Isolated tubal torsion following bilateral tubal ligation: A case report and literature review

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ABSTRACT

A 44-year-old woman with a history of bilateral tubal ligation presented with severe abdominal pain and nausea, and despite unremarkable imaging was subsequently found to have a torsed, necrotic fallopian tube without associated ovarian pathology. Isolated torsion of the fallopian tube without ovarian involvement is rare. A systematic literature review found 8 case reports of isolated tubal torsion in patients with a history of tubal ligation. This paper describes one presentation of this rare pathology and identifies findings common among the 8 case reports identified in the literature.

1. Introduction

Isolated torsion of the fallopian tube without ovarian abnormality is rare, with an incidence of approximately 1 in 1,500,000 [1] since the first documented case in 1890 [2,3]. As of 1985, only 14 cases of tubal torsion following tubal ligation had been documented [4].

2. Case Presentation

A 44-year-old premenopausal woman, G5P5005, who had had bilateral tubal ligation 12 years previously, presented to the emergency room for 10/10 sharp nonradiating right lower quadrant abdominal pain and nausea, worsening for 24 h. The pain was refractory to acetaminophen/hydrocodone tablets and to ketorolac. Multiple high doses of intravenous hydromorphone improved her pain to 2/10. The obstetrics and gynecology department was consulted due to concern for ovarian torsion, a concern that was raised by the patient herself.

The patient reported one prior instance of similar pain several years before presentation, long after her tubal ligation. At that time, she reported receiving a workup, including an ultrasound and a prescription for unspecified pills that improved her symptoms, but she denied receiving any surgical treatment or known definite diagnosis.

2.1. Diagnostic Assessment

The patient's examination was notable for mildly elevated blood pressure, to 158/91 mmHg, and a nonsurgical abdomen with exquisite focal tenderness to palpation in the right lower quadrant. Her speculum and bimanual examination were benign, without cervical motion tenderness. Laboratory workup including CBC, BMP, LFTs, UA, COVID-19 PCR antigen testing, and beta-hcg were notable only for lymphocytic leukocytosis to WBC of 13.1. A pelvic ultrasound and computerized tomography (CT) of the abdomen and pelvis were unremarkable, showing no ovarian enlargement, intact doppler flow to the right (affected) ovary, no adnexal masses, and no evidence of any other acute pelvic or abdominal pathology (Figs. 1 and 2).

2.2. Follow-Up and Outcomes

Via shared decision making, the patient was admitted for diagnostic laparoscopy, which revealed a 1 cm dusky red mass apparently attached to the untethered portion of the right fallopian tube (Fig. 3). Both tubes including this mass were surgically removed. The operation was complicated by a small uterine perforation with scant intra-abdominal bleeding that was successfully treated with topical coagulant foam. The patient recovered well and was discharged home on post-operative day 0 with great improvement in her symptoms. Pathology subsequently revealed the mass to be a torsed and partially necrosed section of fallopian tube (Fig. 4).

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3. Discussion

We searched the NIH database for the terms “ovarian torsion tubal ligation”, “fallopian tube torsion”, “fallopian tube torsion after tubal ligation”, and “isolated fallopian tube torsion” as of 2/19/22 and an additional search of “ovarian torsion after tubal ligation” as of 3/15/22. We then reviewed articles from the sources cited by relevant case reports. During this literature review, all case reports of patients under the age of 18 and all case reports of torsion in pregnancy were assumed not to have occurred in post-tubal ligation patients and excluded. These searches resulted in 110, 1287, 127, 346, and 4 results respectively. However, among these articles, only four case reports were found of tubal and/or adnexal torsion in patients following tubal ligation [2,4–6]. Four other case reports were found in the sources cited by one of these four reports [3,7–9].

Presenting signs of tubal torsion usually included sudden onset or colicky abdominal pain, typically in the left or right lower quadrant, and could also include a palpable adnexal mass, cervical motion tenderness, nausea and vomiting, fever, leukocytosis, and dizziness or shock (Fig. 5) [2–9]. In several cases, repeat presentations with identical symptoms occurred prior to definitive diagnosis [3,6,9]. For this reason, clinicians should have a low threshold to suspect tubal torsion in female patients presenting with abdominal pain and unexplainable findings without any clear source.

The causes of isolated tubal torsion remain unclear, but the fact that this pathology can occur in post-tubal ligation patients at all has interesting implications for its etiology. A 1933 review of tubal torsion cases cited prior hydrosalpinx or tubo-ovarian abscess as possible risk factors associated with subsequent torsion [6]. Bharathi and Gowri list several potential causes of tubal torsion, including venous congestion, arterial compromise leading to hematosalpinx, and even activity of the adjacent sigmoid colon, as most of their cited cases of isolated tubal torsion had occurred on the right [2]. Some authors have theorized that tubal ligation surgery itself or different surgical techniques may predispose patients to torsion: “division of the tube deprives the lateral part of any stability which it might obtain from continuity with the medial part, thus facilitating torsion” [5]. Other authors theorize that “our patient’s problem resulted from cutting too deeply into the mesosalpinx, thereby allowing too much rotation and movement of the distal portion of the oviduct” [9]. However, all documented cases found during our literature review occurred multiple years following tubal ligation, save for the case documented by Poma and Barber, which occurred only two days following surgery [6]. It therefore seems unlikely that the surgery itself is a risk factor. The mechanical risk factors traditionally believed to predispose patients to ovarian torsion (e.g. ovarian masses or cysts causing asymmetric weighting of the ovaries) also do not apply to post-tubal ligation patients.

Traditionally, ultrasound has been the most effective tool for detecting ovarian and adnexal torsion in emergency department settings. Four cases documented the use of ultrasound to aid in diagnosis of tubal torsion: one noted free pelvic fluid on ultrasound, while all four cases detected cystic adnexal masses [2,4–6]. One study cites the sensitivity of ultrasound for adnexal torsion as 84.4%, with a PPV of 81.4% [10]. However, as the ovary is not involved in isolated or intermittent tubal torsion and preserves its arterial and venous flow when the
tube is torsed, ultrasound imaging may be less effective in detecting isolated tubal pathology. Classic diagnostic findings of ovarian torsion, specifically, enlargement of the ovary and impaired doppler flow, do not apply. Including our case report, we found five cases of post-bilateral tubal ligation spontaneous tubal torsion in the absence of an enlarged ovary, adnexal mass, or any other significant ultrasound findings [3,5,8,9]. This suggests that imaging may be less helpful in assessing for torsion in post-bilateral tubal ligation patients, and that cases may go underdiagnosed if clinicians assume an ultrasound scan is sufficient to “rule out” torsion. Definitive diagnosis of isolated tubal torsion, as in ovarian torsion, ultimately requires laparoscopy.

Contributors

Amelia L. Gurley was responsible for the creation, editing, and final approval of the manuscript, and was primarily responsible for direct patient care.

Serena Choi was responsible for the creation, editing, and final approval of the manuscript.

Salman Okour was responsible for the creation, editing, and final approval of the manuscript, and was primarily responsible for direct patient care.

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Patient consent

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Provenance and peer review

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Conflict of interest statement

The authors declare that they have no conflict of interest regarding the publication of this case report.

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