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Case Report

Case Report of Concomitant Presentation of Ovarian Torsion and Acute Appendicitis in a Patient Post-Hysterectomy

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Abstract: Background: Diagnoses for right lower quadrant pain in women must include both gynecologic and non-gynecologic causes. In this differential, ovarian torsion and appendicitis are both serious etiologies that can require swift surgical intervention. Ovarian torsion is the least common of the two, accounting for 2.7% of emergency surgery cases according to a 10-year review, while the lifetime risk of appendectomy for females is 23.1%. As many as 2–3% of patients undergoing surgery for acute appendicitis are instead found to have ovarian torsion. However, there are currently only rare case reports of these two conditions co-presenting in the same patient simultaneously, with little discussion on how to be better prepared before entering the operating room. **Objective:** The purpose of this study is to describe this rare co-presentation to better inform providers of this potential complication and to improve future patient care outcomes. **Method:** A case report of a patient seen at Tripler Army Medical Center, Honolulu, Hawaii, was assessed. **Conclusions:** This case shows the rare possibility of dual acute etiologies of abdominal pain warranting urgent surgical management. This case also highlights the need for a multidisciplinary approach in the pre-procedural evaluation of possible competing etiologies of acute abdominal pain that warrant surgical management. Additionally, this case brings up interesting ethical questions regarding informed consent, autonomy, and the obligation of intraoperatively consulted surgeons to provide definitive and indicated surgical care in the absence of prior discussion of possible pathology.

Keywords: acute appendicitis; ovarian torsion; right lower quadrant pain; emergency department; gynecology and general surgery crossover; CT findings; intraoperative care; intraoperative findings; ethics; consent

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1. Introduction

Diagnoses for right lower quadrant pain in women of childbearing age must include both gynecologic and non-gynecologic causes. In this differential, ovarian torsion and appendicitis are both serious etiologies that can require swift surgical intervention. Ovarian torsion is the least common of the two, accounting for 2.7% of emergency surgery cases according to a 10-year review [1]. The lifetime risk of appendectomy for females is 23.1% [2]. As many as 2–3% of patients undergoing surgery for acute appendicitis are instead found to have ovarian torsion [3].

Having one of these pathologies does not preclude you from having the other. There have been very rare case reports of both acute pathologies occurring in the same patient. An extensive literature review was performed, including the *BMC Journal of Medical Case Reports*, *BMJ Case Reports*, and MEDLINE. The advanced search keywords "Adnexal torsion

AND Appendicitis" were used with dates ranging from 1961 to 2023, and of the 216 results identified, there were 13 case reports with confirmed concomitant inflamed appendix and adnexal torsion in the US, Russia, Morocco, and Ukraine [4–14]. Of these cases, the one presented in this paper is the only reported case in the US that occurred in a reproductive-aged, non-pregnant woman.

Most of these cases occur in infrequent clinical situations; thus, establishing universal best practices that providers can rely on to diagnose both conditions preoperatively and guide their management after diagnosis is difficult at best. Rather, it is up to individual case reports to provide a framework of management options to guide patient care in this rare scenario. Therefore, we present a case report of a co-presentation of acute appendicitis and ovarian torsion in a unique clinical setting to better prepare providers about how to diagnose and manage this rare scenario and to improve future patient care outcomes.

2. Results

Case Summary

A 42-year-old G2P1011 patient with a past medical history of complete hysterectomy presented to the Emergency Department with 2 days of diffuse and worsening abdominal pain, constipation, nausea, and vomiting. Her prior surgical history is noteworthy for a prior cesarean delivery and a total laparoscopic hysterectomy. When interrogated, however, the patient reported that she was unsure if she had had a total versus a supracervical hysterectomy. The patient had normal vital signs, a diffusely tender abdomen, and leukocytosis with a left shift. A CT abdomen and pelvis with contrast test was performed, which was significant for features consistent with a ruptured appendicitis (Figure 1), as well as the "uterine remnant" (Figure 2) mentioned on the initial radiographical reading. The initial radiology reading did not consider the patient history of hysterectomy and described a 5.3 × 7.7 cm gynecological organ thought to be characteristic of a distended endometrial cavity or uterine remnant with low attenuating fluid collection. Additionally, no ovaries were noted on the initial read, and no additional findings were reported except small amounts of adjacent free fluid. In the setting of an acutely painful patient with radiologic findings consistent with appendicitis and no initial suspicion of an acute gynecological pathology, the ED provider consulted general surgery, who took this patient to the OR without the gynecology team being consulted.

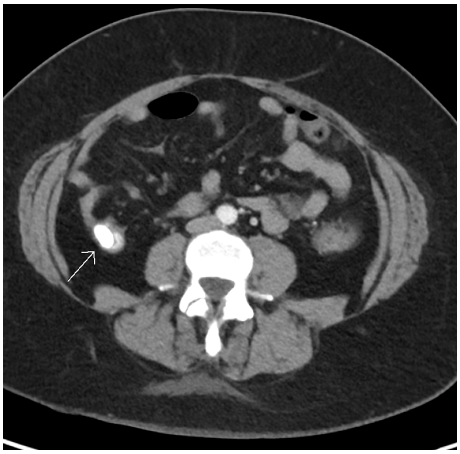
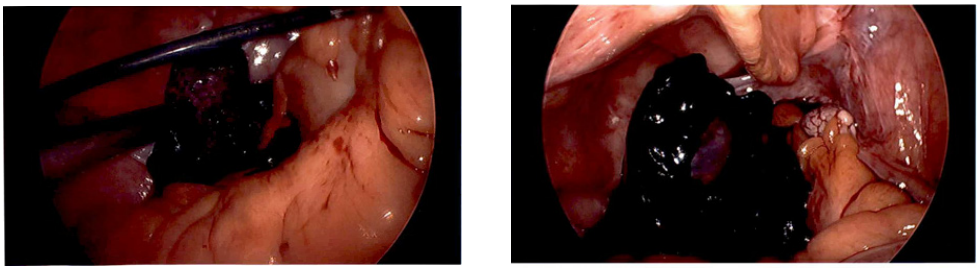


Figure 1. CT with Contrast: Transverse View: A large appendicolith (identified by the white arrow) is present within the distal aspect of the appendix. An adjacent smaller appendicolith is also present. There is focal appendiceal wall thickening involving the tip. There is adjacent peri-appendiceal fat stranding and free fluid. While there is no pneumoperitoneum, findings are concerning for ruptured appendicitis.



Figure 2. CT with Contrast: Transverse View: The initial read was made without consideration of the fact that the patient had a prior complete hysterectomy as the patient was unsure if she had possibly had a supracervical hysterectomy. The large 5.3 × 7.7 cm gynecological organ marked above was thought to be characteristic of a distended endometrial cavity or uterine remnant with low attenuating fluid collection. No ovaries were otherwise visualized, but adjacent free fluid was noted. Upon review, these images were thought to be consistent with a hemorrhagic cyst and possible ovarian torsion.

During the procedure, the appendix was visualized and found to be significantly inflamed, although no perforations were immediately noted. When visualizing the pelvis, the general surgery team appreciated 200 cc of well-formed clot adjacent to a left adnexal hemorrhagic mass (Figure 3a,b). The night gynecology team was consulted intraoperatively after the appendix was removed and while the primary surgical team was finishing their case. The initial gynecological team appreciated a clot covered adnexal mass, but upon the suction and manipulation of the area, an overall hemostatic, stable, and non-necrotic ovary was appreciated. Consideration was given to possible oophorectomy; however, given the borderline findings intraoperatively and the lack of consent for additional procedures such as an oophorectomy, the case was closed without further interventions.



(**a**) (**b**)

Figure 3. (**a**) (**b**) Two views of the left adnexal mass with associated hemorrhage noted at the time of general surgery appendectomy.

When the patient awoke from surgery, the day shift gynecology team again evaluated the patient. The patient stated that her lower abdominal pain had worsened and was not controlled with IV opioids. After reviewing the intraoperative images with the patient, we discussed the suspected rare co-presentation of both acute appendicitis and ovarian torsion with the patient. The day gynecological team had significant concerns that her ovary, due to its size, may be re-torsing, especially as the patient's pain was not controlled by an increasing pain regiment and worsened during repeat abdominal exams over a 12 h period. The patient consented to the laparoscopic management of her suspected left ovarian torsion including the possibility of oophorectomy and possible sequelae related to having only one remaining ovary.

A repeat laparoscopy was performed. The adnexa was visualized and the left ovary was clearly torsed. Due to the extent of necrosis and lack of perfusion with detorsion of the ovary, an oophorectomy was performed without complications. The patient had an uncomplicated postoperative course including resolution of her pain and was discharged to her home on the same day of her surgery. The final pathology showed both acute appendicitis without perforation and an ovary with extensive interstitial hemorrhage and a focal area of ischemic change consistent with torsion, confirming the co-presentation of these two acute pathologies.

3. Discussion

This case shows the rare possibility of dual acute etiologies of abdominal pain warranting urgent surgical management. It is known that ovarian torsion commonly occurs in women of reproductive age, with the main risk factor being an ovarian mass of at least 5 cm in diameter. However, due to its nonspecific findings, direct visualization is the gold standard to definitively diagnose this pathology [15]. Laparoscopic hysterectomy with ovarian conservation is not a well-known risk factor for ovarian torsion [16], but studies have shown that ovarian torsion has occurred after laparoscopic hysterectomy with a prevalence of <8 per 1000 patients [17]. Acute appendicitis, on the other hand, is predominantly diagnosed clinically and with imaging, and has an overall lifetime risk of 6.7% in females in the US. There is no causal link between past hysterectomy and appendicitis. The only exception is one case report out of Iran where suspected iatrogenic appendix injury during hysterectomy was found to be the cause of appendicitis [18].

This case highlights the need for a multidisciplinary approach in the pre-procedural evaluation of possible competing etiologies of acute abdominal pain that warrant surgical management. For example, gynecologic surgical consultation regarding the imaging findings in the ER could have prevented the need to perform two separate surgeries in less than 12 h. The gynecology team was initially consulted very late in the case without a chance to review the patient's history or images or discuss possible surgical managements with the patient. This limited the gynecological team's comfort with managing this finding and indirectly led to a need for a second procedure. In addition, this case brings up interesting ethical questions of informed consent, nonmaleficence, and the obligation of intraoperatively consulted surgeons to appropriately provide definitive and indicated surgical care in the absence of prior discussion of possible gynecologic pathology.

Ethics is an integral part of clinical medicine and is governed by the principles of beneficence, nonmaleficence, autonomy, and justice [19–21]. Furthermore, surgeons have an ethical and legal obligation to attain informed consent before procedures. This is important as the informed consent process builds its foundation on the principle of autonomy, acknowledging the basic human right of self-determination and respecting a patient's dignity [19–21]. During this case, the principles of autonomy and nonmaleficence came into play. Although a second pathology was identified intraoperatively, proceeding with definitive surgical intervention could be seen as a violation of the patient's autonomy and would also have serious legal implications, as informed consent was not attained. The gynecology team opted for a more conservative management option in light of these concerns; unfortunately, likely due to the size of the mass, a second procedure was eventually required. During the initial evaluation, the patient was clinically stable and the intraoperative findings were also consistent with a possible ruptured hemorrhagic cyst. The chief concern was the risk of oophorectomy in a clinically stable patient who was not consented for that procedure. In this case, ensuring adequate consent and, thus, patient autonomy and nonmaleficence was given priority. Ultimately, the consulted gynecologic surgical service was able to obtain informed consent and appropriately treat the patient's ovarian

torsion within a reasonable time frame. This case demonstrates the importance of early consultation and clear patient handoff between all surgical services involved, including night and day shift transfers of patient care.

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