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Original Article

Emergency Laparoscopic Appendectomy in Late Pregnancy: Managing Gangrenous Appendicitis in the Third Trimester

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Abstract

Acute appendicitis during the third trimester of pregnancy is a diagnostic and surgical challenge. We report the case of a 26-year-old gravid female (G2P1L1) at 33 weeks of gestation who presented with progressive diffuse abdominal pain. Initial conservative management failed. Ultrasound and magnetic resonance imaging confirmed a gangrenous appendix. An emergency laparoscopic appendectomy was successfully performed despite the restricted working space caused by the gravid uterus. The patient and fetus remained stable postoperatively. This case emphasizes that laparoscopy can be safely performed in the late third trimester with meticulous planning.

Keywords: Gangrenous appendicitis, Gravid uterus, Laparoscopic appendectomy, Third trimester

INTRODUCTION

Acute appendicitis is one of the most common non-obstetric surgical emergencies during pregnancy. However, its occurrence in the third trimester presents unique clinical dilemmas due to anatomical displacement of the appendix and the potential risks of preterm labor or fetal compromise. While laparoscopy is often preferred in early pregnancy, its use in the third trimester remains technically demanding. Recent guidelines support its safe use with appropriate expertise and precautions.[1]

HISTORY

A 26-year-old female, G2P1L1, at 33 weeks of gestation, presented with a history of abdominal pain for 4 days, mostly in the epigastric region, radiating to the back. Pancreatitis workup and ultrasound abdomen performed at an outside facility revealed no significant abnormality. Her total leukocyte counts were 14,600/mm^3. She was managed conservatively with IV antibiotics (ceftriaxone) and analgesics. After 48 h, she experienced worsening abdominal pain, this time localizing to the right side of the abdomen, with intermittent fever spikes.

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Clinical Examination

On examination, the patient was febrile and tachycardic. Abdominal examination revealed a gravid uterus corresponding to gestational age. Marked tenderness was noted mainly in the right hypochondrium and lumbar regions, with rebound tenderness and localized guarding in the right lumbar region. Repeat investigations revealed increasing total counts (20,250/mm^3), raised C-reactive protein (146.89 mg/L), and high procalcitonin (28 ng/mL), with positive urine ketone bodies. Antibiotics were escalated to meropenem and metronidazole, and supportive treatment was continued.

Imaging Findings

Ultrasound Abdomen and Pelvis: Revealed probe tenderness in the right lumbar region with gross inflammatory changes. A blind-ending tubular structure measuring 14 mm arising from the base of the cecum was noted, suggestive of the appendix.

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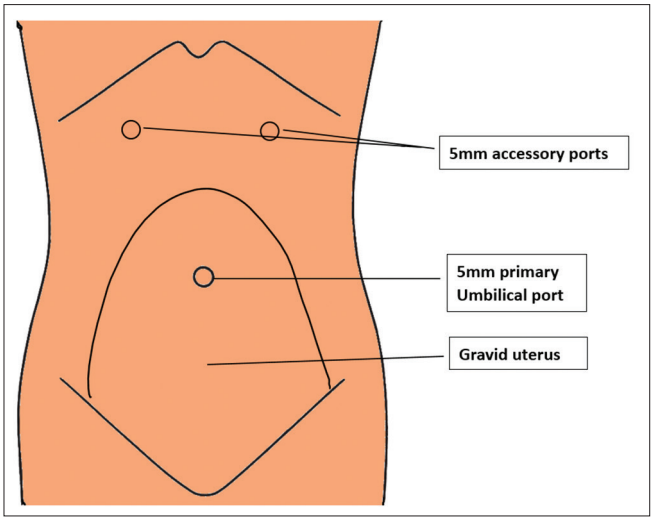

Figure 1: Schematic diagram showing port placement

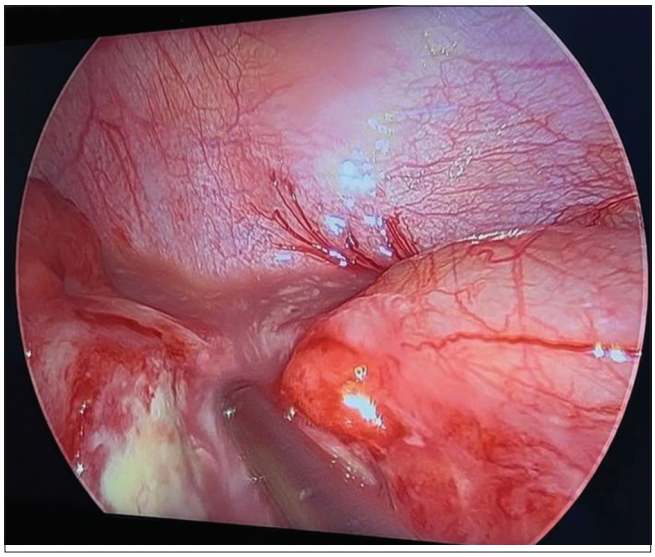

Figure 2: Intraoperative image showing pus collection in the right paracolic region

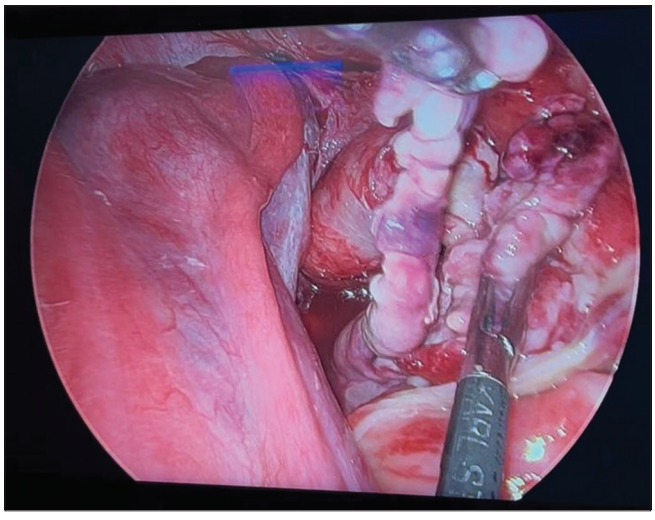

Figure 3: Intraoperative image showing a gangrenous appendix along with mesoappendix

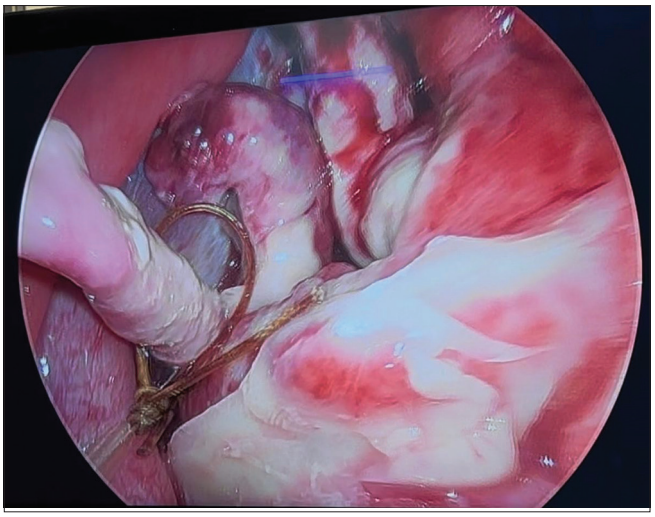

Figure 4: Intraoperative image showing the appendix being ligated at the base

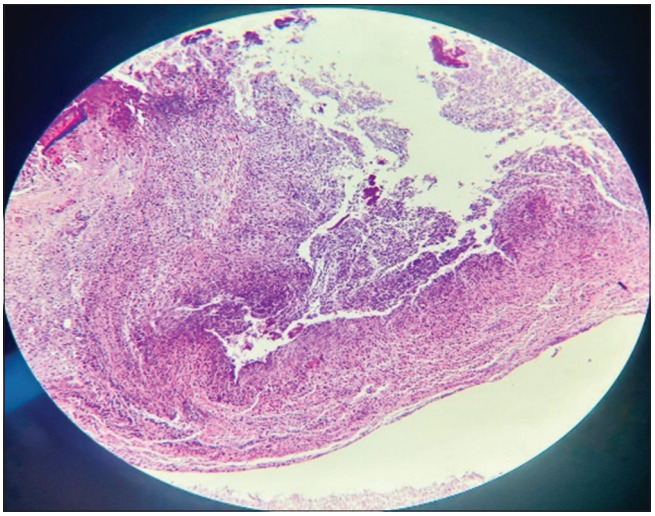

Figure 5: Histopathology image showing necrotizing appendicitis

MRI Abdomen and Pelvis: Magnetic resonance imaging abdomen and pelvis: Focal thickening of tubular bowel structure arising from the cecal base is seen, possibly an inflamed appendix, with perifocal free fluid in the right iliac fossa.

Management

Given the strong clinical and radiological suspicion for acute appendicitis, an emergency laparoscopic appendectomy was planned under general anesthesia after obtaining high-risk informed consent.[2,3]

Operative Procedure

The patient was placed in the supine position. A 5-mm port was inserted at the umbilicus using a blunt trocar, and pneumoperitoneum was established with CO_2 after confirming the position of the port. Additional 5 mm ports placed under vision in the right and left subcostal regions

along the mid-clavicular line [Figure 1].

Intraoperative Findings

Purulent collection noted in the right lumbar region with early inflammatory mass formation [Figure 2]. A long, dilated, gangrenous, perforated appendix was noted in retrocecal position, with dense adhesions to cecum, ileum, and adjacent mesentery [Figure 3]. The appendix was ligated at the base and removed [Figure 4]. All ports were removed under vision. Patient tolerated the procedure well.

Post-operative Course

The patient and fetus were monitored continuously for 24 h. She showed significant symptomatic improvement, and the post-operative period was uneventful. She was discharged on post-operative day 4 with oral antibiotics and analgesics.

Histopathology Report

The section shows a wall of appendix with ulcerated mucosa lined by granulation tissue and covered with inflammatory exudate. Necrosis of the wall with dense inflammatory infiltrate is seen up to the serosa and extending into periappendiceal fat admixed with karyorrhectic debris. The inflammatory cells consist of neutrophils with few histiocytes, lymphocytes, and plasma cells. Many dilated and congested blood vessels were seen.

Impression: Acute necrotizing appendicitis with perforation.

DISCUSSION

This case presented several challenges unique to late-pregnancy laparoscopy:

1. Restricted working space due to the gravid uterus occupying nearly the entire abdominal cavity
2. Difficulty in trocar placement, requiring meticulous planning to avoid uterine injury
3. Limited instrument angulation and range of motion throughout the procedure
4. Anatomical displacement of the appendix superiorly and laterally. The presence of early inflammatory mass formation and purulent collection further complicated the identification and mobilization of the appendix
5. Physiological concerns, including:
   - Risk of preterm labor triggered by surgical stress
   - Potential compromise of uteroplacental perfusion due to pneumoperitoneum or intraoperative hypotension
   - Need for vigilant maternal–fetal monitoring throughout the procedure.

Despite these challenges, the laparoscopic approach allowed for better visualization of the displaced appendix and a faster recovery for the patient. Recent literature supports its safety in the third trimester when performed by experienced surgeons.[4-6]

CONCLUSION

Emergency laparoscopic appendectomy in the third trimester is a safe and effective approach for managing complicated appendicitis when performed with appropriate expertise and multidisciplinary support. Despite technical challenges posed by the gravid uterus and altered anatomy, with careful patient positioning, port placement modifications, and intraoperative monitoring, favorable outcomes can be achieved. Laparoscopy offers the advantages of having better visualization, reduced post-operative pain, and faster recovery. Early diagnosis and timely surgical intervention remain crucial to minimize maternal and fetal complications.

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