

# Ovarian torsion- the pitfalls in diagnosis and review of current trends in management

## Abstract

Adnexal torsion refers to the twisting of the ovary or tube or both along the axis of their vascular pedicle. As the degree of vascular occlusion progresses, unrelieved torsion is followed by haemorrhagic infarction and delay in diagnosis can result in loss of ovarian function. Until recently, salpingo-ohorectomy was considered the standard treatment option for treating an ischemic looking adnexa but now, published studies contradict this radical treatment and stress on preserving the ovaries despite their grossly necrotic appearance. The present case discloses the importance of clinical suspicion of ovarian torsion even in the absence of radiological findings. Absence of intra-ovarian blood flow is rather more confirming than the lack of flow in the vascular pedicle. Follow up of the reported case revealed normal blood supply and follicular activity in the remnant ovary which is in coherence with the recent literature supporting de-torsion and removal of the pathology only, despite of a ischemic and hemorrhagic adnexa.

**Keywords:** Ovarian Torsion, Diagnosis, Ipsilateral, Prepubertal, Post menopausal

Volume 6 Issue 4 - 2017

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**Received:** February 21, 2017 | **Published:** April 03, 2017

## Introduction

Adnexal torsion refers to the twisting of the ovary or ipsilateral fallopian tube or both, along the axis of their vascular pedicle. This presents as a gynecological emergency accounting for 2.7 %<sup>1</sup> of casualty admissions, mostly affecting reproductive age women. Although prepubertal girls, young women and post menopausal females can also be affected but the diagnosis in such cases becomes even more challenging, especially in emergency settings. As the degree of vascular occlusion progresses, unrelieved torsion is followed by haemorrhagic infarction and delay in diagnosis can result in loss of ovarian function. Patients usually present with vague abdominal symptoms and ovarian torsion is far less common as compared to PID, functional ovarian cysts, endometriosis and other surgical emergencies, accounting for such a clinical picture. A recent scoring system suggests that presence of unilateral lumbar or abdominal pain lasting for > 8 hours, associated vomiting, absence of leucorrhoea or metrorrhagia and presence of an ovarian cyst of > 5cms size on ultrasound are strongly associated with ovarian torsion.<sup>2</sup> Among the imaging modalities, ultrasound is considered to be the most reliable method but shows highly variable appearance for a torsed adnexa. Most frequent findings are that of an enlarged, edematous ovary with peripherally arranged follicles. Ovarian perfusion may or may not be compromised and presence of perfusion within the ovary does not exclude the diagnosis, hence, misleading the clinician in most of the cases.<sup>3</sup>

Until recently, salpingo-ohorectomy was considered the standard treatment option for treating an ischemic looking adnexa<sup>4</sup> but now, published studies contradict this radical treatment and stress on preserving the ovaries despite their grossly necrotic appearance and favour detorsion whenever, future fertility is desired.<sup>5-7</sup> With the emerging acceptance of laparoscopy in treating all gynecological emergencies, laparoscopic detorsion and cystectomy whenever indicated, must be adopted as the standard approach of treatment. In this article, we present a case of ovarian torsion in a young girl with vague symptoms and no evidence of torsion on ultrasound, operated solely, on the basis of strong clinical suspicion. Results of conservative surgery and related review of literature is hereby discussed.

## Case presentation

An 18 year old, unmarried girl presented to the emergency department with chief complaints of dull aching pain in the right iliac fossa since one day. The pain was waxing and waning in nature associated with a few episodes of acute exacerbations in the last 24 hours. Patient also had 2-3 episodes of non-bilious vomiting and constipation. Past history revealed that she was a known case of polycystic ovarian disease and had a similar episode of acute abdomen 5 months back which was conservatively managed and she was advised a 3 month course of oral contraceptive pill. Previous ultrasounds showed a persisting follicular cyst of around 5 cm in the right ovary along with bilaterally enlarged ovaries with peripherally arranged multiple small follicles. Patient had oligomenorrhoeic cycles and rest of the medical and surgical history was not significant. There was no history of fever, loss of appetite, vaginal discharge or urinary symptoms. Abdominal examination did not reveal any mass in the right iliac fossa but rebound tenderness was present. Blood investigations were sent along with CA-125 which were all found to be normal. Transabdominal scan revealed an enlarged right ovary with a clear cyst of 71x57x65mm along with a thick wall. Left ovary was also enlarged with peripherally arranged follicles and a simple cyst of 28mm. Colour Doppler revealed normal blood flow in both the ovarian vascular pedicles. Since the patient was a known case of PCOD, presence of enlarged ovaries with a persistent follicular cyst and normal blood flow, only made the diagnosis of torsion more challenging. But, considering the recurrent episodes of acute exacerbation, vomiting and persistent dull aching pain, authors decided to go for a diagnostic laparoscopic evaluation in order to rule out ovarian torsion.

Intraoperatively, right adnexa was twisted for three and half turns on its pedicle and appeared bluish black, edematous and congested suggestive of haemorrhagic necrosis. Following detorsion, right tube immediately gained colour and the right ovary also began to regain its colour slowly in the periphery. On attempting cystectomy, cyst ruptured and drained hemorrhagic fluid, the surrounding ovarian tissue was highly edematous and friable. Cystectomy was done with removal of the surrounding blackish and friable tissue. Rest of the

ovary near the hilum was preserved despite, it appearing bluish-black and edematous. Left ovary was enlarged with multiple small follicles and a 3x2 cm haemorrhagic cyst was found which was also excised. Post operative period was uneventful and the patient was discharged the next day with a 5 day course of antibiotics and analgesics. A follow up scan was done after 6 weeks which revealed remnant ovarian tissue on the right side along with good follicular activity and normal blood flow (Figures 1-3).



**Figure 1** laparoscopic view of the necrotic and hemorrhagic ovary following torsion.



**Figure 2** Ultrasonography revealed a simple ovarian cyst of size 6 X 6 cm with intact blood supply in the pedicle.



**Figure 3** Follow up scan revealed follicular activity in remnant ovary.

## Discussion

Follicular cyst of the ovary is a common finding in young girls and reproductive age women with abdominal pain. These are usually managed medically whenever symptomatic and rarely require surgical

excision. Surgery is indicated only when these cysts are large and lead to ovarian torsion. Ovarian torsion is diagnosed mainly on the basis of strong clinical suspicion as the ultrasonography findings are highly variable and sometimes misleading. The affected ovary may appear as a mixed echogenic mass or appear enlarged. The twisted pedicle may appear as a “whirlpool” on grey scale or color Doppler.<sup>8</sup> Flow within the ovarian vessels may be preserved until late in the clinical progression of the disease and presence of normal Doppler studies does not exclude the diagnosis of torsion. Absence of intraovarian blood flow is rather more confirming than the lack of flow in the vascular pedicle. In a study of 35 patients with adnexal torsion, correct diagnosis by clinical and sonographic findings could be made in only 26% cases and with CT scan in only 34% cases. Other studies have also shown that the sensitivity of USG in diagnosing torsion ranges from 40-75%.<sup>9,10</sup> Hence, whenever torsion is suspected clinically and the ultrasound can't establish a confirmatory diagnosis, laparoscopy is recommended a diagnostic and therapeutic tool.

Until recently, detorsion of the twisted adnexa was said to be associated with the risk of thromboembolism and hence, salpingoophorectomy is considered the standard treatment for ischaemic and necrotic looking adnexa. Upcoming literature however does not support this radical treatment especially in young girls in whom maintenance of ovarian function and future fertility is of utmost importance. Adnexal sparing approach must be applied instead of the traditional salpingoophorectomy in young women with twisted ischaemic adnexa. Detorsion and ovarian cystectomy for benign masses is now increasingly being accepted with good postoperative recovery, no risk of thromboembolism and restoration of ovarian function.<sup>11</sup> Traditionally, necrotic appearance of the ovary was considered synonymous with oophorectomy however, the current understanding is that a complete arterial obstruction is uncommon and some blood supply can still be obtained from the ovarian and uterine arteries. The ischaemic and haemorrhagic appearance is due to venous and lymphatic stasis rather than gangrene formation. Various studies have shown that there is no risk of thromboembolism following detorsion of the ovary.<sup>5,6</sup> A large study of 214 cases of adnexal torsion revealed that conservative management with detorsion had no serious post operative complications,<sup>12</sup> a similar study of 102 patients of adnexal torsion treated with detorsion, cyst aspiration or excision regardless of the ischaemic appearance of the ovary also revealed good postoperative recovery with no serious outcomes. Follicles were demonstrated in the postoperative follow up scans in 92.3% patients, rest of the patients did not reveal follicular activity because of irreversible damage to the ovary, however, leaving the non viable and necrotic ovary in situ did not cause any harm to the patient. Since, it is very difficult to judge which ovary is damaged beyond recovery, one can consider frozen section analysis or leave the necrotic ovary inside without adding any danger to patient's outcome.<sup>4</sup> Ovarian preservation following detorsion is associated with restoration of normal shape, size, blood flow as compared to the contralateral ovary.<sup>4,12,13</sup>

In the presented case also, part of the necrotic looking ovary was left *in situ* with removal of the cyst and surrounding friable ovarian tissue, follow up scan after 6 weeks revealed good blood flow in the remnant ovary along with follicular activity. To conclude, authors stress on the role of strong clinical suspicion of ovarian torsion despite normal Doppler findings especially, in young girls to prevent irreversible damage to the ovary. Clinical appearance of the torsead adnexa does not correlate well with the likelihood of residual ovarian function and recovery and hence every possible effort should be made to reestablish the blood supply by detorsion and doing an adnexa

sparing surgery. Laparoscopic approach with its inherent advantages of shorter hospital stay and quick post operative recovery must now be accepted as the cornerstone of managing such emergencies and conservative therapy should be offered in order to safeguard future fertility in young girls presenting with ovarian torsion.

## Acknowledgments

None.

## Conflicts of interest

None.

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