

SHORT COMMUNICATION

Open Access



Histological findings of patients with adnexal torsion who underwent surgical treatment: short reminder

Ritva Nissi*, Markku Santala and Anne Talvensaari-Mattila

Abstract

Background: Ovarian torsion is a rare emergency condition in women. Early diagnosis is necessary to preserve fertility.

Case: Our study evaluated 40 patients, who underwent laparoscopic surgery. The aims of this retrospective study were to emphasize the importance of early diagnosis in ovarian torsion, evaluate the process of patient treatment, and investigate the number of patients treated by minimally invasive surgery. In this article, we present the outcomes from the patient data.

Results: Thirty-two percent (13/40) of patients were first evaluated by the surgeon to investigate right-sided lower abdominal pain. These patients were first misdiagnosed with appendicitis or urinary tract stones. Among these patients, necrotic ovary tissue was more common, most likely due to a longer delay seeking medical attention. A total of 77% (31/40) of patients underwent laparoscopic surgery on the same date that they were admitted to the hospital. No severe complications occurred in this group of patients. All histological findings were benign. In 52% (21/40) of patients, the adnexa was removed, whereas in 37% (15/40) of patients the torsed adnexa was treated by detorsion. A total of 27% (11/40) of patients had no diagnosis before undergoing surgery.

Conclusions: Rapid and accurate diagnosis is essential to preserve ovarian function.

Keywords: Laparoscopic surgery, ovarian torsion

Background

Ovarian torsion is a rare emergency condition in women. Early diagnosis is necessary to preserve the function of the ovaries and fallopian tubes [1]. A torsed adnexa often involves both the ovary and fallopian tubes. Torsed ovary appears dark-purple or black in color with hemorrhage. Animal studies indicate that there may not be total occlusion of the artery in ovarian torsion, even with venous and lymphatic congestion [2].

According to the ACOG committee [3], adnexal torsion is the fifth most common gynecological emergency. However, torsion of malignant ovarian masses is rare.

The most common symptom is sudden abdominal pain, which is associated with nausea and vomiting. There are no reliable laboratory tests or clinical imaging criteria to confirm the preoperative diagnosis of adnexal torsion, thus requiring the diagnosis to be confirmed surgically. Traditionally, the torsed adnexa was removed to prevent thromboembolic complications, but reports indicate only 0.2% of patients experience thromboembolic events after conservative surgery [1]. The surgery should be minimally invasive, aiming detorsion and the preservation of adnexal tissue. Torsed ovaries should not be removed unless the severely necrotic ovarian tissue falls apart. In contrast to surgeries in adult patients, there are technical adaptations when performing gynecologic surgery in adolescents. The goal of this study is to highlight the need for a fast diagnosis of ovarian torsion. The patients

* Correspondence: rikanissi@gmail.com

Department of Obstetrics and Gynecology, Oulu University Hospital, PO Box 5000, FI-90014 Oulu, Finland

Table 1 Patients' characteristics

Surgical treatment	Adnexa removal 52.5% (n = 21)	Detorsion of ovary 37.5% (n = 15)	Detorsion of ovary 37.5% (n = 15)	Resection of ovary 2.5% (n = 1)	
Histology	Simple cyst 32.5% (n = 13)	Mucinous or serous cyst 25% (n = 10)	Teratoma 7.5% (n = 3)	Paratubal cyst 7.5% (n = 3)	Necrosis 27.5% (n = 11)
Patients age	Prepubertal (< 15) 5% (n = 2)	16–55 years 87.5% (n = 35)	55–71 years 7.5% (n = 3)		

should be identified quickly and undergo minimally invasive surgery.

Case

We present a retrospective analysis of 40 patients who underwent laparoscopic surgery between January 2010 and October 2014. The medical records were collected from the database of Oulu University Medical Hospital, and the patients' clinical characteristics were analyzed (Table 1). Statistical analysis was performed using SPSS (Statistical Product and Service Solutions).

Results

The median age of the patients was 33 years (range 13–71 years), and the median BMI was 24 (range 19–39). Seven of the patients (17.5%) were pregnant during the operation. Thirty-one patients (77.5%) had no previous abdominal operations. As mentioned before, 77.5% (31/40) of the patients underwent surgery on the date of admission, whereas 10% (4/40) underwent surgery on the following day. The rest of the patients (12.5%, 5/40) underwent surgery within the next 10 days. The histological analysis revealed necrosis in 32.5% of patients (13/40). All patients who underwent surgery after the 2nd hospitalization day had necrotic tissue. All histological diagnoses were benign. In 55% of patients (22/40), the torsion was on the right side. All patients first admitted to the hospital instead of undergoing surgery had right-sided ovarian torsion. Patients with right-sided ovarian torsion more often had necrotic tissue (10/13, 77%), possibly due to the prolonged delay in diagnosis. A total of 37.5% of patients (15/40) were only treated by detorsion of the ovary. These patients underwent surgery on the same day of hospital admission. A total of 52.5% (21/40) of the patients underwent removal of both the adnexa and fallopian tube.

Discussion

Follicular cysts of the ovary are a common finding in the reproductive age group, and they are usually managed without surgery: pelvic ultrasonography is a safe and effective tool for providing information. The diagnosis of ovarian torsion is clinical, as the ultrasonography findings are mainly variable and sometimes misleading. Whenever torsion is suspected clinically, laparoscopy is recommended. Detorsion of the twisted adnexa is rarely associated to the risk of thromboembolism and hence

salpingo-oophorectomy is not the standard treatment for ischemic and necrotic looking adnexa. Adnexal-sparing approach should be applied especially in a young woman with twisted ischemic adnexa in order to preserve future fertility and normal ovarian function. Detorsion and ovarian cystectomy for benign masses is associated with short postoperative recovery, very small risk of thromboembolism, and good recovery of ovarian function. The twisted ischemic adnexa is very edematous and liable to be traumatized. Therefore, detorsion should be performed with care, and preferably with blunt instruments, if laparoscopy is used.

Hibbard et al. [4] published a 10-year review of 128 patients with adnexal torsion. They concluded that 2.7% of emergency surgery cases involved ovarian torsion [4]. In particular, right-sided cases were first misdiagnosed as appendicitis [4]. A large study of 214 cases [5] of adnexal torsion revealed that that conservative management with detorsion had no serious post-operative complications. A similar study [6] of 102 patients of adnexal torsion treated conservatively had similar results. In postoperative follow-up scans, follicles were demonstrated in 92.3% of patients.

A differential diagnosis list for each symptom may help to increase the number of patients treated with minimally invasive surgery. Torsion of the adnexa should not be treated by adnexectomy to avoid emboli detaching from the thrombosed ovarian veins. Most cases of ovarian torsion occur in the reproductive age group and are typically benign. We encourage a focus on rapid and accurate early diagnosis and more detailed standards for choosing conservative surgery instead of radical surgery. Laparoscopic and conservative management of torsed adnexal cyst is safe and reliable method to preserve ovarian endocrine and reproductive function.

Authors' contributions

ATM designed the study, MS conducted the research, and RN analyzed the data and wrote the article. All authors read and approved the final manuscript.

Funding

None

Availability of data and materials

All data generated in the present study are available from the authors upon request.

Ethics approval and consent to participate

The Ethics Committee of Northern Ostrobothnia Hospital approved this study, and written informed consent was obtained from all patients. Samples were taken in accordance with the Helsinki Declaration.

Consent for publication

Not applicable

Competing interests

The authors declare no competing interests.

Received: 4 April 2020 Accepted: 11 August 2020

Published online: 26 August 2020

References

1. Bar-On S, Mashiach R, Stockheim D, Soriano D, Goldenberg M, Schiff E (2010) Emergency laparoscopy for suspected ovarian torsion: are we to hasty to operate? *Fertil Steril* 93:2012–2015. <https://doi.org/10.1016/j.fertnstert.2008.12.022>
2. Taskin O, Birincioglu M, Aydin A, Buhur A, Burak F, Yilmaz I (1998) The effects of twisted ischaemic adnexa managed by detorsion on ovarian viability and histology: an ischaemia-reperfusion rodent model. *Hum Reprod* 3:2823–2827. <https://doi.org/10.1093/humrep/13.10.2823>
3. ACOG Committee Opinion (2019) Adnexal torsion in adolescents. *Obstet Gynecol* 134:e56–e63435. <https://doi.org/10.1097/AOG.0000000000003376>
4. Hibbard LT (1985) Adnexal torsion. *Am J Obstet Gynecol*. 152:456-461. doi: [10.1016/S0002-9378\(85\)80157-5](https://doi.org/10.1016/S0002-9378(85)80157-5)
5. Aziz D, Davis V, Allen L, Langer JC (2004) Ovarian torsion in children: is oophorectomy necessary? *J Pediatr Surg* 39:750–753. <https://doi.org/10.1016/j.jpedsurg.2004.01.034>
6. Oelsner G, Cohen SO, Soriano D, Admon D, Mashiach S, Carp H (2003) Minimal surgery for the twisted ischaemic adnexa can preserve ovarian function. *Hum Reprod* 18:2599–2602 <https://doi.org/10.1093/humrep/deg498>

Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Submit your manuscript to a SpringerOpen[®] journal and benefit from:

- Convenient online submission
- Rigorous peer review
- Open access: articles freely available online
- High visibility within the field
- Retaining the copyright to your article

Submit your next manuscript at ► [springeropen.com](https://www.springeropen.com)
