

# Adnexal Torsion: Clinical Study in a Tertiary Care Center in India

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## ABSTRACT

**Aim and objective:** Adnexal torsion is a rare gynecological emergency. It involves females of all age-groups. It requires early diagnosis and intervention in order to save the adnexa from irreversible injury. Our study elaborates on the clinical presentation, diagnosis, and management of adnexal torsion in a tertiary care center in India.

**Study design:** Prospective study.

**Materials and methods:** It is a clinical study conducted at Sri Ramachandra Institute of Research and Higher Education over a period of 1 year from January 2018 to January 2019.

**Results:** Most cases of adnexal torsion presented with diffuse pain abdomen (64.2%), nausea and vomiting (42.8%). About 60% were mainly found in the reproductive age-group of 20–30 years. Five antenatal cases with adnexal torsion were observed (11%). Polycystic ovaries (21.4%) and hypothyroidism (50%) were the notable risk factors associated with this complaint. Size more than 5 cm were increasingly associated with adnexal torsion. Ultrasound was used as a primary imaging modality although in few cases like pregnancy, large masses in which ultrasound was inconclusive CT and MRI were more convincing. Laparoscopy was the preferred mode of intervention with an attempt to conserve the ovary in childbearing age-group. However, 24% of cases were converted to laparotomy in view of large size of the mass or hemodynamic instability.

**Conclusion:** Adnexal torsion is one of the rare emergency which requires an expertise team for early diagnosis using imaging and clinical symptoms. Prompt surgical intervention is required to preserve the ovarian tissue especially in younger age-group.

**Keywords:** Adnexal complex, Fertility, Histopathology, Laparoscopy, Laparotomy, Ovarian torsion, Polycystic ovary syndrome, Pregnancy, Reproductive age-group, Ultrasonography.

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## INTRODUCTION

Adnexal torsion is one of the most important and rare gynecological emergencies. Torsion commonly involves both the ovary and fallopian tube. It is usually associated with a cyst or tumor. Its size is larger than 5 cm, carry a greater risk of torsion.<sup>1,2</sup> Clinically, the patient presents with sudden onset of lower abdominal pain that worsens intermittently over many hours. As the symptoms are non-specific, it can lead to a delay in diagnosis. Imaging like ultrasound, CT, and MRI (especially in pregnant women) helps in rapid approach, with that said, surgical intervention preferably laparoscopy remains the gold standard for diagnosis and treatment.

## MATERIALS AND METHODS

This is a prospective observational study and was carried out in the Department of Obstetrics and Gynecology at Sri Ramachandra Institute of Higher Education and Research. About 42 patients with adnexal torsion were observed over a period of 1 year from January 2018 to January 2019. Clinical information regarding the age, medical history, clinical features, parity, diagnosis, and management was collected with a preformed proforma, with an aim for correct diagnosis and appropriate management. Standard transabdominal and transvaginal ultrasound with Doppler were used as imaging modalities. MRI was used in antenatal patients with torsion and also in other cases where ultrasound was inconclusive.

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## RESULTS

Out of the 42 cases of adnexal torsion in the age ranged from 10 to 47 years, most of the patients were noted in the reproductive age-group of 20–30 years (59.5%). Five patients were pregnant (11.1%), 4 patients (10%) were prepubescent (Table 1). No postmenopausal cases of adnexal torsion were identified. About 18 (42.8%) were nulliparous women and 24 (57.1%) were multiparous women.

Diffuse abdominal pain was the most common clinical presentation found in 27 patients (67.5%), thus creating a dilemma in diagnosis. And 20 cases (50%) had pain localized to the pelvic region. About 8 cases (20%) presented with a palpable pelvic mass. Associated symptoms like nausea and vomiting were noted in

**Table 1:** Characteristics of patients with adnexal torsion

Patient characteristics	Our study	Percentage (%)
No. of patients (n)	42	42
Age <20 years	9	21.4
21–30 years	25	59.5
31–40 years	7	16.6
>40 years	1	2.3
Nulliparous	18	42.8
Multiparous	24	57.1
Menopause	0	0
Pregnancy	5	11.1
Palpable mass	8	20
Right-sided mass	15	35.7
Left-sided mass	27	64.2
Size <5 cm	6	14.2
5–10 cm	33	78.5
>10 cm	3	7.1

**Table 2:** Associated risk factors with adnexal torsion

Risk factors	Number	Percentage (%)
Hypothyroid	21	50
PCOS	9	21.4

**Table 3:** Clinical symptoms in patients with adnexal torsion

Symptoms	Number	Percentage (%)
Pelvic pain	20	48
Diffuse pain abdomen	27	64.2
Vomiting/nausea	18	42.8
Fever	5	11.9
Vaginal spotting	2	4.7
H/o menorrhagia	15	35.7
Constipation	4	9.5
Abdominal distension	6	14.2
Asymptomatic	3	7.1

18 cases (45%), 5 cases (12.5%) had fever. Three cases (7.5%) were however asymptomatic with the diagnosis of adnexal torsion made intra operatively. Some 30 out of the 42 cases (72%) had associated risk factors like hypothyroidism noted in 21 cases (50%) and PCOS in 9 (21.4%). About 4 out of the 9 cases of PCOS were on treatment with oral contraceptives, Metformin (Table 2).

Ultrasound was the common imaging modality done in all 42 cases (Table 3).<sup>3</sup> Ovarian size of more than 5 cm associated with adnexal torsion was observed in 33 cases (78.5%). Doppler shows the features of torsion like reduced vascularity (arterial and venous flow) and was noted in 18 cases (42.8%), blood flow was absent in 8 cases (19%), and normal vascularity was seen in 7 cases (16.7%).

About 24 cases had ultrasound probe tenderness (57.1%), noted at the side of the enlarged ovary. A computed tomography scan was done for 5 cases, of which 3 were diagnosed as torsion. MRI was used in 6 cases in which ultrasound findings were equivocal (Table 4).

Preservation of healthy ovarian tissue was a major factor considered in surgery as most of our patients were either in pre-menarcheal or reproductive age-group.<sup>4,5</sup> Laparoscopic cystectomy was done successfully in 16 cases (38%), 8 cases (19%) underwent

**Table 4:** Imaging in diagnosis of adnexal torsion

Imaging	Number	Percentage (%)
Ultrasound done	42	42
Torsion diagnosed	36	85.7
CT scan (torsion diagnosed/done)	3/5	60
MRI scan (torsion diagnosed/done)	6/6	100

**Table 5:** Surgical management of cases with adnexal torsion

Procedure	Number	Percentage (%)
Laparoscopic cystectomy	16	38
Laparoscopy converted to laparotomy	10	23.8
Ovarian detorsion	8	19
Spontaneous	2	4.7
Laparoscopic	6	14.2
Ovarian cystectomy + fimbriectomy	3	7.1
Salpingo-oophorectomy + appendectomy	2	4.7
Oophorectomy	3	7.1

**Table 6:** Pathological examination of specimens

Histopathological features	Number	Percentage (%)
Hemorrhagic necrotic cyst	11	26.1
Hydrosalpinx	2	4.7
Benign serous cystadenofibromas	6	14.2
Benign mucinous cyst	2	4.7
Serous borderline tumor with microinvasion	1	2.3
Mature cystic teratoma	6	14.2
Fimbrial cyst	3	7.1
Paraovarian cyst	5	11.9
Gangrenous necrosis	6	14.2

ovarian detorsion, 2 of which were spontaneous detorsion and 6 laparoscopic detorsion (Table 5). And 10 cases (23.8%), however, were converted to laparotomy, 3 cases underwent oophorectomy, and 2 cases were proceeded with appendectomy. Histopathological features associated with torsion were hemorrhagic necrotic cyst in 11 cases (26.1%), gangrenous necrosis seen in 6 cases (14.2%), benign ovarian mass including serous cystadenofibromas in 6 cases (14.2%), 2 cases of mucinous cyst (4.7%), 6 cases of mature cystic teratoma (14.2%) and one case (2.3%) was malignant, serous borderline tumor with microinvasion (Table 6).

## DISCUSSION

Gynecological emergencies as such are an uncommon entity, the most common among them is adnexal torsion. Although torsion of adnexa can occur in any age-group, they were more commonly found in the reproductive age of 20–30 years (59.5%) in the present study. This may be due to the fact that benign ovarian cysts are more common in this age-group.<sup>6</sup> As observed in various similar studies, the most common clinical presentation was abdominal pain, subjectively described as diffuse pain in 64.2% and pain confined to the pelvic region in 48% of the patients (Table 3). Nausea and vomiting were the second most common presentation (42.8%). Menstrual complaints like menorrhagia were noted in 35.7% and intermenstrual bleeding in 4.7%, although non-specific; further studies of adnexal torsion in relation to ovulation

and menstrual cycles are needed. Among the cases presenting with diffuse pain, imaging modality played an important role in differentiating torsion from other surgical emergencies.<sup>7</sup> And 3 cases were asymptomatic (7.1%), presented as simple ovarian cysts on imaging, and diagnosed as adnexal torsion intraoperatively with twisted pedicles.

Torsion over the right side is more as proposed by Ci Huang et al. in 2017, Spinelli C et al., and Kandasami et al. They attributed the presence of sigmoid colon on the left as an inhibitory factor.<sup>6</sup> Interestingly in our study, more than half of the cases (64.2%) were left-sided mass with torsion.

### Pregnancy and Adnexal Torsion

In our study, 5 cases of adnexal torsion were observed in pregnant women, with 4 cases presenting with severe pain in the first trimester and 1 case with multiple admissions since 23 weeks and had to terminate by cesarean section at 35 weeks. Out of the 4 cases which presented in the first trimester, 2 patients required detorsion and two patients required laparoscopic cystectomy at 9 weeks and 11 weeks.

### Imaging in Adnexal Torsion

Imaging studies are important when evaluating a pelvic mass.<sup>8</sup> Ultrasound with Doppler was performed in all the cases, and 36 cases (42%) showed features of torsion; CT scan was done in 5 cases and diagnosis of torsion was done in 3 cases. MRI was performed in 6 cases, of which 3 were antenatal cases and 3 cases had a mass of more than 8 cm. Enlarged ovaries were found in all the cases in our study. Color Doppler was performed with ultrasound which showed the absent vascularity in 8 cases (19%) and 18 cases (42.8%) showed reduced vascularity and twisted pedicles.

Diagnostic laparoscopy being the gold standard for adnexal torsion was performed and its management was aimed at preserving the healthy ovarian tissue (Table 5). Laparoscopy was the common surgery in other studies by Shobha et al. (81.4%),<sup>4</sup> Nurith et al. (59%).<sup>9</sup> In 16 cases (38%), laparoscopic cystectomy was done successfully, 10 cases (23.8%) were however converted into laparotomy in view of large cyst size and suspicion of malignancy. And 3 cases with severe gangrenous ovaries underwent oophorectomy. Fertility-preserving surgeries were 73.4% in our study, similar studies by Sobha et al. showed 54.5%, Ziv et al. 86.4%.<sup>4,10,11</sup> Histopathology was sent for all the specimens (Table 6). In our study,<sup>12,13</sup> however, one case was found to be malignant and the majority (97.6%) of cases were benign, as consistent with other studies, this could be due to the fact that most patients were in the reproductive age-group.<sup>14,15</sup>

### CONCLUSION

Adnexal torsion being one of the rare emergencies, requires an expertise team of gynecologist, radiologist, and anesthetist for early

diagnosis using clinical symptoms, examination, and imaging.<sup>16</sup> As most of the cases are commonly found in the reproductive ages, prompt surgical intervention is required to save the ovarian tissue for "time is tissue."

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