

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

Sneha Mathimaaran<sup>1</sup>, Vasantalakshmi GN<sup>2</sup>

## 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:** This is a clinical study conducted at Sri Ramachandra Medical Centre, Chennai, over a period of 1 year—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. 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 computed tomography (CT) and magnetic resonance imaging (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 emergencies, 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.

*Journal of South Asian Federation of Menopause Societies (2019): 10.5005/jp-journals-10032-1176*

## INTRODUCTION

Adnexal torsion is one of the most important and rare gynecological emergencies. Torsion commonly involves both ovary and fallopian tube. It is usually associated with a cyst or tumor. Size larger than 5 cm carry a greater risk of torsion.<sup>1,2</sup> Clinically, patient presents with sudden onset lower abdominal pain that worsens intermittently over many hours. As the symptoms are nonspecific, it can lead to delay in diagnosis. Imaging like ultrasound, computed tomography (CT), and magnetic resonance imaging (MRI) (especially in pregnant women) help 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 undertaken in the Department of Obstetrics and Gynecology at Sri Ramachandra Medical Centre. About 42 patients with adnexal torsion were observed over a period of 1 year, January 2018–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.

## RESULTS

Out of the 42 cases of adnexal torsion in the age ranged from 10 years to 47 years, most of the patients were noted in the reproductive age group of 20–30 years (59.5%). Five were pregnant (11.1%) and 4 (10%)

<sup>1,2</sup>Department of Obstetrics and Gynecology, Sri Ramachandra Medical Centre, Sri Ramachandra Institute of Higher Education and Research, Chennai, Tamil Nadu, India

**Corresponding Author:** Vasantalakshmi GN, Department of Obstetrics and Gynecology, Sri Ramachandra Medical Centre, Sri Ramachandra Institute of Higher Education and Research, Chennai, Tamil Nadu, India, Phone: +91 9941050162, e-mail: vimalash@live.com

**How to cite this article:** Mathimaaran S, Vasantalakshmi GN. Adnexal Torsion: Clinical Study in a Tertiary Care Center in India. *J South Asian Feder Menopause Soc* 2019;7(2):68–70.

**Source of support:** Nil

**Conflict of interest:** None

were prepubertal (Table 1). No postmenopausal cases of adnexal torsion were identified. Eighteen (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 making a dilemma in diagnosis. Twenty cases (50%) had pain localized to the pelvic region. Eight cases (20%) presented with a palpable pelvic mass. Associated symptoms like nausea and vomiting were noted in 18 cases (45%), and 5 cases (12.5%) had fever. Three cases (7.5%) were however asymptomatic with the diagnosis of adnexal torsion made intraoperatively. Out of the 42 cases, 30 (72%) had associated risk factors like hypothyroidism noted in 21 cases (50%) and PCOS in 9 (21.4%). Out of the nine cases of PCOS, four 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

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

<i>Patient characteristics</i>	<i>Our study</i>	<i>Percentage</i>
No. of patients (n)	42	100
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

<i>Risk factors</i>	<i>Number</i>	<i>Percentage</i>
Hypothyroid	21	50
PCOS	9	21.4

**Table 3:** Imaging in diagnosis of adnexal torsion

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

with adnexal torsion was observed in 33 cases (78.5%). Doppler showing features of torsion like reduced vascularity (arterial and venous flow) were noted in 18 cases (42.8%), absent blood flow in 8 cases (19%), and normal vascularity in 7 cases (16.7%). Twenty-four cases had ultrasound probe tenderness (57.1%) noted at the side of enlarged ovary. CT scan was done for five cases, of which three were diagnosed as torsion. MRI were used in six cases in which ultrasound findings were equivocal.

Preservation of healthy ovarian tissue was major factor considered in surgery as most of our patients were either in premenarchal or reproductive age group.<sup>4,5</sup> Laparoscopic cystectomy was done successfully in 16 cases (38%), and 8 cases (19%) underwent ovarian detorsion, 2 of which were spontaneous detorsion and 6 laparoscopic detorsion (Table 4). Ten cases (23.8%) however were converted to laparotomy. Three 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 cystadenofibroma 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 5).

**Table 4:** Surgical management of cases with adnexal torsion

<i>Procedure</i>	<i>Number</i>	<i>Percentage</i>
Laparoscopic cystectomy	16	38
Laparoscopy converted to laprotomy	10	23.8
Ovarian detorsion	8	19
Spontaneous	2	4.7
Laparoscopic	6	14.2
Ovarian cystectomy + fimbriectomy	3	7.1
Salphingo-oophorectomy + appendectomy	2	4.7
Oophorectomy	3	7.1

**Table 5:** Pathological examination of specimens

<i>Histopathological features</i>	<i>Number</i>	<i>Percentage</i>
Hemorrhagic necrotic cyst	11	26.1
Hydrosalpinx	2	4.7
Benign serous cystadenofibromas	6	14.2
Benign mucinous cyst	2	4.7
Serous boderline tumor with microinvasion	1	2.3
Mature cystic teratoma	6	14.2
Frimbrial cyst	3	7.1
Paraovarian cyst	5	11.9
Gangrenous necrosis	6	14.2

**Table 6:** Clinical symptoms in patients with adnexal torsion

<i>Symptoms</i>	<i>Number</i>	<i>Percentage</i>
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

## DISCUSSION

Gynecological emergencies as such is an uncommon entity, and the most common among one of 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 cyst is 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% (Table 6). Nausea and vomiting were the second most common presentation in 42.8%. Menstrual complaints like menorrhagia were noted in 35.7% and intermenstrual bleeding in 4.7%. Although nonspecific, further studies of adnexal torsion in relation to ovulation and menstrual cycles is needed. Among the cases presenting with diffuse pain, imaging modality played an important role in differentiating torsion

from other surgical emergencies.<sup>7</sup> Three cases were asymptomatic (7.1%), presented as simple ovarian cysts on imaging and diagnosed as adnexal torsion intraoperatively with twisted pedicles. Torsion over right side is more as proposed studies by Huang et al., Spinelli et al., and Kandasami et al. They attributed the presence of sigmoid colon in the left as inhibitory factor.<sup>6</sup> Interestingly, in our study is that more than half of the cases (64.2%) were left-sided mass with torsion.

## PREGNANCY AND ADNEXAL TORSION

Hibbard et al. studied 128 cases including 2 pregnant women with adnexal torsion over 10 years.<sup>8</sup> When the patient is pregnant this can also lead to fetal mortality and potential loss of fertility for the patient. The presentation of ovarian torsion can mimic many other intraabdominal pathologic conditions.<sup>9</sup> In our study, five cases of adnexal torsion were observed in pregnant women with four cases presenting with severe pain in first trimester and one case with multiple admissions since 23 weeks, she underwent cesarean section at 35 weeks. Out of the four cases which presented in first trimester, two patients required detorsion and two laparoscopic cystectomy at around 9–11 weeks.

## IMAGING IN ADNEXAL TORSION

Imaging studies are important when evaluating a pelvic mass.<sup>10</sup> Ultrasound with Doppler was performed in all the cases, and 36 cases (42%) showed features of torsion; CT scan was done in five cases, and diagnosis of torsion was made in three. MRI was performed in six cases, of which three were antenatal cases and three cases with 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 absent of vascularity in 8 cases (19%) and 18 cases (42.8%) with reduced vascularity and twisted pedicles. Diagnostic laparoscopy being the gold standard for adnexal torsion was performed and management aimed at preserving the healthy ovarian tissue (Table 4). Laparoscopy was the common surgery in other studies by Hibbard et al. (81.4%)<sup>8</sup> and Hiller et al. (59%).<sup>11</sup> In 16 cases (38%), laparoscopic cystectomy was done successfully, and 10 cases (23.8%) were however converted into laparotomy in view of large cyst size, suspicion of malignancy. Three cases with severe gangrenous ovaries underwent oophorectomy. Fertility preserving surgeries were 73.4% in our study, similar studies by Nair et al. had 54.5% and Tsafir et al., 86.4%.<sup>12,13</sup> Histopathology was sent for all the specimens (Table 5). In our study, however, one case was found to be malignant and the majority (97.6%) 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 cases are commonly found in the reproductive ages, prompt surgical intervention is required to save the ovarian tissue for "time is tissue."

## REFERENCES

- McWilliams GD, Hill MJ, Dietrich CS, 3rd. Gynecologic emergencies. *Surg Clin North Am* 2008;88(2):265–283. DOI: 10.1016/j.suc.2007.12.007.
- Growdon WB, Laufer MR. Ovarian and fallopian tube. *Uptodate* 2013;4:1–18.
- Wikinson C, Sanderson A. Adnexal torsion - a multi modality imaging review. *Clin Radiol* 2012;67(5):467–483.
- Smorgick N, Pansky M, Feingold M, et al. The clinical characteristics and sonographic findings of maternal ovarian torsion in pregnancy. *Fertil Steril* 2009;92:1983–1987.
- Oelsner G, Shashar D. Adnexal torsion. *Clin Obstet Gynecol* 2006;49(3):459–463. DOI: 10.1097/00003081-200609000-00006.
- Chen M, Chang CD, Yang YS. Torsion of previous normal adnexa. Evaluation of the correlation between the pathological changes and clinical characteristics. *Acta Obstet Gynecol Scand* 2001;80(1):58–61.
- Spinelli C, Buti I, Pucci V, et al. Adnexal torsion in children and adolescents: new trends to conservative surgical approach. *Gynecol Edocrinol* 2013;29(1):54–58. DOI: 10.3109/09513590.2012.705377.
- Hibbard LT. Adnexal torsion. *Am J Obstet Gynecol* 1985;152:456–461.
- Young R, Cork K. Intermittent ovarian torsion in pregnancy: A case report, *Clin Pract Cases Emerg Med* 2007;1(2):108–110.
- Valsky DV, Esh-Broder E, Cohen SM, et al. Added value of the gray-scale whirlpool sign in the diagnosis of adnexal torsion. *Ultrasound Obstet Gynecol* 2010;36(5):630–634. DOI: 10.1002/uog.7732.
- Hiller N, Appelbaum L, Simonovsky N, et al. CT features of adnexal torsion. *Am J Roentgenol* 2007;189(1):124–129. DOI: 10.2214/AJR.06.0073.
- Nair S, Joy S, Nayar J. Five year retrospective case series of adnexal torsion. *J Clin Diagn Res* 2014;8(12):OC09–OC13. DOI: 10.7860/JCDR/2014/9464.5251.
- Tsafir Z, Azem F, Hasson J, et al. Risk factors, symptoms, and treatment of ovarian torsion in children: The twelve year experience of one center. *J Minim Invasive Gynecol* 2012;19(1):29–33. DOI: 10.1016/j.jmig.2011.08.722.
- White M, Stella J. Ovarian torsion: a 10 year study prespective. *Emerg Med Australas* 2005;17(3):231–237.
- Ashwal E, Krissi H, Hiersh L, et al. Presentation, diagnosis of ovarian torsion. *J Pediatr Adolesc Gynecol* 2015;28(7):526–529. DOI: 10.1016/j.jpog.2015.03.010.
- Karaman E, Beger B, Çetin O, et al. Ovarian torsion in normal ovary: a diagnostic challenge. *Med Sci Monit* 2017;23:1312–1316. , ncbi.nlm.nih.gov.