

Short Report

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Postpartum pneumoperitoneum: A rare complication does not invariably pose a threat**Dilip Gokhale; Karuna M Das***

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Abstract

Due to clinical suspicion of embolism, a 36-year-old gravida 5 para 4 patient was referred for CTPE five days after a normal vaginal delivery. CTPE showed no pulmonary artery filling deficit. However, lung window measurements showed pneumoperitoneum. The delivery was uneventful except for 1st-degree perineal injury. Patients' CRP and blood levels were normal. The multidisciplinary team consultation between gynecology, surgery, and emergency department suggested observation, but the patient declined due to no symptoms. However, she was evaluated over the phone and readmitted two days later for a CT abdomen with oral and IV contrast. A repeat CT showed pneumoperitoneum resorption and no oral contrast extravasation. Poor intestinal dilatation with pneumocystis intestinalis. After discharge and contact, no symptoms appeared. We present a case with inadvertent observation during thoracic imaging for suspected pulmonary embolism revealed postpartum pneumoperitoneum, a benign condition.

Keywords: Postpartum; Pneumoperitoneum; Computed Tomography; Peritonitis.

Abbreviations: CT PE: CT for Pulmonary Embolism; IVF: In Vitro Fertilization.

Background

Postpartum pneumoperitoneum is an infrequently documented occurrence that, if not detected promptly, can result in severe and irreversible complications [1]. To date, very few cases have been reported in the literature [2]. All individuals must be cognizant of this condition and deal with it with respect. Here we are reporting one case where incidental observation during thoracic imaging done for suspected pulmonary embolism helped us to detect the postpartum pneumoperitoneum which turned out to be a benign finding.

Case presentation

A 36-year-old gravida 5 para 4 patient was referred on the fifth day following a normal vaginal delivery for CT PE due to

clinical suspicion of embolism. CT PE revealed no filling defect in the pulmonary arteries. However, pneumoperitoneum was detected upon evaluation of the lung window parameters. Abdominal sections that were visualized revealed no free fluid. It was an IVF pregnancy devoid of any notable complications, including gestational diabetes. The delivery was uneventful, apart from 1st degree perineal injury. The patient's CRP and blood counts were both normal. The results were conveyed to the referring physician. MDT (multidisciplinary team consultation) discussion between Gynecology, Surgery, and emergency department advised admission for observation which the patient declined due to the absence of clinical symptoms. However, she was subsequently consulted via telephone and was readmitted two days later for a CT abdomen with oral and IV contrast. This repeat CT revealed pneumoperitoneum resorption and no oral

contrast extravasation. There was absence of intestinal dilatation and pneumocystis intestinalis. The patient was discharged and subsequently contacted. She developed no symptoms.

Discussion

Pneumoperitoneum is a medical emergency. Most of the cases occur due to perforation of the bowel needing urgent surgical intervention. Laparoscopy and sometimes laparotomy are the standard of surgical care in cases of bowel perforation as this is a serious condition with significant morbidity and mortality. Also, all surgeries have their attendant risks. Therefore, it is critical to possess knowledge regarding non-surgical causes of pneumoperitoneum, particularly in instances where imaging records and clinical observations are inconsistent.

The frequency of pneumoperitoneum without any indication of visceral perforation has been shown to range from 5% to 14% [3]. The phenomenon of air ascending through the female vaginal system and entering the peritoneal cavity, leading to the occurrence of pneumoperitoneum, has been extensively documented in the literature [4]. There are several mechanisms that may be employed to address this issue, including as pelvic manipulation/insufflation, postpartum knee-chest exercises, vaginal douching, engaging in vigorous sexual intercourse, utilizing a Jacuzzi, and high-grade post-vaginal laceration [5,6].

The occurrence of pneumoperitoneum shortly following an uncomplicated vaginal birth is infrequent, with only a limited number of instances documented in the medical literature [4,7,8]. When a patient has pneumoperitoneum along with systemic upset and biochemical imbalance, they need an exploratory laparotomy [8].

Thoracic causes are the most common etiology of nonsurgical pneumoperitoneum. Several thoracic factors can contribute to the occurrence of this condition. These factors include: a) The application of high-pressure ventilation; b) Barotrauma, which refers to tissue damage caused by changes in pressure; c) Cardiopulmonary Resuscitation (CPR); d) The rupture of a bleb, which is a small air-filled sac in the lung; and e) Increased intrathoracic pressure resulting from forceful sneezing [9-11]. Chichley et al. describe a unique case in which positive pressure breathing and CPR resulted in a fatal occurrence of pneumoperitoneum [10]. Pneumoperitoneum can arise from several other factors, including diaphragmatic abnormalities, the Macklin effect (resulting from bleb rupture leading to pneumomediastinum and subsequent extension to retro pneumoperitoneum), as well as through the foramina of Morgagni and Bochdalek [11]. Spontaneous pneumoperitoneum has been documented in cases also with Covid pneumonia, without the need for surgical intervention [9].

Other causes of pneumoperitoneum within the abdomen include a) pronounced gastric dilatation, b) colonoscopy and polypectomy, c) intestinal pneumatosis, d) diverticulosis, and f) peritoneal dialysis [12]. It appears that pneumatosis intestinalis, which is associated with Inflammatory Bowel Disease (IBD) and pulmonary obstructive airway disease, is the most prevalent cause of pneumoperitoneum without peritonitis [13].

The current case did not yield any conclusive evidence regarding the etiology of pneumoperitoneum. It is improbable

that the grade 1 rupture that the patient presented with caused pneumoperitoneum. A typical, uneventful vaginal delivery occurred. An oral contrast follow-up CT revealed no indications of contrast leakage, perforation, pneumatosis, or diverticulosis. The patient has no evidence of peritonitis and is in good health. The gynecological and surgical teams evaluated the patient, who had normal CRP and counts. The ultimate diagnosis was pneumoperitoneum in the absence of peritonitis.

Conclusion

While pneumoperitoneum is commonly recognized as a critical medical condition, it can also develop due to nonsurgical factors. Pneumoperitoneum without peritonitis occurring during the postpartum period following a normal, uneventful vaginal delivery is an uncommon occurrence. Radiologists should possess knowledge of this entity, given their potential role as the primary point of contact in identifying pneumoperitoneum. It is crucial to underscore that the rare prevalence of pneumoperitoneum during the postpartum phase necessitates immediate and intensive intervention. A clinical follow-up, contrast CT, and surgical consultation are all essential.

Declarations

The author declare that there is conflict of interest.

Statement of ethics: This was an observational study. Written informed consent was waived due to the nature of the study as a case report.

Data availability statement: Data will be made available on request.

References

1. Miles Dua S, Morrison C, Farrant J, Rolles K. Postpartum pneumoperitoneum: An important clinical lesson. *BMJ Case Rep.* 2012; 2012.
2. Lozman H, Newman AJ. Spontaneous pneumoperitoneum occurring during postpartum exercises in the knee-chest position. *Am J Obstet Gynecol.* 1956; 72: 903-905.
3. Hillman KM. Pneumoperitoneuma review. *Critical care medicine.* 1982; 10: 476-481.
4. Ely J, Iler L. Postpartum pneumoperitoneum. *Iowa medicine: Journal of the Iowa Medical Society.* 1990; 80: 352-353.
5. Williams TC, Kanne JP, Lalani TA. Jacuzzi jet-induced pneumoperitoneum. *Emergency radiology.* 2004; 10: 259-261.
6. Worley JA. Postpartal pneumoperitoneum. *The Journal of the Louisiana State Medical Society: Official organ of the Louisiana State Medical Society.* 1961; 113: 52-55.
7. Brown V, Dua S, Athow A, Borgstein R, Fafemi O. Postpartum pneumoperitoneum and peritonitis after water birth. *Journal of Radiology Case Reports.* 2009; 3: 1.
8. Lapin H, Fred HL. Postpartum pneumoperitoneum. *Archives of Internal Medicine.* 1962; 110: 328-330.
9. Del Rey IAG, de la Plaza Llamas R, Ramia JM, Velasco AAM, Candelas DAD. Non-surgical spontaneous pneumoperitoneum in a COVID-19 positive patient with severe bilateral pneumonia. *Cirugia espanola.* 2021; 99: 469.

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10. Critchley LAH, Rowbottom S. Fatal tension pneumoperitoneum with pneumothorax. *Anaesthesia and intensive care*. 1994; 22: 298-299.
 11. Ahmed K, Abdelbaki A, Jihene A, Khaoula M, Yamina H, et al. Airway management: induced tension pneumoperitoneum. *The Pan African Medical Journal*. 2016; 25.
 12. Kumar A, Muir MT, Cohn SM, Salhanick MA, Lankford DB, et al. The etiology of pneumoperitoneum in the 21st century. *Journal of Trauma and Acute Care Surgery*. 2012; 73: 542-548.
 13. Hsueh KC, Tsou SS, Tan KT. Pneumatosis intestinalis and pneumoperitoneum on computed tomography: beware of non-therapeutic laparotomy. *World Journal of Gastrointestinal Surgery*. 2011; 3: 86.