occurs 5 per 10,000 pregnancies [4]. Recent reports reported 10-22% [5]. Presence of large Corpus luteal cyst with laxity of the pedicle that occurs during hormonal changes in pregnancy predispose to torsion and the risk is reported to be greater during the first trimester and also greater when the size is more than 4 to 5 cms. [6].

The most common symptom reported is sudden onset pain abdomen followed by vomiting [7,8]. Clinical features of acute abdomen will be elicited in cases of complete torsion and guarding and rigidity will be absent in initial stages as in this current lady and pain could not get relieved with analgesics [1]. Confirmation is essential by imaging and USG is the first line investigation and evaluation with Doppler increases the sensitivity. Presence of blood flow in the pedicle does not rule out torsion but presence of whorl pool sign is highly sensitive to diagnose torsion [7]. The differences in sonographic findings between pregnant and non-pregnant women with ovarian torsion were well elucidated in an article by Jie-Lin Feng and colleagues [8].

Ovarian Torsion is traditionally managed by emergency laparotomy and during the past decade laparoscopic management is being undertaken. The guidelines for laparoscopic management during pregnancy were published in 2011. Maintaining the CO<sub>2</sub> insufflation pressure between 10-15 mmHg is essential and progesterone therapy is to be initiated before 12 weeks of pregnancy [9]. The problems of laparoscopy during pregnancy are fetal hypoxia due to the decreased blood flow in uterine arteries because of increased intra-abdominal pressure, trendelenburg position and CO<sub>2</sub> assimilation in the blood. Technique is easier during first trimester but successful laparoscopic surgery is reported during second as well as third trimesters with modification of position and trocar placements [2]. Supra umbilical trocar placement was employed in the present case and also cases reported during first trimester. The surgical procedure undertaken were mostly Ovarian cystectomy, Ovariectomy/oophorectomy when ischaemic changes are seen [1,2,10,11].

Detorsion is the procedure of choice in recent times to preserve ovarian function. Appearance of bluish or blackish discolouration of Ovarian surface is the sign of ischaemia and or gangrene and the standard management is Ovariectomy. In presence of ischaemic or gangrenous changes conservative detorsion without cystectomy is being undertaken in nonpregnant women to preserve Ovarian function and reserve [2]. During pregnancy as the chances of infection and miscarriage increase most would resort to cystectomy to preserve ovarian function and prevent miscarriage. But theoretically cystectomy also would increase operative time as well as manipulation and predisposes to risk of miscarriage. In the present case, detorsion was undertaken in the presence of ischaemia and partial rupture during pregnancy. No Cystectomy or fixation was done. A case of Ovarian torsion with partial necrosis managed by mini-laparotomy and partial cystectomy and reconstruction during first trimester is on record [12]. The woman was on progesterone support and followed up till delivery which resulted in vaginal birth.

Favourable Pregnancy outcome was reported after Laparoscopic detorsion and concurrent cystectomy or Ovariectomy during pregnancy in most of the cases. A woman who underwent laparoscopic detorsion and adnexectomy during first trimester [11] delivered vaginally at term and similarly vaginal delivery was achieved after laparotomy and adnexectomy at term [1]. In both cases progesterone supplementation was practiced. Bras R and colleagues reported a case of adnexal torsion during first trimester in a woman with recurrent pregnancy loss which was managed by laparoscopic detorsion and cystectomy. The lady was on progesterone support and delivered vaginally at term [13]. Good pregnancy outcome was also reported in cases of laparoscopic management of torsion ovarian cyst during second trimester [2] as well as third trimester [14]. Position of the patient with a lateral tilt and choosing the site of placement of trocars with skill in placing the trocars are the key elements in achieving success in laparoscopic management of Ovarian cysts during pregnancy. The pathology is mostly benign in torsion ovarian cysts during pregnancy compared to those in non-pregnant state [8] and hence laparoscopic management can be safely undertaken instead of laparotomy. However caution to be exercised in choosing laparoscopic approach when the USG or MRI features suggest malignancy.

## Conclusion

- When there is acute exacerbation of vomiting during pregnancy associated with localized pain, adnexal torsion to be suspected.
- Doppler studies of adnexal mass confirm the diagnosis of torsion
- Laparoscopic management is safe during first trimester of pregnancy
- Ovarian Cystectomy can be avoided and conservative management of distortion can be undertaken when there is minimal hemorrhagic fluid without active bleeding from the breached surface of the mass lesion.

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