

Clinical, pathological, and surgical aspects of ovarian torsion

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Abstract

Background: Ovarian torsion accounts for 1%–6% of surgical treatment for adnexal masses. Its incidence rises during pregnancy but is rare, and there are varied predisposing factors. However, the etiology remains unknown.

Materials and Methods: The cases of ovarian torsion over 2 years (2020–2022) at MGM Women's Hospital, Kalamboli, Navi Mumbai, India, have been reported duly reviewed retrospectively.

Results: Twelve of eighteen adnexal torsions occurred in the right adnexa (67%). Of the four pregnant patients, three had a right-sided adnexal torsion (75%). Right anticlockwise adnexal torsion was the most common entity noted. The most common types of ovarian cysts are dermoid cysts and serous cystadenomas, corresponding to this study, with 77.8% of the cases having either histopathological findings.

Conclusion: Ovarian torsion is an urgent gynecological condition that needs prompt intervention. Modalities such as laparotomy, laparoscopy, or conservative management with detorsion can be the treatment of choice. Maximum adnexal torsion occurs on the right side. A large amount of right-sided adnexal torsion has rotation anticlockwise manner, whereas most left-sided adnexal torsion spin clockwise.

Keywords: Acute abdomen, ovarian torsion, oophoropexy, cystectomy, oophorectomy

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INTRODUCTION

Torsion of the ovary refers to the total or partial rotation of the adnexa around its vascular pedicle to obliterate arterial or venous flow to the adnexa. Adnexal torsion is defined as a rotation of more than 45° in the long axis of the adnexa.^[1] The etiological classification includes benign and malignant ovarian masses, nonovarian masses such as paraovarian cysts, and an additional subset of pathologies unique to pregnancy.^[2] Etiology is often unknown. However, factors predisposing to torsion are moderate-sized cysts, long

pedicles, and increased or free mobility of adnexa. The underlying pathophysiology involves complete torsion on its pedicle is reduced venous return, leading to lymphatic blockage and stromal edema with the subsequent sequelae of venous congestion, stasis of blood, internal hemorrhage, and infarction.^[3,4] The usual presentation with ovarian torsion is often nonspecific and 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 the absence of the sigmoid colon, thus allowing movement.^[7] Ultrasound is the first-line imaging modality for evaluating adnexal masses. It may be supplemented with magnetic

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resonance imaging. Tumor markers support the evaluation of malignant potential, but the interpretation of results in pregnancy is challenging.^[2]

MATERIALS AND METHODS

We retrospectively reviewed ovarian torsion cases over 2 years (2020–2022) at MGM Women’s Hospital, Kalamoli, Navi Mumbai, India. Patients were identified using hospital records and operation theater registers. We noted clinical history, routine blood investigations, and patient demographic data. Ultrasound was done for each patient, and ovarian torsion was confirmed. The emergency operative procedure was conducted, and surgical outcomes with complications were reported. We did a postoperative histopathological examination. All patients were followed up.

RESULTS

A total of 18 patients were operated on given acute abdomen secondary to adnexal torsion over 2 years. All patients in the study group belonged to the reproductive age group, and 72.2% of the patients were vitally stable when they presented to the emergency room. A total of 77.8% of the patients were diagnosed accurately and clinically, and a confirmatory diagnosis was attained by ultrasonography. A total of 22.2% of females were suspected of other acute abdomen causes but were diagnosed with adnexal torsion on ultrasound.

Nine of eighteen patients were nulligravida females (50%), of which five patients had a history of oral contraceptive pill intake or known evidence of previous adnexal mass (28%). Five of eighteen females were multiparous (28%), whereas 4 of 18 females were gravid women (22%), and one of these women had a history of infertility conception with ovulation induction.

Twelve of eighteen adnexal torsions occurred in the right adnexa (67%) [Figure 1]. Of the four pregnant patients, three had a right-sided adnexal torsion (75%). Adnexal torsion in gravid females occurred primarily in the first trimester other than in one case where it happened at the gestational age of 17 weeks.

The lateral end of the infundibulopelvic ligament was used as the reference axis of rotation, medial or anticlockwise, and lateral or clockwise rotation. Right anticlockwise adnexal torsion was the most common entity noted in 10 of 18 cases (53%). It was followed by left clockwise adnexal torsion of five patients (26%). Right clockwise rotation

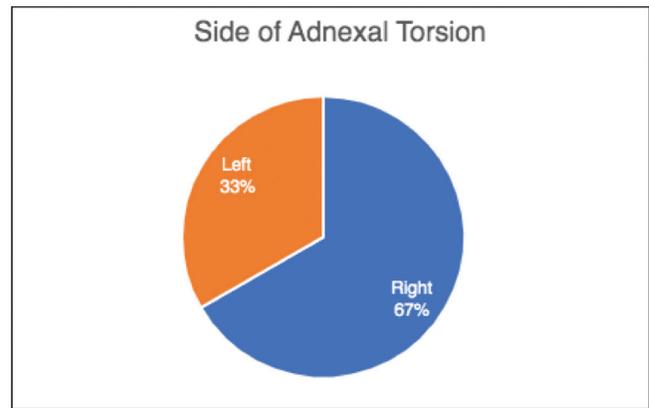


Figure 1: Side of adnexal torsion

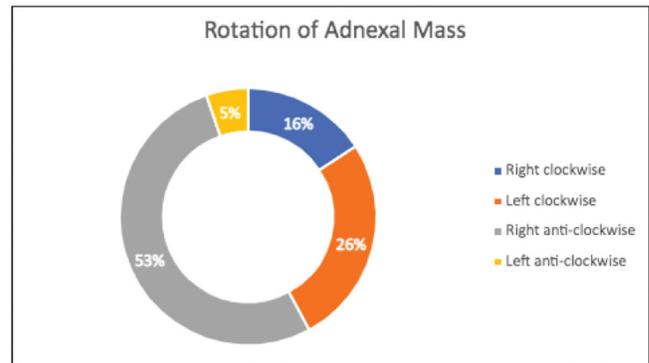


Figure 2: Rotation of adnexal mass

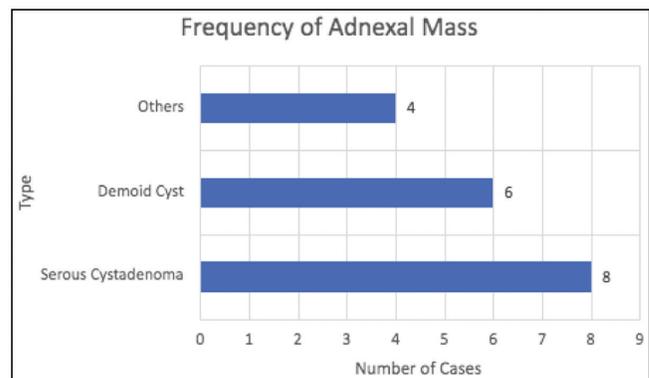


Figure 3: Type of adnexal mass

was witnessed in 3 of 18 cases (16%), followed by the least common adnexal torsion in the left anticlockwise manner of only one patient (5%) [Figure 2].

A total of 44.4% of the adnexal masses were serous cystadenomas on histopathological examination. This is followed by 33.3% of cases with evidence of dermoid cysts or mature teratoma [Figure 3]. Among the rest, histopathology suggested nonneoplastic disorders such as endometriotic cysts, persistent functional cysts, or hemorrhagic corpus luteum cysts of pregnancy.

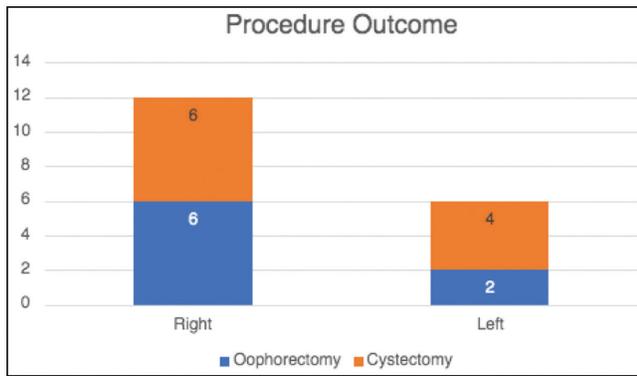


Figure 4: Outcome of procedure

Doppler study was performed preoperatively for all cases. A total of 55.6% of the patients (10 of 18) had no evidence of residual vascularity in the adnexal mass, whereas 44% had residual vascular flow.

The surgical approach to 15 cases was an exploratory laparotomy (83%), whereas laparoscopic for three (17%). Unilateral oophorectomy was performed in 44.4% of the cases (8 of 18), whereas unilateral ovarian cystectomy was performed in 55.6% of the cases (10 of 18) [Figure 4]. In one patient, a cystectomy was followed by ovarian ligament plication due to the lengthening of the ligament.

In all cases with residual vascular flow, the procedure performed was a unilateral cystectomy, preserving the ovarian function. However, in 2 of 10 patients [Figure 4], the vascular flow was lowered or minimal, and there was the absence of a change of color, but ovarian preservation was done. These cases were followed up to check for residual ovulatory function.

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 regresses 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 by Hua *et al.*^[1] suggests that its occurrence during gestation is reported as 2%, accounting for 2.7% of surgical emergencies in pregnant women.

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 undergoes torsion. A study by Senarath *et al.*^[2] states that pregnant women with adnexal masses of 4 cm or greater had a 1%–6% lower incidence of torsion than nonpregnant women. Two studies

suggest that more than 80% of patients with ovarian torsion had 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. Still, cysts over 10 cm are usually resected due to an increased risk of malignancy, rupture, or torsion. Management of cysts between 5 and 10 cm is controversial.^[3]

The incidence is higher at 13–17 weeks of gestation with ovarian masses larger than 4 cm,^[11,12] which does not correspond with this study, because three of four cases were in the first trimester. The most common types of ovarian cysts are dermoid cysts and serous cystadenomas,^[3] corresponding to this study, with 77.8% of the cases having either histopathological findings.

Two of the four pregnant females in this study underwent ovulation induction preceding the development of adnexal torsion, which corroborated with other studies that prove that conception ovulation induction is a risk factor for torsion.^[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 transabdominal 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 lower thrombotic risk.^[2] If the cysts contain septate, nodules, papillary excrescences, or solid components, 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 the suppression of ovarian cysts by oral contraceptives, and another is an oophorectomy, as conducted in two cases. Oral contraceptives reduce the size of functional cysts, hence preventing the recurrence of ovarian torsion.^[16-21]

A study by Krissi *et al.*^[22] used the axis of medial rotation as the opposite of the psoas major and the great vessels on the same side. The proximal end of the infundibulopelvic ligament was used as the reference point in the study corresponding to this study. The rotation of the adnexa on the right side of the pelvis is more common in the anticlockwise direction because of the available space due to the absence of the sigmoid colon, unlike on the left side of the pelvis.

A study by Singh *et al.*^[23] suggests that the most common presenting complaint of the individual with adnexal torsion is the acute abdomen. A study by Yen *et al.*^[11] suggests that surgical intervention is primarily done in the second trimester between 16 and 18 weeks unless torsion, rupture, or malignancy is suspected. Following procedure postviability, we must consider fetal well-being and assessment. Management of the pregnancy may include cardiotocography, nonteratogenic antibiotics, and tocolytics.^[2]

CONCLUSION

Ovarian torsion is an urgent gynecological condition that needs prompt intervention. Modalities such as laparotomy, laparoscopy, or conservative management with detorsion can be the treatment of choice. A few noteworthy findings in these cases were that maximum adnexal torsion occurs on the right side. A large amount of right-sided adnexal torsion has rotation in an anticlockwise manner, whereas most left-sided adnexal torsion has rotation in a clockwise manner. Also, preservation of the ovary, even with evidence of minimal vascularity or change in color, proved to have the ovulatory function on serial follow-up.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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