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Case Report

Pneumoperitoneum with peritonitis: an unseen, rare complication of postpartum caesarean uterine wound dehiscence

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ABSTRACT

Pneumoperitoneum with peritonitis is very rare and life-threatening complication of post LSCS in postpartum period. Pneumoperitoneum is defined as presence of free air within the peritoneal cavity which can be associated with uterine scar dehiscence. We are presenting a case of pneumopyoperitoneum with uterine scar dehiscence on post operative day 6 of emergency LSCS which is successfully managed at our institution. A 22 years old female P1L1 with postoperative day 6 of emergency LSCS presented to labour room with chief complains of abdominal distension with pain abdomen since 1 day and on and off fever since 4 days with difficulty in breathing. On examination she was in septic shock. Her abdominal X-ray showed air under diaphragm. The abdominal CT scan showed moderate to gross pneumoperitoneum extending into endometrial cavity through full thickness defect involving anterior myometrium in lower uterine segment suggestive of uterine rupture and also endometrial and intraperitoneal collections with multiple air foci. Emergency laparotomy was done and air escaped out with hissing sound. All the pus with blood was drained. Margins of uterine caesarean site were freshened and sutured. Gut was explored, no perforation was present. Postoperative period was uneventful. Pneumoperitoneum associated with peritonitis is a grave cause of maternal morbidity and mortality. Hence high index of suspicion with proper investigation and treatment can reduce morbidity associated with this condition, leading to good future obstetric outcome of patient.

Keywords: Lower segment caesarean section, Pneumoperitoneum, Peritonitis, Pneumopyoperitoneum

INTRODUCTION

Worldwide Caesarean section rate is increasing. As per latest data (Fifth National Family Health Survey 2020-21) caesarean rate in Indian population is 21.5%.¹ With increasing CS rate, post operative complications are also increasing. Scar dehiscence is common complication, may present with secondary postpartum haemorrhage, localized wound infection, Endomyometritis and peritonitis leading to sepsis.²

It can also present with pneumoperitoneum and hence clinical presentation can mimic gastrointestinal perforation. Clinical examination with lab investigations and imaging modalities can help in early diagnosis and management.² This is a rare case of postpartum uterine scar dehiscence with peritonitis and pneumoperitoneum.

CASE REPORT

A 22 years old female with P1L1 presented to labour room on postoperative day 6. She was referred from peripheral hospital. She had complaints of fever on and off for last 4 days with difficulty in breathing and sudden abdominal distention and pain since, 1 day which was progressive in nature.

She underwent LSCS in view of non-progress of labour 6 days back. No history of diarrhoea and vomiting. She was passing urine and stool comfortably. On examination, she was conscious and well oriented. She was having tachycardia (PR 119/min) and hypotension with BP of 88/62 mmHg, RR 18/min, SPO₂ 97% on room air. She was pale and cold to touch. On chest examination basal crept were present more on right side. The abdomen was

distended, tense with slight rebound tenderness and tympanic on tapping (Figure 1).

Bowel sounds were sluggish. Abdominal scar was healed and healthy. On vaginal examination, blood with purulent discharge was present. Swab was sent for culture and sensitivity. Treatment was started in the form of injectable antibiotics (pipracillin tazobactam 4.5 gm 12 hourly, Metronidazole 500 mg, 8 hourly) with supportive medication and was kept NPO.

Biochemical reports were within normal range except for anemia (Hb 5gm%) and leucocytosis (TLC were 18000/cm). USG abdomen revealed heteroechoic shadow of 2×2 cm in uterine cavity.



Figure 1: Distended tense abdomen with dry dressing, single layer uterine incision closure.

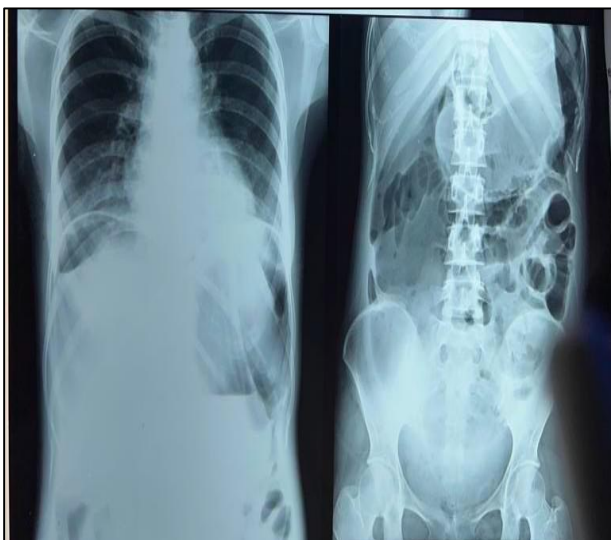


Figure 2: X-ray abdomen showed air under diaphragm and Rigler sign and football sign.

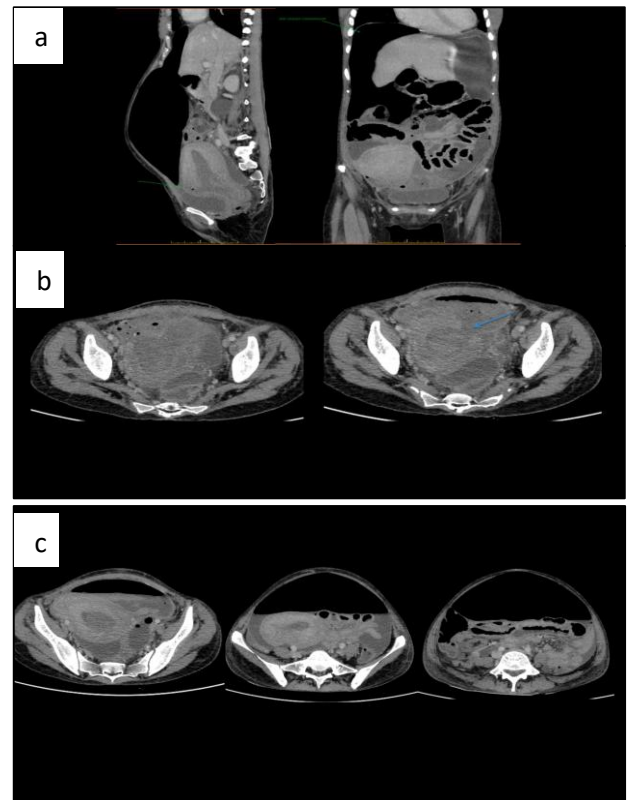


Figure 3: (a) CT abdomen coronal plane showing moderate to gross pneumoperitoneum extending into endometrial cavity through full thickness defect involving anterior myometrium in lower uterine segment suggesting uterine scar dehiscence. (b, c): CT abdomen axial plane showing endometrial collection with air foci and intraperitoneal collection with multiple air foci. There is the continuity of air and fluid between endometrium and peritoneal cavity.

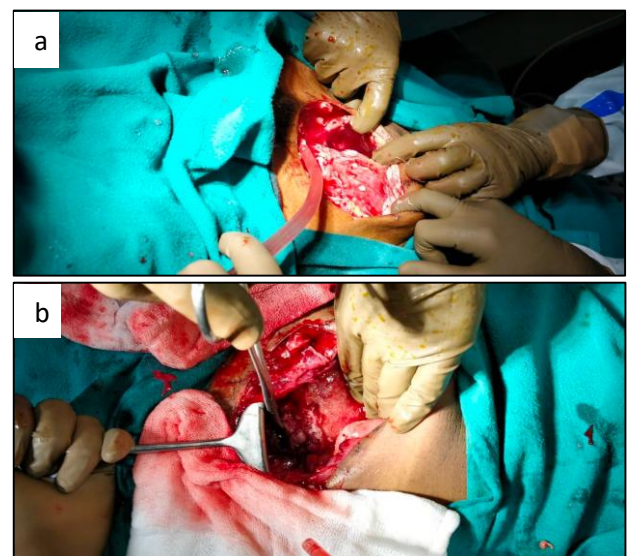


Figure 4: (a, b) Uterine full thickness defect approximately 6cm long with sloughed margins which was resutured in double layer with vicryl no 1-0 after refreshing the margins.

The abdominal X-ray showed air in abdominal cavity, under diaphragm, Rigler sign and Football or Oval sign (Figure 2). No air fluid level was seen. The CT scan abdomen revealed moderate to gross pneumoperitoneum with few retroperitoneal air foci, full thickness defect involving anterior myometrium in lower uterine segment suggesting uterine rupture, Hypodense collection in endometrial cavity with foci of air which extended in peritoneal cavity through defect. (Figure 3 a, b, c) Also ill-defined heterogeneously enhancing collection with multiple internal air foci was seen in pelvis. Based on clinical presentation and investigations, decision of emergency laparotomy was taken.

The abdominal wound was opened; the rectus sheath was found intact. On opening of rectus sheath, air gushed out with hissing sound. Pus for cultures sensitivity was taken. Hemoperitoneum with pus and pus flakes approximately 100cc was drained. No active bleeding site was found. Bowel was adherent to fundus of uterus which was separated. Gut exploration was done and no perforation was detected. Uterine closer was done in single layer. Uterine full thickness defect approximately 6 cm long was present with sloughed margins which was resutured in double layer with vicryl no 1-0 after refreshing the margins (Figure 4 a, b). Peritoneal lavage was done with normal saline and drain was put in abdomen. 3 units of blood was transfused to patient. She had skin wound infection and urinary tract infection in postoperative period which were treated with appropriate antibiotics according to culture report. She was discharged in stable condition on 23rd postoperative day. She was followed up at 1month and she was asymptomatic.

DISCUSSION

It is a matter of great concern that caesarian section incidence is on the rise especially in developing countries.^{3,5,6} Cases of post caesarean wound sepsis are increasing due to inadequate aseptic precautions, improper surgical technique, indiscriminate use of antibiotics leading to antibiotic resistance. Suboptimal post-operative care and poor hygiene in postoperative period leads to ascending genital infections in developing countries.^{3,5,6} Risk factors include diabetes, emergency surgery, infection, improper suture technique, hematoma on the uterine incision line and retro-vesical hematoma.⁷

Pneumoperitoneum means air in peritoneal cavity, is of two types: surgical and nonsurgical. "Pneumoperitoneum induced Peritonitis" is synonymous with surgical pneumoperitoneum, as peritonitis occur due to leakage of air and visceral contents after gut injury, for which surgery is needed. Various causes like trauma, malignancy, vascular causes and anastomotic leak can result in pneumoperitoneum. Presence of free air in the peritoneum with intact gut is known as "non-surgical or spontaneous pneumoperitoneum."³ Non-surgical form accounts 5-15% of all occurrences.⁴ In this case patient presented with fever, difficulty in breathing, pain abdomen with

abdominal distention and rebound tenderness and purulent vaginal discharge. These are most common presentation of uterine wound dehiscence with peritonitis described in literature.^{7,12,13} These symptoms were because of uterine wound infection and peritoneal infection which was either inoculated at time of surgery or in postpartum period through vagina due to poor hygienic conditions. Prolonged labour could be a precipitating factor for infection. Single layer closure of uterine incision with inadequate depth of tissue can lead to easy sloughing of margins. This infection leads to uterine wound sloughing causing gap along suture line and entry of air into peritoneal cavity. CT report mention the continuity of air and fluid between endometrium and peritoneal cavity. So it is spontaneous cause of pneumoperitoneum as no gut perforation was found on exploration. Haemoperitoneum accrued because of oozing from uterine incision marginal blood vessels due to inflammation.

Later on fibrosis of these vessel leads to stoppage of bleeding, so no active bleeding was found. Literature support conservative surgery by resuturing post freshening the margins but hysterectomy is preferred choice if there is presence of infected margins or marked endometritis or intraabdominal abscess.⁸ Double layer uterine closure would be the preferred choice in prolonged labour or obstructed labour. In our case, patient had one live issue with present caesarean, so inspite of signs of endometritis and intraabdominal abscess, we decided to preserve the uterus and hence resuturing with double layer uterine closure was done. Patient did well in postoperative period.

In literature, entry of air into peritoneal cavity through vagina in nonsurgical cases have been well described.⁹ Mechanisms include pelvic manipulation/insufflation, post-partum knee chest exercises, vaginal douching, orogenital sex, rigorous sexual intercourse, Jacuzzi use and post vaginal laceration.^{9,10} Pneumoperitoneum in the post-partum period after a normal vaginal delivery is a rare entity and reported only in a very few cases in the medical literature in 1950s and 1960s when 'Knee-chest' exercises was recommended treatment in postpartum period to return a retroverted uterus to the anteverted position and water birth, but now a days these exercises are not recommended due to risk of air embolism.^{11,12} Most common cause of pneumoperitoneum is gut perforation in nonsurgical cases.

In females, cause of pneumoperitoneum in postpartum period after surgery (LSCS) is not reported yet. In our case X -Ray and CT showed moderate to gross pneumoperitoneum. As pus culture from abdomen and vagina was sterile and no gas producing bacteria were found. In absence of gut perforation, cause of pneumoperitoneum was entry of air through vagina through uterine defect into peritoneal cavity. In postpartum period lax abdominal wall masks the signs of guarding and rigidity leading to difficulty in diagnosing peritonitis.¹³ Imaging modality plays an important role in making diagnosis of peritonitis by demonstrating uterine wound

dehiscence with pneumoperitoneum. There is poor correlation between operative and imaging findings.¹⁴⁻¹⁶ Bed side USG is very simple modality and can be done in sick patients also. In our patient USG did not suggested air in peritoneal cavity, scar dehiscence or pus. X-Ray also did not show scar dehiscence, hemoperitoneum or pelvic abscess. CT also did not revealed hemoperitoneum. Hence clinical symptoms and signs of peritonitis, with pneumoperitoneum in postpartum period need urgent surgical intervention to decrease maternal morbidity and mortality.

CONCLUSION

Pneumoperitoneum in postpartum period with peritonitis and uterine scar dehiscence is life-threatening complication. It needs urgent diagnosis and surgical intervention to decrease maternal morbidity and mortality. Double layer uterine closure in high risk cases is treatment of choice. Conservative approach to preserve the uterus can be carefully adopted in patients who need preservation of fertility.

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