International Surgery Journal
Dubey SS et al. Int Surg J. 2026 Apr;13(4):690-693
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: https://dx.doi.org/10.18203/2349-2902.isj20260862

Case Report

Gas under the diaphragm due to perforation of a gangrenous uterus in a postmenopausal nulliparous woman: a diagnostic and surgical dilemma

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Received: 27 January 2026
Accepted: 05 March 2026

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ABSTRACT

Pneumoperitoneum is most commonly associated with hollow viscus perforation. Rare gynecological causes may mimic gastrointestinal pathology, leading to diagnostic dilemmas. Chances of uterine perforation presenting as gas under the diaphragm (pneumoperitoneum) are extremely low, as it's a very rare complication, usually from a perforated pyometra (pus in the uterus), often misdiagnosed as a GI perforation. We report to you a 54-year-old postmenopausal woman presented with acute abdomen and radiological pneumoperitoneum. Emergency exploratory laparotomy revealed pyoperitoneum, a gangrenous perforated uterus, and gangrenous small bowel loops. Subtotal hysterectomy with bowel resection and stoma formation was performed. Intraoperative pus culture grew Escherichia coli. Despite aggressive management, the patient succumbed on postoperative day one.

Keywords: Pneumoperitoneum, Pyoperitoneum, Gangrenous uterus

INTRODUCTION

Pneumoperitoneum indicates hollow viscus perforation most commonly. Rarely gynecological conditions can present similarly, especially in postmenopausal women where symptoms may be subtle. Though spontaneous perforation of uterus is rare, its incidence being about 0.01-0.5%, the clinical picture of uterine perforation secondary to pyometra are similar to hollow viscus perforation which makes preoperative diagnosis difficult.[1,2] Pyometra is defined as the accumulation of purulent material in the uterine cavity resulting from interference of its natural drainage.[2,3] It is an uncommon condition with a reported incidence ranging from 0.1% to 0.5% and an incidence approaching 13.6% in postmenopausal women.[2-4] It is associated with benign or malignant gynecological tumors, colorectal tumors, radiation cervicitis, congenital anomalies, puerperal infections and intrauterine devices.[2,5]

CASE REPORT

A 54-year-old postmenopausal nulliparous woman presented with sudden onset abdominal pain, constipation, and obstipation. No history of vomiting or fever was given. No past history of fever or cough or lose stool was given. She was a known case of diabetes mellitus, rheumatoid arthritis, and hypertension. Patient gave no gynaecological complaints. She attained menopause 7 years back. She had undergone dilatation and curettage in 2004 (DNA). The history was given by husband and patient.

On examination, patient presented with guarding and rigidity per abdomen. Bowel sounds were present. Pulse was 100 per min and BP was recorded at 130/70 mm of Hg. Per rectal examination revealed empty and roomy cavity. Since she was referred from a primary health care center with X-ray which showed gas under diaphragm, a

repeat X-ray chest (Figure 1 A) and abdomen erect (Figure 1 B) was done which revealed the same. Patient was resuscitated and blood investigations were sent which revealed raised WBC (21070). She was taken for emergency exploratory laparotomy after adequate resuscitation for diagnosis of peritonitis post hollow viscus perforation.

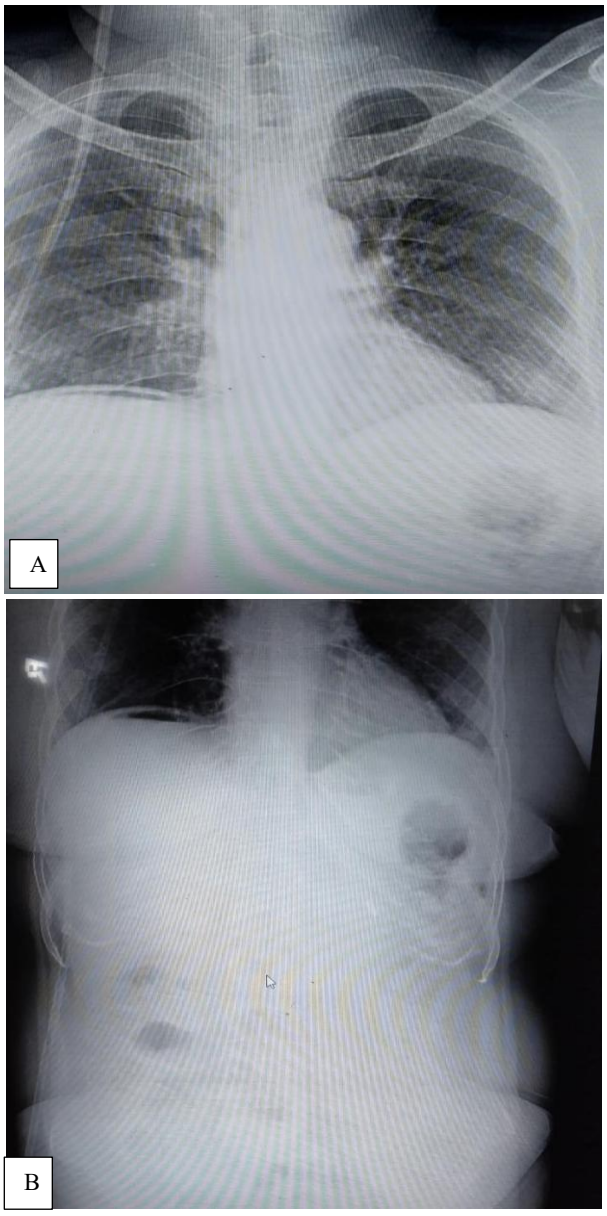

Figure 1 (A and B): Chest abdomen erects and X ray.

Intraoperative findings and management

One liter of purulent fluid suctioned out, no bowel perforation could be seen, dense adhesions were present. (Bowel loops adhered to each other and other organs and to anterior abdominal wall and dense adhesions to uterine fundus and posterior wall). The uterus was gangrenous (Figure 2). The gangrenous uterus had a 1×1 cm anterior wall perforation (Figure 3 A and B). A gangrenous small bowel segment close to the uterus was noted (Figure 4).

Figure 2: The uterus was gangrenous.

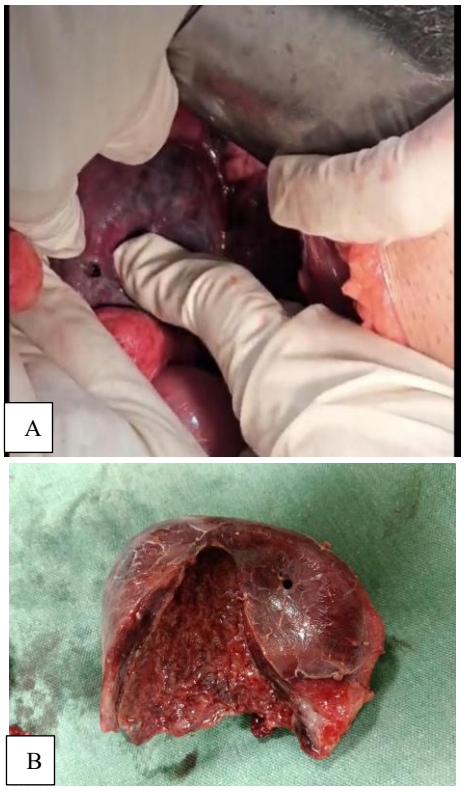

Figure 3 (A and B): The gangrenous uterus had a 1×1 cm anterior wall perforation.

Figure 4: A gangrenous small bowel segment close to the uterus was noted.

Surgical procedure

Under general endo-tracheal anesthesia, Exploratory laparotomy was done with drainage of peritoneal collection and then subtotal abdominal hysterectomy was performed as fallopian tubes and ovaries couldn't be differentiated due to adhesions. Dusky small bowel loops (ileal loop) (40 cm) around 100 cm from IC junction was identified. The bowel loops were kept in warm saline mops and patient was administered 100% O_2 but yet, the dusky loop (gangrenous) could not be saved hence resected and a double barrel ileostoma was made on the right side. Thorough wash given with warm normal saline and closure was done after placing pelvic drain.

Immediately post op, patient was not extubated since responses were not elicited by anesthetists. Patient was shifted to surgical ICU post op. On post op day 1 patient went into multiorgan failure with rising crest, decreasing urine output, no respiratory effort and bp dropping despite on supports.

The patient went into septic shock despite escalating antibiotics to piperacillin and tazobactum combination and to meropenum, and unfortunately succumbed on post operative day 1.

Microbiological findings

The pus sample was collected intra op as soon as the abdomen was opened and post op, sent for culture and sensitivity. Pus culture grew *Escherichia coli*. Gram stain showed numerous pus cells and gram-negative bacilli sensitive to higher antibiotics.

Histopathological findings

The sample sent for histopathological examination revealed that the sections from uterus showed infiltration of mixed inflammatory infiltrate comprising of lymphocytes, plasma cells and polymorphs in stroma extending up to serous a with extensive necrotic areas and hemorrhage. No viable endometrium on sections identified.

The bowel loop was also studied and the reports were consistent with gangrenous small bowel.

DISCUSSION

Intraperitoneal free gas seen radiologically as air under the diaphragm nearly always indicates a perforated abdominal hollow viscus that requires surgical intervention. Rarely, however, the presence of a pneumoperitoneum may not be due to bowel perforation.[6] Uterine perforation presenting with pneumoperitoneum is extremely rare.[2]

Pyometra is an intrauterine infection demonstrated by the production of purulent content filling the uterine cavity.[7] It is distinguished from endometritis which is inflammation localized to the endometrium of the uterus. In humans the incidence of pyometra is low, 0.04% of gynecological admissions.

The mechanism is thought to be due to cervical stenosis, and therefore the most common risk factors are being post-menopausal, post-surgical, post-IUD placement or removal, and post-partum.[3] Presenting symptoms in patients with pyometra include post-menopausal bleeding, vaginal discharge, fever, and abdominal pain.[8] Patients may even be asymptomatic.[8]

Case reports demonstrate the significance of life-threatening complications such as pneumoperitoneum and diffuse peritonitis secondary to a perforated pyometra, with a mortality rate of up to 31%.[9]

CONCLUSION

This case highlights the fact that identical clinical presentations may have vastly different underlying pathologies. Surgeons must maintain a high index of suspicion, including rare gynecological causes, when evaluating pneumoperitoneum in postmenopausal women. Although many cases warrant immediate surgical intervention, appropriate investigations should be considered whenever the patient's condition permits. The abdomen is a Pandora's box and multidisciplinary teams including GI surgeons, gynaecologists, radiologists, urologists and intensive care specialists can help in managing critical patients with rare and unexpected pathologies.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

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Cite this article as: Dubey SS, Merchant SM, Kinjal. Gas under the diaphragm due to perforation of a gangrenous uterus in a postmenopausal nulliparous woman: a diagnostic and surgical dilemma. Int Surg J 2026;13:690-3.