

Uterine Perforation with Intra-abdominal Extrusion of Foetus and Intrauterine Bowel Herniation and Strangulation: A Case Report

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ABSTRACT

Uterine perforation is a major but rare complication of surgical abortion. Some of the dreaded complications are bowel herniation, strangulation, gangrene, and sepsis. With the legalisation of medical termination of pregnancy, such life-threatening complications have become a rarity in recent times. Usually, the patient presents with lower abdominal pain. A history of surgical abortion may not be forthcoming if an unsafe abortion is performed. A high index of suspicion should be kept while imaging such patients in an emergency setting, since early diagnosis is the key to survival. Hereby, the authors present a case of a 30-year-old female patient presenting with non specific complaints of abdominal pain. Upon vaginal examination, a structure protruding out of the internal os (admitting the tip of a finger) was noted, and a boggy mass was felt in the pouch of Douglas. Ultrasonography and Contrast-enhanced Computed Tomography scan (CECT) performed in an emergency setting revealed uterine rupture with a rent, intra-abdominal foetal extrusion, and bowel loop herniation through the vagina. A delayed CT scan provided additional information about right ureteral injury, which was helpful in proper urological preoperative planning. In conclusion, ultrasonography and CECT imaging are useful in cases with lower abdominal pain having recent history of abortion to rule out uterine perforation and other obvious and occult associated complications for proper patient management.

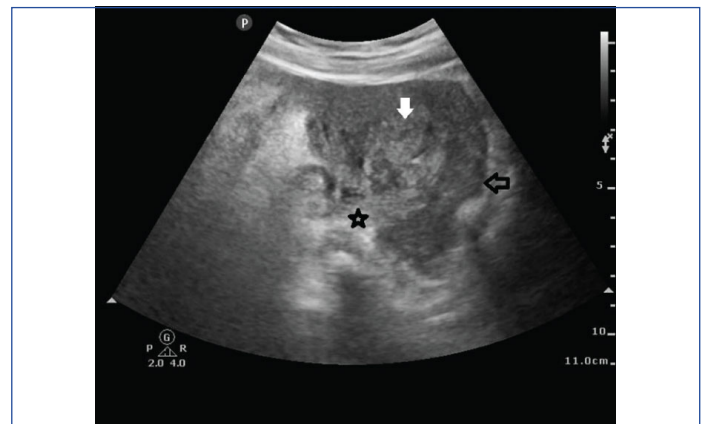
Keywords: Abortion, Evisceration, Gangrenous bowel, Obstruction, Pregnancy, Ureter

CASE REPORT

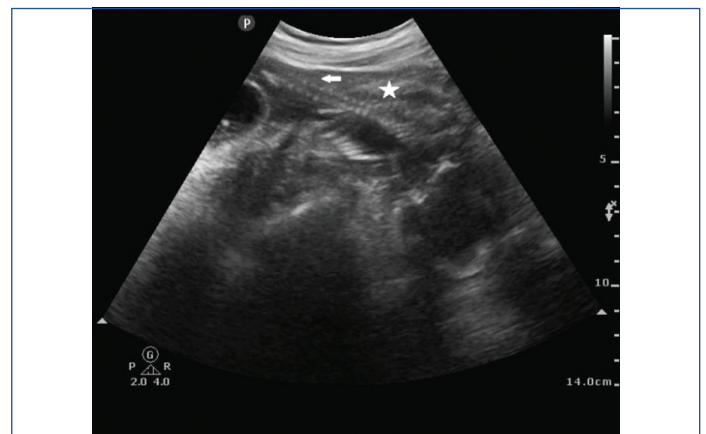
A 30-year-old female Gravid4 Pregnancy2 Live2 Abortion1 (G4P2L2A1), who had two previous full-term normal deliveries, presented with four months of amenorrhoea, lower abdominal pain, abdominal distension, and pervaginal bleeding. The patient did not have any prior medical conditions or systemic illnesses. During gynaecological examination, a long tubular structure measuring 15 cm in length with a diameter of 1 cm was observed protruding from the introitus. On pervaginal examination, the structure was noted to be protruding out of the internal os (admitting only the tip of a finger), and a boggy mass was felt in the pouch of Douglas.

The patient was shifted for an emergency ultrasound scan. On ultrasonography, the uterus appeared bulky with a hypoechoic defect in the myometrium measuring 8 mm in the left posterolateral wall of the uterus near the cornua [Table/Fig-1]. Multiple air foci were appreciated within the endometrial cavity and myometrium. A tubular structure with gut signature (bowel loops) was noted traversing the rent in the posterior wall of the uterus into the endometrial cavity [Table/Fig-1]. A single extrauterine intra-abdominal foetus corresponding to 16 weeks and three days was noted in the left iliac fossa [Table/Fig-2] with absent foetal cardiac activity. There were multiple dilated bowel loops in the abdomen.

Following the CECT scan, uterine perforation was revealed through a rent approximately 2.9 cm in thickness at the left cornua and along the left posterolateral uterine wall [Table/Fig-3], with a retained product of conception measuring 3×3.6×4.6 cm in the endometrial cavity. The foetus was seen in an extrauterine, intraperitoneal location in the left iliac fossa and left pelvic cavity [Table/Fig-4]. Also, noted was, the herniation of small bowel loops into the endometrial cavity (ileal bowel loops) along with its mesentery [Table/Fig-5]. It was extruding through the cervix into the vagina [Table/Fig-6], resulting in upstream small bowel obstruction of the proximal ileum and jejunum with a maximum diameter of 4.2 cm [Table/Fig-7]. An injury



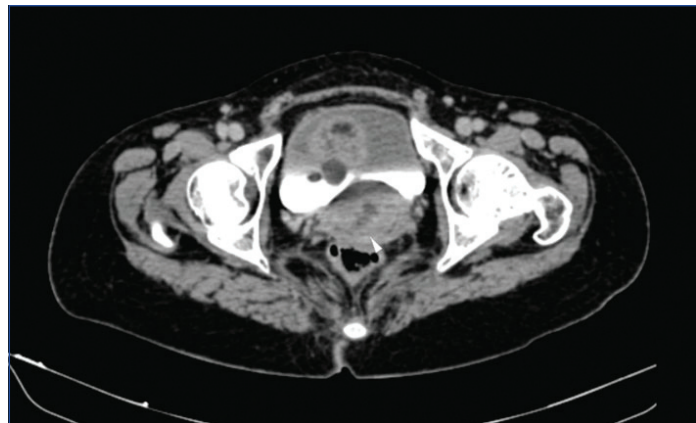
[Table/Fig-1]: Sagittal ultrasound image of pelvis showing bulky uterus (hollow black arrow) with rupture in its posterior wall (black star) and echogenic mesentery and bowel loops (solid white arrow) entering into endometrial cavity through the rent.



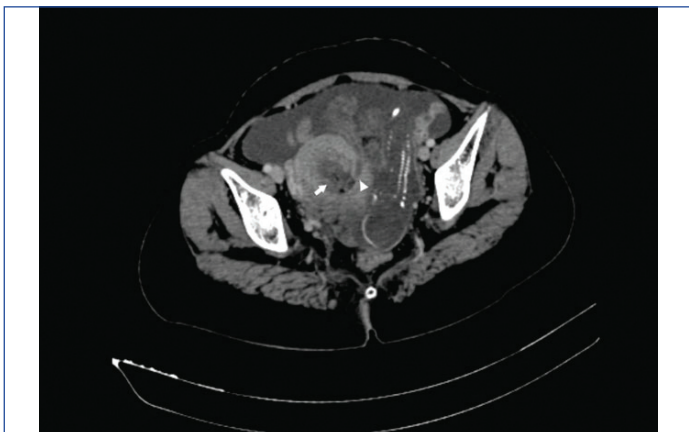
[Table/Fig-2]: Ultrasound image of pelvis showing echogenic foetal bones (white star) lying in the pelvis with no intervening tissue between foetus and anterior abdominal wall (white arrow).



[Table/Fig-3]: Sagittal CECT image of abdomen and pelvis— Venous phase showing bulky uterus with rent in its posterior wall (small white arrow). Fluid, hyperdense contents and air foci are noted within the endometrial cavity (black star). Foetal skull noted in pelvis posterior to uterus (big white arrow).



[Table/Fig-6]: Oblique CECT axial image- Venous phase showing herniated bowel loops within the vagina (arrow head).



[Table/Fig-4]: Oblique CECT axial image- Venous phase showing, collapsed bowel loops traversing through the rent in left posterior uterine wall (arrow head) with collapsed bowel loops within the endometrial cavity (arrow). Foetal bones are noted in pelvic cavity on left side in extrauterine location.



[Table/Fig-7]: Coronal CECT images- Venous phase showing dilated small bowel loops in abdomen.



[Table/Fig-5]: Sagittal CECT axial image- Venous phase showing, collapsed bowel loops traversing through the rent in left posterior uterine wall (black arrow head) and evisceration through cervix into the vaginal canal (white arrow head).



[Table/Fig-8]: MIP sagittal CECT image- Delayed phase showing extravasation of excreted contrast from right lower ureter with contrast noted in pelvis (black arrow heads).
MIP: Maximum intensity projection

to the right ureter with contrast extravasation was noted on delayed postcontrast images suggesting urinary leakage [Table/Fig-8].

Upon admission, the patient was afebrile, had a pulse rate of 108 beats per minute, a blood pressure of 104/76 mmHg, and appeared pale on examination. Complete blood counts showed mild anaemia with a haemoglobin level of 8.8 g/dL (normal range in adult females

is 12-16 g/dL), a total leukocyte count of 12000, and platelets at 2.83 lakhs. The patient received a transfusion of packed red blood cells and was taken up for surgery the next day. The dead foetus (approximately 500 grams) along with placental clots noted in the left iliac fossa and uterine cavity, was removed. A rent of size 4x1 cm was noted in the posterior wall of the uterus with descent of the ileal loops through the uterus into the vagina. The uterine rent was repaired. A 40 cm segment of gangrenous ileal loops, 100 cm away from the duodeno-jejunal flexure, was noted. About 50 cm of gangrenous bowel loops were excised, and a double barrel ileostomy was created in the right iliac fossa. Contusion over the rectosigmoid junction was seen. Inflamed, infected, necrosed, and oedematous ureter with surrounding collection was noted. The patient was kept in the intensive care unit for 10 days. Upon improvement of her condition, right ureteric reimplantation with Double J Stent placement was performed.

DISCUSSION

An unsafe abortion is defined as an abortion carried out by professionals lacking adequate skills or at a centre lacking appropriate medical facilities for abortion, or both [1]. It is the fourth leading cause of maternal mortality, which is often preventable with early detection and management. Surgical abortions carry a higher risk of complications compared to medical abortions. Complications related to surgical abortions can be acute or chronic and include haemorrhage, sepsis, acute respiratory distress syndrome, disseminated intravascular coagulation, visceral organ injury, thromboembolic phenomena, and infection [2]. Second-trimester abortions are usually performed surgically. The risk of morbidity and mortality increases as the weeks of gestation increase, with a sharp rise in the rate of severe complications noted after 14 weeks of pregnancy [2]. Uterine perforation has an incidence between 0.07% to 1.2% [3,4]. Various factors predispose to an increased risk of perforation, including previous operative/procedural history, multiparity, uterine attitude, post-puerperal uterus, and a history of previous placental invasion [4].

Uterine perforation following an abortion might be missed, so it is pertinent to routinely follow-up asymptomatic patients with ultrasonography after surgical abortion [3,5,6]. On the other hand, symptomatic patients may present with delayed onset abdominal pain, vaginal bleeding, anaemia, or haemodynamic instability after prior uterine instrumentation [5]. Perforation detected late carries a poorer prognosis than those that are detected earlier [7]. Initially, most patients are investigated with ultrasonography, which often shows various direct and indirect features of perforation. Direct signs on ultrasonography include the extrusion of foetal parts with no intervening structures between the abdominal wall and foetus or the urinary bladder and foetus [6,8]. A uterine defect is seen as a hypoechoic or anechoic rent extending from the myometrium to the endometrium, associated with fluid in the pouch of Douglas. The defect is often accompanied by bowel wall evisceration through the perforation site or partial extrusion/protrusion of foetal parts; like, the intra-abdominal protrusion of a foetal leg with an intact amniotic cavity through the rent in the left uterine horn on ultrasonography as described in the case by Tan WX et al., [9,10]. Intraperitoneal air foci or collections with air foci in the pelvis are indirect signs that could point to a recent uterine perforation in the appropriate clinical setting [6]. Other features such as foreign bodies in the pelvis should also raise suspicion of uterine perforation; like, a coiled-up Ryle's tube noted in the case by Nayak PK et al., [11]. The usage of high-resolution transvaginal probes can enhance the detection of perforation defects and mural haematomas [4,8]. Present case showed a bulky uterus with echogenic bowel loops and associated mesentery within, an intra-abdominally extruded foetus, and free fluid.

The CECT not only helps in elucidating the exact site of perforation but also in looking for complications like herniation and viability of small bowel loops, mesentery, transverse colon, sigmoid colon, omentum, ovaries, or fallopian tubes [6]. The defect is seen as a hypoattenuating breach in the myometrial continuity [10]. Associated bowel obstruction and strangulation can also be visualised. Mechanisms of bowel obstruction following evisceration were described by Augustin G et al., in their study, including uncomplicated obstruction, strangulation, mesenteric stripping, and degloving bowel injury. Strangulation develops as the bowel loops pass through a tight hole of perforation. Mesenteric stripping is the separation of bowel loops from their mesentery, and degloving injury results from the circumferential separation of the muscular layer of the bowel from the underlying mucosa. The present patient showed strangulation without mesenteric stripping, which was noted as associated mesenteric herniation with bowel loops on CECT and also confirmed during surgery [12]. A ten minutes delayed phase of CECT imaging can demonstrate injuries to adjacent vessels and ureters with the demonstration of any active haemorrhage/urinary extravasation. Active haemorrhage can be seen as contrast extravasation in arterial phase which increases in size on the delayed phase, whereas contrast extravasation in renal excretory phase denotes urinary leakage [8,13]. Some uterine tears might not be visualised at CT because of their small size; however, the presence of hemoperitoneum, active bleeding into or outside the uterine cavity, and injury to neighbouring structures should prompt suspicion of a uterine perforation [5].

The MRI is less commonly performed in emergency settings, especially when the patient is hemodynamically unstable, because of its limited availability and long scanning duration [4,5]. Begum J et al., described a case where an MRI was done to look for the site of uterine perforation. The patient also had intra-abdominal extrusion of a deformed foetal head, consolidating their clinical suspicion and ultrasonographic findings [14]. However, with a smaller number of cases and studies present in the literature regarding the findings in patients with various complications of unsafe abortion, the utility of MRI performed in an emergency setting remains dismal and needs further validation with large-scale studies and meta-analyses. Gakhal MS and Levy HM, described a case, wherein MRI could not show appreciable foetal parts in the right adnexa of the patient with uterine rupture and abdominal extrusion of the foetus [15].

Uterine perforation with abdominal extrusion of foetal parts presents with classic radiological manifestations. Yet, in some cases, it might become difficult to differentiate it from abdominal ectopic pregnancy. Foetal cardiac activity assessment could help in differentiating between an intra-abdominal ectopic live gestation and an extruded dead foetus [8].

CONCLUSION(S)

Post-uterine instrumentation, gynaecological examination, and routine ultrasonography can help in the early detection of complications. Ultrasonography and CECT imaging done in an emergency setting for patients having undergone unsafe abortions can help in ruling out uterine perforation. Furthermore, CECT provides additional information regarding the site of perforation and any missed complications like ureteric injuries, thus aiding in proper surgical planning and management.

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PLAGIARISM CHECKING METHODS: [\[Jain H et al.\]](#)

- Plagiarism X-checker: Aug 02, 2023
- Manual Googling: Oct 23, 2023
- iThenticate Software: Dec 16, 2023 (9%)

ETYMOLOGY: Author Origin

EMENDATIONS: 6

AUTHOR DECLARATION:

- Financial or Other Competing Interests: None
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. Yes

Date of Submission: **Aug 02, 2023**Date of Peer Review: **Oct 19, 2023**Date of Acceptance: **Dec 18, 2024**Date of Publishing: **Mar 01, 2024**