

## Torsion of ovarian cyst presenting as acute abdomen: A prospective study

Shabir Ahmad Mir<sup>1\*</sup>, Hanief Mohamed Dar<sup>2</sup>, Waseem Ahmad Dar<sup>3</sup>, Mumtazdin Wani<sup>4</sup>, Omar Shah<sup>5</sup>

<sup>1, 2, 3, 4</sup> Department of Surgery, Government Medical College, Srinagar, Jammu and Kashmir, India

<sup>5</sup> Department of Surgery, SKIMS Soua, Srinagar, Jammu and Kashmir, India

### Abstract

**Background:** Ovarian torsion present as acute abdomen in emergency department. Torsion of ovarian cyst remains a diagnostic challenge. Torsion of ovarian cyst is a rare condition, hence its diagnosis needs high index of suspicion. Ovarian salvage rate is low in our setup till now.

**Aim:** To define the various factors helpful in limiting the prolonged delay before surgical intervention to improve ovarian salvage rate.

**Material and Methods:** This prospective study was conducted at Shri Maharaja Hari Singh (SMHS) Hospital, an associated hospital of Government Medical College Srinagar, in department of general surgery over a period of 5.5 years from July 2012 to December 2017 (5.5 years). Patients were evaluated in the emergency department by history, clinical examination, baseline blood investigations, ultrasonography/doppler sonography. CT (Computed Tomography) was done only in selected patients. In this study, only those subjects were finally included in whom the diagnosis of ovarian cyst with torsion was confirmed intra-operatively.

**Results:** During the study period of 5.5 years, 31 patients with torsion of ovarian cyst were included after being diagnosed during surgical exploration. Age of the patients ranged from 26 to 57 years with the mean age of  $37.61 \pm 6.96$  (SD=6.96). Salvage of the ovary was done only in 3 patients while in others ovary was sacrificed because of delayed definitive diagnosis. **Conclusion:** Torsion of ovarian cyst remains a diagnostic challenge. Torsion of ovarian cyst is a rare condition; hence its diagnosis needs high index of suspicion. Clinical features, history of ovarian cyst, and ultrasonography/Doppler ultrasonography should all be used to help in early diagnosis of this condition. Early diagnosis is needed to improve the ovarian salvage rate. Surgery provides definitive diagnosis and management of torsion ovarian cyst, hence unnecessary delay should be avoided.

**Keywords:** Torsion, ovary, cyst, doppler USG, surgery

### 1. Introduction

Ovarian Torsion occurs when there is total or partial rotation of adnexa around its vascular axis or pedicle.

Ovarian torsion is the fifth most common gynaecologic surgical emergency; with prevalence rate of 2.7% to 3% [1-2]. Torsion occurs for two main reasons: hyper mobility of the ovary and adnexal lesion [3].

The predisposing factors are long pedicle, large cyst, and free mobility. Ovarian torsion present as acute abdomen in emergency department. It most commonly occurs in women of reproductive age (including during pregnancy) however, pre-pubertal girls and postmenopausal women can also be affected. Delay or misdiagnosis can result in the loss of the affected ovary and subsequent reduced reproductive capacity. However, diagnosis can be difficult, particularly in intermittent torsion and the differential diagnosis can include several other gynaecological and surgical emergencies [4]. Due to torsion these sequels occur to the ovary starting from venous and lymphatic blockade, venous congestion, haemorrhage, necrosis and gangrene. Ovarian torsion (also termed as adnexal torsion) refers to partial or complete rotation of the ovary and a portion of fallopian tube along its supplying vascular pedicle [5]. It occurs commonly in reproductive age group, more on the right side (60%) and often presents with acute lower abdominal pain lasting for few hours and up to 24 h, accounting for 2.7% of acute gynaecological conditions [6, 7]. It is an emergency

condition requiring immediate surgery to salvage the ovary. Mostly patients present with acute lower abdominal pain with severe vomiting, fever, and extreme abdominal tenderness localized to the site of affected ovary. The intensity of pain increases with time may radiate from lower abdomen to back and thigh. However, in some cases, it may have nonspecific symptoms leading to delay in diagnosis and dilemma for the gynecologist. Prevalence of ovarian torsion in postmenopausal women is 17% [8]. Early diagnosis and surgery are essential to protect ovarian and tubal function and prevent severe morbidity [9, 10].

### 2. Material and Methods

This prospective study was conducted in the department of general surgery at Sri Maharaja Hari Singh (SMHS) Hospital, an associated hospital of Government Medical College Srinagar, over a period of 5.5 years from July 2012 to December 2017 (5.5 years). Patients were evaluated in the emergency department by history, clinical examination, baseline blood investigations, and ultrasonography/Doppler Sonography. CT (Computed Tomography) was done only in selected patients. In this study, only those subjects were finally included in whom the diagnosis of ovarian cyst with torsion was confirmed intra-operatively.

### 3. Results

During the study period of 5.5 years, 31 patients with torsion of ovarian cyst were included after being diagnosed during surgical exploration. Age of the patients ranged from 26 to 57 years (table1) with the mean age of  $37.61 \pm 6.96$  (SD=6.96). Majority of the patients belonged to the reproductive age group. Mostly the females were married (table 2) and parous. USG/Doppler findings were torsion of ovarian cysts (17 patients). Average time from the onset of symptoms to presentation was 3.1 days ranging from 0 to 20 days. Most common symptom was pain. In all cases of the torsion ovarian cysts, size was more than 5cms.

**Table 1:** Age distribution

Age Group(years)	No of patients	%
20-29	2	6.45
30-39	18	58
40-49	9	29
≥50	2	6.45
Total	31	

**Table 2:** Marital status

Status	No. of patients	%
Married	28	90.32
Unmarried	3	9.6

Average time from the onset of symptoms (table 3) to presentation was 3.1 days ranging from 0 to 20 days. Most common symptom was pain, being sudden in onset in majority of them. Average time from presentation to definitive diagnosis was 21 hours ranging from 2 hours to 4 days. Clinical suspicion of torsion of ovarian cyst was present in 6 patients.

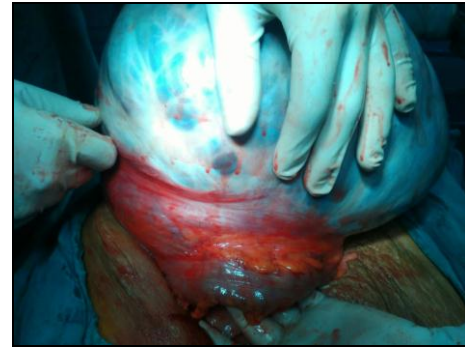
**Table 3:** Clinical Features

Symptoms	No. of patients	%
Pain	31	100
Nausea	19	61.3
Vomiting	16	51.6
Palpable abdominal mass	21	67.7
Increased Leukocyte count	5	16.12
Fever	4	13

USG/Doppler USG (table 4) findings were torsion of ovarian cysts (17 patients i.e., 54.8%), ovarian cyst without comment on torsion (4 patients), free fluid (1 patient), nonovarian pathology (4 patients), and more than one of these findings (5 patients). Operative findings are suggestive of torsion (Figure1 to 2) in all 31 patients suffering from this condition.



**Fig 1:** Torted ovarian cyst.



**Fig 2:** Twist in torted ovarian cyst.

Salvage of the ovary was done only in 3 patients while in others ovary was sacrificed because of delayed definitive diagnosis.

**Table 4:** Diagnosing modality

Modality	Applied in number of patients	Diagnosis as torsion of ovarian cyst
History and clinical examination	31	6 (19.3%)
Sonography/Doppler ultrasonography	31	17(54.8%)
CT Scan	3	3
Surgical visualisation	31	31(100%)

Majority of patients were having 2-4 turns (table 5) in the torsion of their ovarian cyst.

**Table 5:** No. of turns detected on torsion

No. of turns	No. of patients	%
1	5	16.1
2-4	23	74.19
>5	3	9.6

Right sided lesions were more common than left sided (table 6).

**Table 6:** Laterality

Laterality	No. of patients	%
Right	19	61.2
Left	12	38.7

In all cases of the torsion ovarian cysts, the size was more than 5cms (table 7). Most of the ovarian cysts with torsion were having a size of 10-14cms.

**Table 7:** Size of cyst

Centimeters	Number of patients	%
5-9	3	9.7
10-14	14	45.2
15-19	11	35.5
>20	3	9.7

### 4. Discussion

Ovarian torsion is the fifth most common gynaecologic surgical emergency; with prevalence rate of 2.7% to 3% [1-2]. In the present study, age of the patients ranged from 26 to 57 years, with the mean age of  $37.61 \pm 6.96$  (SD=6.96). Majority of our patients belonged to the reproductive age group. Another study also shares the similar view that it is usually seen in women who are in the reproductive age group [11]. Para ovarian cysts represent approximately 10% of all adnexal masses [12]. Torsion of para-ovarian cysts is 3

times more common in pregnant women, probably due to the rapid growth spurt. Most common symptom was pain, being sudden in onset in majority of them. Average time from presentation to definitive diagnosis was 21 hours ranging from 2 hours to 4 days. Clinical suspicion of torsion of ovarian cyst was present in 6 patients. Physicians need to maintain a high index of suspicion for this uncommon and often difficult to diagnose cause of abdominal pain [13]. Isolated torsion of a fallopian tube or a para-ovarian cyst is rare, but it has been reported in literature and therefore, making a diagnosis is often difficult and delayed [14]. USG/Doppler findings were torsion of ovarian cysts (17 patients), ovarian cyst without comment on torsion (7 patients), free fluid (1 patient), nonovarian pathology (4 patients), and more than one of the above findings (5 patients). Operative findings were suggestive of torsion in all 31 patients suffering from this condition. Ultrasound diagnosis of ovarian torsion is controversial despite advances in technology and improvement in operator skills in recent years. The use of colour and spectral Doppler ultrasound in the diagnosis of ovarian torsion has been described [15]. Doppler studies can demonstrate the presence of blood flow, while spectral Doppler can enable the differentiation between venous and arterial flow in the ovary [15]. Based on the premise that venous flow will be compromised before arterial flow in ovarian torsion, the absence of venous or arterial and venous flow in an enlarged or cystic ovary on colour and spectral Doppler studies is highly predictive of ovarian torsion [15, 16]. The converse does not apply that the presence of arterial or venous flow rules out the diagnosis of ovarian torsion as intermittent torsion must be considered [17].

Ovarian cysts remain the most common underlying pathology in ovarian torsion. Although malignant tumours have been described they remain a rare underlying cause [18-21].

Salvage of the ovary was done only in 3 (9.6%) patients while in others ovary was sacrificed because of delayed definitive diagnosis. Salvage rates in other case series reviews vary from 7 to 65% [18, 19, 22-25].

## 5. Conclusion

Torsion of ovarian cyst remains a diagnostic challenge. Torsion of ovarian cyst is a rare condition, hence its diagnosis needs high index of suspicion. Clinical features, history of ovarian cyst, and ultrasonography /doppler ultrasonography should all be used to help in early diagnosis of this condition. Early diagnosis is needed to improve the ovarian salvage rate. Surgery provides definitive diagnosis and management of torsion ovarian cyst, hence unnecessary delay should be avoided. In our study ovarian salvage rate was low.

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