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Timely Exploratory Laparotomy in Severe Pelvic Inflammatory Disease: A Case Study on Surgical Decision-Making

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Abstract: ***Pelvic Inflammatory Disease (PID) is a common yet potentially serious gynecological condition that may result in infertility, ectopic pregnancy, and chronic pelvic pain if not promptly treated. While the mainstay of treatment is broad-spectrum intravenous antibiotic therapy, certain cases particularly those complicated by tubo-ovarian abscess (TOA) or peritonitis require surgical intervention. We present the case of a 28-year-old female with severe PID and TOA unresponsive to 48 hours of guideline-directed antibiotic therapy. Exploratory laparotomy revealed a ruptured TOA and extensive pelvic adhesions, necessitating immediate surgical management. The patient made a full recovery with complete resolution of symptoms at follow-up. This case emphasizes the critical importance of timely surgical intervention in complicated PID and highlights the ongoing need for evidence-based guidelines regarding optimal timing of surgery to minimize morbidity and improve outcomes.***

Keywords: Pelvic Inflammatory Disease, Tubo-ovarian abscess, Exploratory Laparotomy, Surgical timing, Peritonitis

1. Introduction

Pelvic Inflammatory Disease encompasses infections of the upper female genital tract, including the uterus, fallopian tubes, and ovaries. Complications such as tubo-ovarian abscesses (TOAs), chronic pelvic pain, infertility, and ectopic pregnancy can arise from delayed or inadequate treatment. While antibiotics are the primary treatment modality, surgical intervention becomes imperative in certain scenarios, particularly when there is no clinical improvement within 48–72 hours or when an abscess is suspected to rupture.

2. Methodology

A case-based approach was used to present the clinical course, imaging, and surgical management of a 28-year-old female with severe PID and suspected TOA. The clinical reasoning behind the decision for surgical intervention, intraoperative findings, and postoperative course are detailed.

3. Results & Discussion

A 28-year-old female presented with acute lower abdominal pain, fever, and purulent vaginal discharge. Her medical history was significant for multiple sexual partners and inconsistent condom use. Physical examination revealed bilateral adnexal tenderness and cervical motion tenderness. Laboratory tests showed elevated white blood cell count and positive nucleic acid amplification tests for Chlamydia trachomatis.

A transvaginal ultrasound was obtained early in the course of care, which revealed a mild to moderate volume of complex free fluid in the pelvis. No focal fluid collection to suggest abscess was identified at that time (Figure 1).

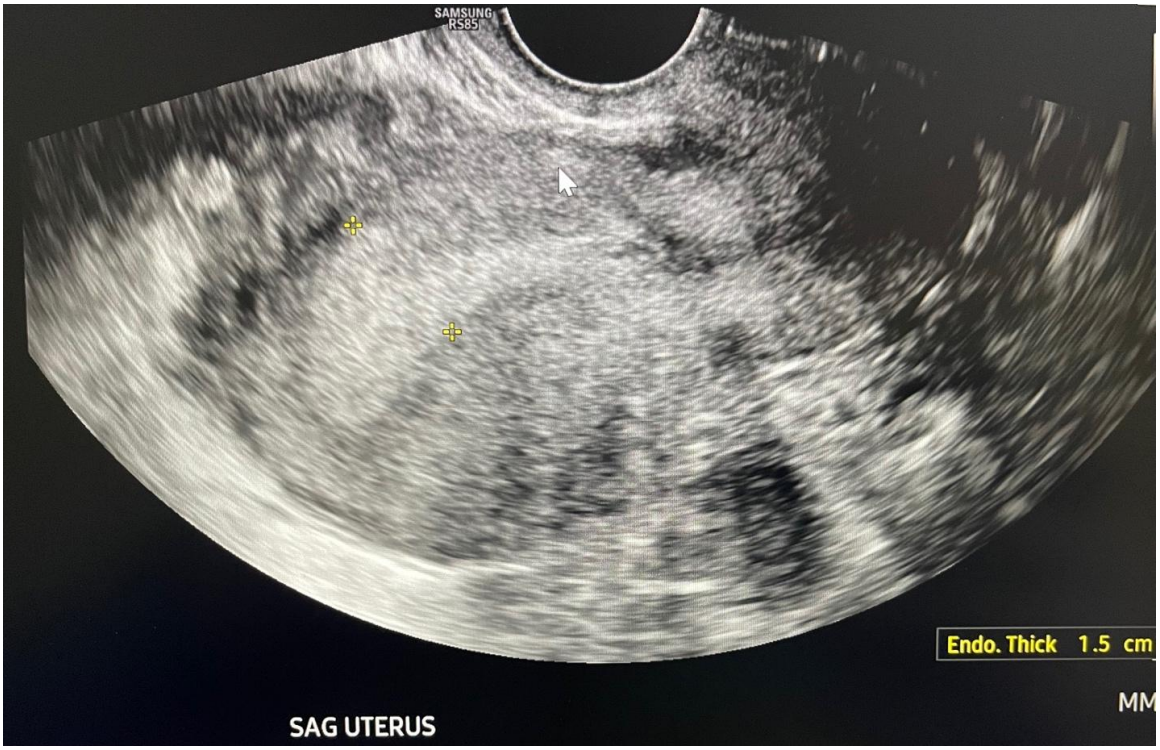

Figure 1: Transvaginal ultrasound image showing mildly complex free fluid in the pelvis without a discrete abscess formation

The patient was admitted and initiated on broad-spectrum intravenous antibiotics, including ceftriaxone, doxycycline, and metronidazole. Despite 48 hours of medical management, her symptoms persisted with minimal improvement. Repeat imaging showed worsening of pelvic inflammation and increased concern for an evolving TOA.

Given the absence of clinical improvement, increasing pain, and deteriorating peritoneal signs, the decision was made to proceed with exploratory laparotomy. Intraoperatively, gross purulent fluid was observed pooling in the dependent portions of the pelvis, extending along the peritoneal surfaces up to the subhepatic space, consistent with diffuse peritonitis (Figure 2). Extensive adhesions involving the adnexal structures were noted, and a ruptured TOA was identified. The abscess cavity was evacuated, and thorough irrigation and washout of the peritoneal cavity were performed.

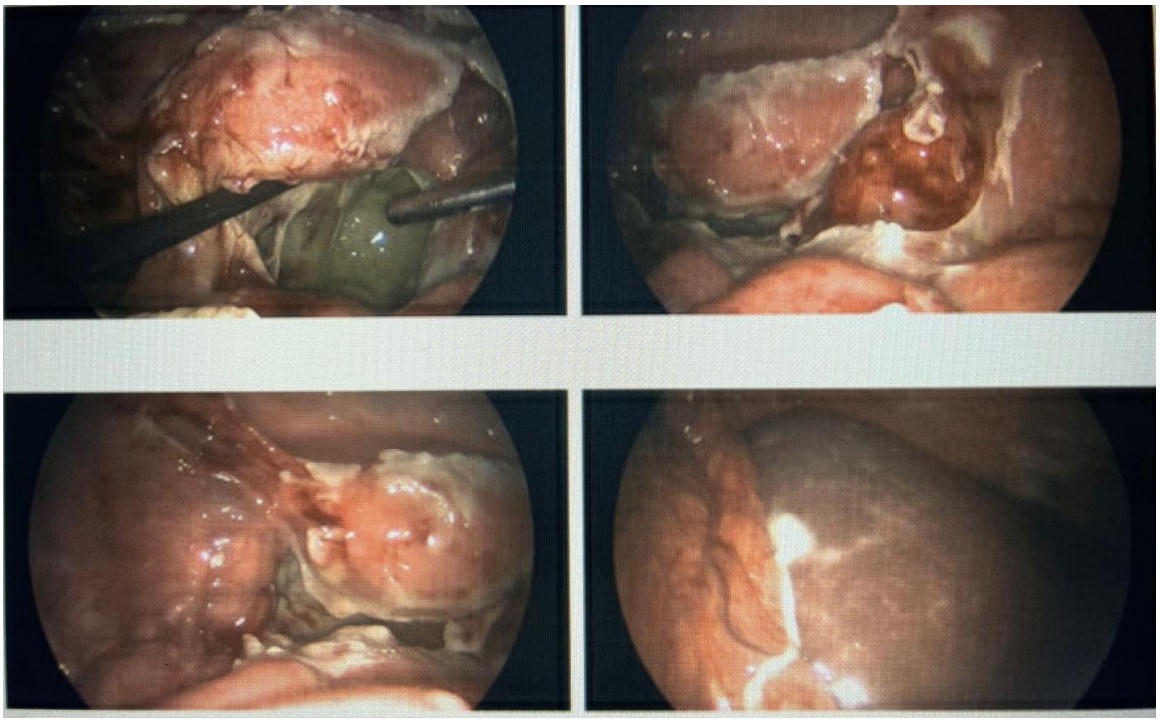

Figure 2: Intraoperative photograph demonstrating purulent fluid in the pelvis and upper abdomen, extending up to the liver margin, prior to irrigation and washout.

Following debridement and washout, a closed-suction drain was placed in the pelvis to prevent fluid reaccumulation. Hemostasis was achieved, and the abdomen was closed in layers. A postoperative image shows the abdominal cavity after lavage, with the drain in place (Figure 3).

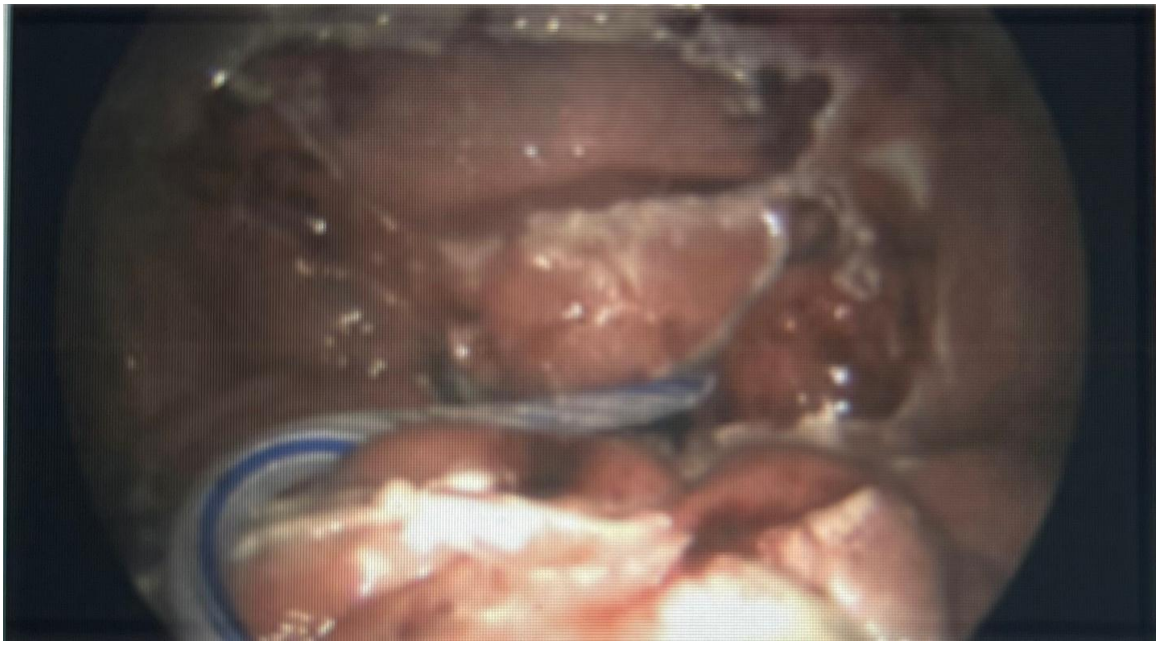

Figure 3: Post-washout intraoperative image showing clean peritoneal cavity with drain placement for postoperative management.

Pelvic inflammatory disease (PID) is a polymicrobial infection of the upper female genital tract that, if not promptly treated, can lead to significant morbidity, including chronic pelvic pain, infertility, and TOA formation. While antibiotics remain the cornerstone of therapy, surgical intervention may be necessary in cases where patients fail to respond to medical management or develop complications such as peritonitis or abscess rupture.

The optimal timing of surgical intervention in patients with complicated PID remains an area of debate. Current guidelines from the Centers for Disease Control and Prevention (CDC) recommend surgical evaluation in patients who do not show clinical improvement after 48–72 hours of broad-spectrum antibiotic therapy, have a ruptured TOA, or present with severe sepsis or peritonitis (1). In this case, our patient presented with significant peritoneal signs and failed to improve despite appropriate antibiotic therapy, warranting exploratory laparotomy.

Recent studies suggest that early surgical intervention in severe cases of PID or TOAs may be associated with improved outcomes. One study found that patients who had surgical drainage within 72 hours of presentation had a significantly shorter hospital stay and lower rates of sepsis compared to those managed with prolonged antibiotic therapy alone (2).

Similarly, a retrospective cohort study analyzed the impact of early versus delayed exploratory laparotomy in patients with PID-associated peritonitis. Patients who underwent laparotomy within 48–72 hours of admission had lower rates of ICU admission and a decreased incidence of postoperative complications such as bowel obstruction and recurrent abscess formation compared to those who underwent delayed surgery (3).

However, the decision to proceed with surgery must be individualized based on clinical presentation, comorbid conditions, and imaging findings. While laparoscopy has been increasingly favored over open laparotomy due to its minimally invasive nature, lower postoperative pain, and shorter recovery time, exploratory laparotomy remains an important option in cases with extensive adhesions, abscess rupture, or hemodynamic instability (4).

4. Conclusion

This case underscores the importance of timely surgical intervention in patients with severe PID unresponsive to antibiotic therapy. Recognizing when to transition from medical to surgical management is crucial in preventing complications and ensuring optimal patient outcomes. Clinicians should adhere to established guidelines and maintain a high index of suspicion for cases requiring early surgical evaluation.

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