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Post-caesarean surgical site infections: Case series of two cases

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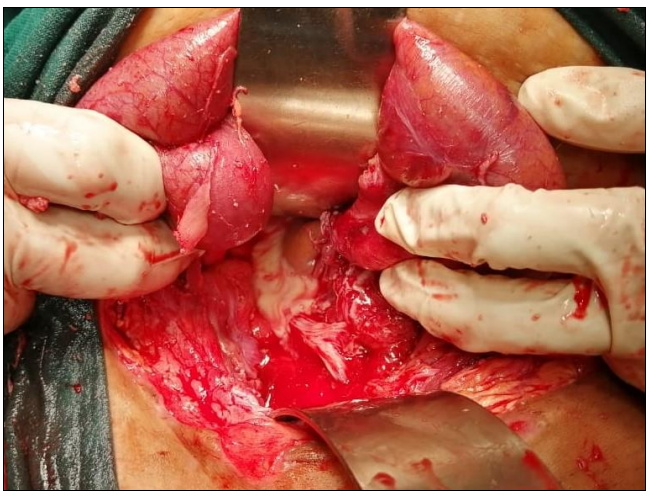
Abstract
Post-caesarean pyoperitonitis is a rare but severe infectious complication causing maternal morbidity and mortality. We present two cases of post-caesarean pyoperitonitis that were successfully managed by prompt surgical exploration. The first case presented with late post-caesarean intra-abdominal sepsis in a young lady with subsequent bowel involvement, while second case presented with early post-caesarean intra-abdominal sepsis in elderly lady secondary to uterine scar dehiscence with absence of bowel involvement.

Keywords: Post-caesarean pyoperitonitis, intra-abdominal sepsis, uterine scar dehiscence, bowel gangrene

Introduction
Incidence of caesarean section is increasing in developing countries over the past few decades, so as the increasing rate of surgical site infections. Caesarean sections are associated with a 5-fold to 20-fold increased risk of infection when compared to vaginal delivery [1]. Majority cases of pyoperitonitis after perforated appendices or colorectal anastomotic leakages have been reported in general surgery literature, but there are very few cases of post-caesarean section pyoperitonitis have been reported in the literature. Post-caesarean section peritonitis is a significant and prolonged peritoneal inflammatory response, usually due to bacteria introduction at the time of surgery that involves cytokine cascades and toxic-mediated endothelial damage, resulting in increased capillary leakage and the onset of abdominal sepsis. We present two cases of post-caesarean pyoperitonitis that were successfully managed by prompt surgical exploration. The first case presented with late post-caesarean intra-abdominal sepsis in a young lady with subsequent bowel involvement, while second case presented with early post-caesarean intra-abdominal sepsis in elderly lady secondary to uterine scar dehiscence with absence of bowel involvement.



Case 1: A case of post-caesarean generalised peritonitis leading to intra-abdominal sepsis presenting as bowel gangrene in a healthy young patient.

Case details

A 19-year-old female, P1L1, referred case from private nursing home to our OBGY emergency department with history of emergency caesarean section done 24 days back for meconium stained liquor with foetal distress. She came with complaints of LSCS suture site wound discharge and gape, abdominal pain in left hypochondriac region and abdominal distension, breathlessness since last 4-5 days. Patient developed diarrhoea after admission.

During hospitalization in private nursing home after caesarean, on post-operative day (POD) 8, patient had purulent discharge from LSCS suture site, not associated with fever. On POD 15, patient had high grade fever spikes, vomiting and cough with expectoration. On POD 19, she had acute onset breathlessness and pain in abdomen in left hypochondriac region for which she was shifted to MICU for 1 day and given Oxygen by CPAP. During the entire course of hospitalization, she had received antibiotics.

On physical examination, patient had breathlessness with tachycardia (PR-120/min) and tachypnoea (RR-34/min) associated with low grade fever spikes. Saturation was maintained 98% at room air. There was diminished air entry in both lungs. Bilateral crepitations were present. On per abdominal examination: abdominal distension was noted. LSCS suture site wound gape of size 3x2x2cm noted on right extreme of wound with intact rectus sheath. Abdominal tenderness was noted in left hypochondriac region on palpation. Fluid thrill and shifting dullness were present. Bowel sounds were sluggish. On per speculum examination, lochia was healthy and non-foul smelling. On bimanual vaginal examination, cervical os was closed and exact size of uterus could not be made out because of distension of abdomen. Laboratory result showed leucocytosis of more than 24,000/cm3 with neutrophilia, Hb 9.2 gm% with normal LFTs and RFTs. Urgent bedside USG whole abdomen showed gross free fluid in abdomen with multiple internal echoes and septae. Provisional diagnosis of generalised peritonitis with intra-abdominal sepsis secondary to caesarean section was made.

Emergency exploratory laparotomy was done with intraoperative assistance of general surgeons, under G/A. Abdomen was opened by right paramedian incision with all aseptic and antiseptic precautions. Abdominal cavity was full of turbid fluid with flakes of pus. Around 1000 cc fluid drained. All abdominal viscera were bathed in pus. Pus collected from abdomen and ascitic fluid was sent for microbial examination. Uterus was involuted. On further exploration, Aperistaltic, fragile bowel loops noted. Cocooned bowel loops seen with multiple dense adhesions between bowel to bowel and bowel to omentum. Gangrenous ileal loops around 30 cm proximal to ileocecal junction noted. Consequently, 40 cm ileal resection followed by ileostomy was performed. A thorough peritoneal lavage was given and two wide bore drains were put in both the flanks. After complete haemostasis abdomen was closed.

Postoperatively patient was transferred to intensive care unit and administered broad spectrum antibiotics. Pus collected from abdomen showed E. coli growth sensitive to Meropenem which was started. Patient required ICU care for 20 days as her postoperative period was complicated by lower respiratory tract infection with Klebsiella pneumoniae as causative organism. She recovered afterwards, however, developed Colo-cutaneous fistula which is being managed conservatively.

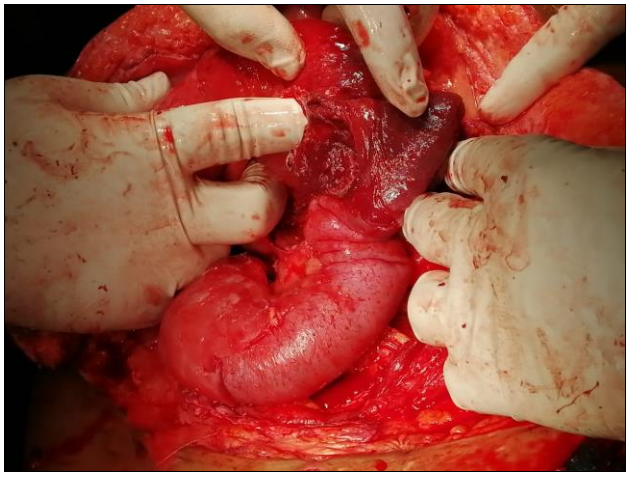
Case 2: A Case of Post-Caesarean Generalised Peritonitis Leading To Intra-Abdominal Sepsis Secondary to Uterine Scar Dehiscence.

Case details

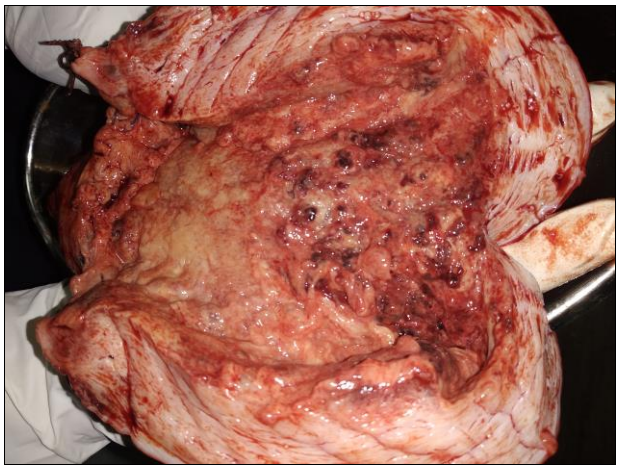
A 35-year-old elderly primigravida lady, with 40 weeks and 6 days of gestation was received in emergency duty of OBGY department as a referred case with thick Meconium Stained Liquor (MSL) with failure of induction of labour after 4 times dinoprostone gel inductions. She was in labour for 20 hours. On admission, her leukocyte count was 28,000/cm3. A high vaginal swab was taken and Emergency Lower Segment Caesarean Section (LSCS) had been performed for MSL with foetal distress with chorioamnionitis. Preoperatively IV antibiotics were administered before skin incision. She gave birth to a healthy female child of 2.3 kg with no intraoperative complications; the estimated blood loss was 800 ml. She did not have any medical or surgical problems and her BMI was 22 kg/m^2.

Patient started to feel unwell after 48 hours post-delivery. She was afebrile and appeared clinically well despite having slight tachycardia and minimal abdominal distention with no tenderness. On postoperative day (POD) 5, she developed a persistent high-grade fever with tachycardia (PR- 124/min), diffuse pain and distention of abdomen. Diffuse abdominal tenderness was present on palpation, with sluggish bowel sounds. On per speculum examination, lochia was foul-smelling. On bimanual vaginal examination, cervical os was closed and exact size of uterus could not be made out because of distension of abdomen. Laboratory investigations showed raised WBC counts (24,000/cm3) in spite of antibiotic treatment. Her LFTs and RFTs were normal. USG whole abdomen showed moderate free fluid with bulky uterus. CT scan of abdomen and pelvis showed moderate free fluid with disruption of uterine caesarean incision with fluid collection anterior to uterus in the pelvis. No evidence of intraperitoneal leak demonstrated after oral administration of water-soluble radiologic contrast media; bowel perforation was ruled out. A provisional diagnosis of post-caesarean generalised peritonitis with intra-abdominal sepsis secondary to uterine scar dehiscence was made. Emergency exploratory laparotomy was done under G/A. Abdomen was opened by right paramedian incision with all aseptic precautions. Abdominal cavity was full of turbid fluid with flakes of pus and was drained. On further exploration, uterine scar dehiscence with necrosed and sloughed out margins with evidence of endomyometritis was noted. Bowel loops were distended.

Pus collected from abdomen and ascitic fluid was sent for microbial examination. Total abdominal hysterectomy was done. A thorough peritoneal lavage was given and two wide bore drains were put in both the flanks. After complete haemostasis abdomen was closed. Postoperatively, broad spectrum antibiotics were administered and pus collected from abdomen showed E. coli and klebsiella pneumoniae growth sensitive to Meropenem and tetracycline which was given for 7 days. Histopathology report showed necrotic endometrium with fibrinopurulent exudate. Postoperative recovery was uneventful and patient was discharged from hospital on POD 13 in good physical health.



Case 3: Cacooned bowel loops



Case 4: Hystererctomised specimen showing necrotic endometrium and uterine scar dehiscence

Discussion

Surgical site infection (SSI) is most commonly defined as an infection at the surgical site within thirty days of the operative procedure, further divided into superficial incisional (involving the skin of the incision), deep incisional (involving the muscle or fascia beneath the skin incision), and organ/space (involving any part of the anatomy other than the incision that was opened or manipulated during the operation). Risk factors for surgical site infection after caesarean section are multifactorial. Increased length of surgery, maternal comorbidities and immune status, obesity, premature rupture of membranes (PROM), and increased vaginal exams have been associated with increased surgical site infection risk after caesarean section. Timing of prophylactic antibiotics, chlorhexidine skin preparation, surgical techniques, and operating room safety checklists and maintenance are some factors associated with reduced surgical site infections [1].

The most common bacterial aetiologies of abdominal sepsis after post-caesarean peritonitis are polymicrobial, a combination of common gut flora, such as Escherichia coli, Klebsiella pneumoniae, Streptococcus spp. and Bacteroides fragilis, with other gram-negative, gram-positive, and anaerobic bacteria [1].

Management of severe sepsis and septic shock in abdominal sepsis involves early, appropriate broad-spectrum antibiotic use plus early, aggressive source control of necrotic tissue [1]. Though rare, uterine scar dehiscence can sometimes complicate lower segment caesarean section with complications like post-partum haemorrhage, endomyometritis, localized/generalized peritonitis, and sepsis [2-4]. Some patients may be diagnosed immediately after childbirth and some may have presentation after about 2–4 weeks of delivery. Identification of the condition requires a high index of clinical suspicion and dependence on radiological signs seen on ultrasonography (transvaginal/3D) or the CT scan [6].

Incidence of post-operative uterine scar dehiscence irrespective of the cause is around 0.6% worldwide [4]. Dehiscence of a lower uterine segment incision is rare but potentially dangerous cause of localized/generalized peritonitis. The usual scenario is first there is severe infection in the endometrial and myometrial layer of the uterus. The pus either drains through the cervix or rarely the infection leads to necrosis of the weakest part of the uterine wall which is usually the Caesarean incision. Once there is dehiscence of the uterine wall, the infection will spread to the peritoneal cavity [13-16]. If the infection begins in an intact uterus and extends into the peritoneum, antimicrobial treatment alone usually suffices. Conversely, peritonitis caused by uterine incisional necrosis must be dealt surgically [7, 8].

Infection associated with uterine dehiscence can present with fever, tachycardia, features of anaemia, features of sepsis, and clinical signs like suprapubic tenderness and per vaginal tenderness. Intra-abdominal sepsis can present with free fluid within the abdomen, bowel distension, pleural effusion, and bladder flap hematoma [10-11]. Exploratory laparotomy should be considered as the most important tool for diagnosis and treatment for uterine scar dehiscence and repair. Peripartum hysterectomy is performed as treatment of choice in 6% of patients with postoperative uterine wound sepsis and necrosis [9]. Conservative resuturing after debridement can be chosen, but in presence of marked wound infection, endomyometritis and/or intra-abdominal abscess, hysterectomy should be considered [3, 10-12].

Conclusion

1. Post-caesarean pain in abdomen and sepsis especially with free fluid in abdomen needs appropriate work up and management in time.
2. Any women with post-caesarean peritonitis with infection should be carefully evaluated for uterine scar dehiscence or bowel perforation.
3. Post-caesarean peritonitis caused by uterine scar dehiscence or bowel perforation requires prompt surgical exploration and removal of source of infection with early administration of broad-spectrum antibiotics.
4. High index of suspicion should be maintained even in low risk women undergoing Caesarean section.

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