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Posterolateral uterine rupture in scarred uterus complicated by external iliac vein injury

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ABSTRACT

Uterine wall rupture is a rare yet catastrophic complication of pregnancy with a high mortality rate of both the mother and the fetus. The condition could be classified according to etiology into primary unscarred uterus, and secondary scarred uterus or according to the site of rupture. Our case presented with scarred uterine rupture through a posterolateral injury. The patient had history of 3 previous CS and a D&C procedure. The rupture was complicated by EIV injury. Uterine rupture does not always present with profound manifestations of shock especially in posterior wall rupture and timely management ensures the best possible outcome. Finally, meticulous examination of the anatomically related structures and vessels, and the repair of any associated injuries, is essential.

Keywords: D&C, EIV injury, Uterine rupture

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Introduction

Uterine wall rupture is a catastrophic complication of pregnancy defined as complete separation of the three uterine layers. [1] Although being a rare complication with an approximated incidence rate of 0.04% in developing countries and an even lower rate in developed countries, the condition has a poor prognosis with a high mortality rate of both the mother and the fetus. [2-4]

According to etiology, uterine rupture is classified into primary uterine rupture when the uterus is unscarred and secondary scarred

uterine rupture when the uterus previously endured an intervention or myometrial incision such as previous cesarean section delivery (CS) or dilatation and curettage (D&C). [1,2,4] Multiple risk factors play a role in both unscarred and scarred uterine rupture: lack of antenatal care, multiparity, maternal age, abnormal fetal presentation, macrosomia, congenital uterine anomaly and labor induction with prostaglandins (PG) and/or oxytocin. [2-4] This case report highlights possible causes of atypical site uterine rupture with the aim of early detection and management to ensure the best possible outcome.

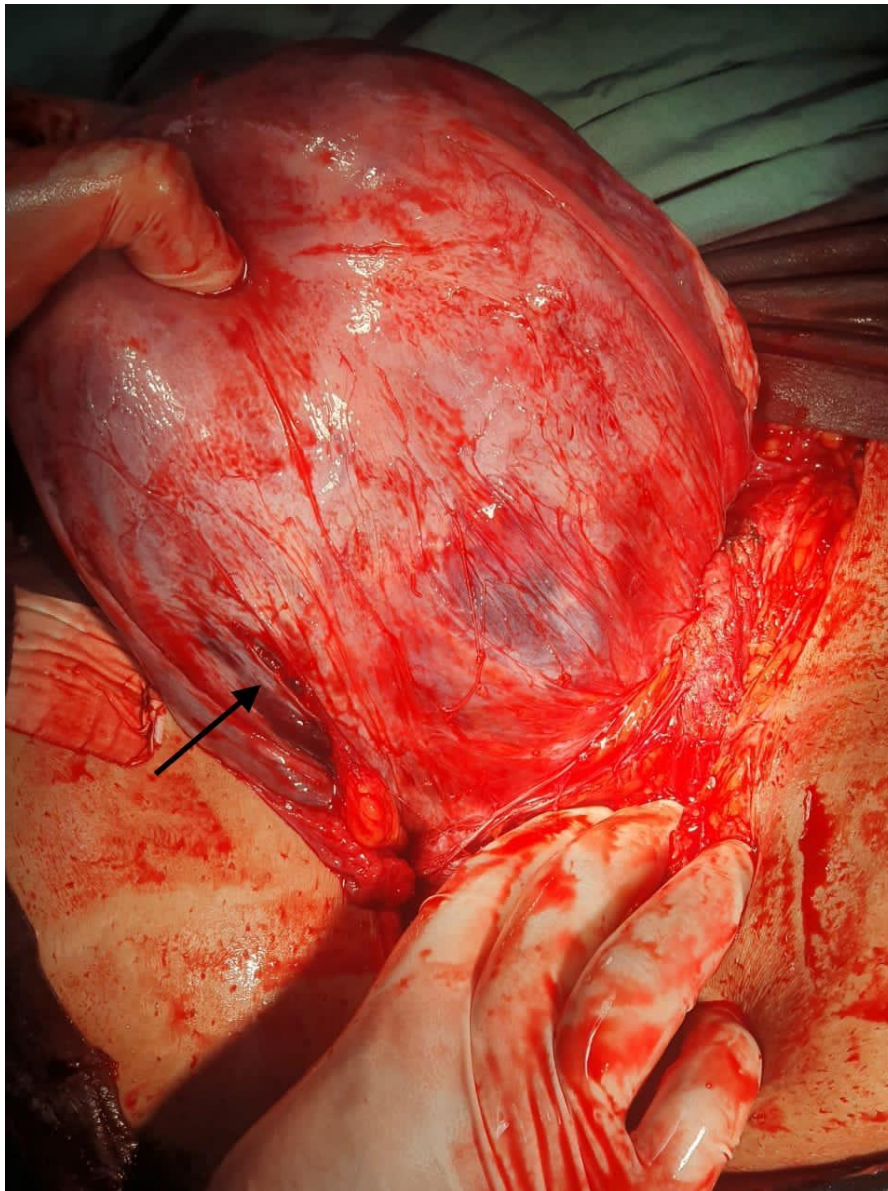


Figure 1. Ruptured uterus showing posterolateral wall injury with intact anterior wall (posterolateral wall injury indicated by the black arrow)

Case

A 42-year-old female, gravida 5 para 3 abortus 1, 39 weeks' gestation, presented with lower abdominal pain radiating to her back which started 6 hours prior to coming to the hospital. The patient had history of 3 previous CS, through lower segment incision, last one dated 5 years ago, and history of D&C procedure for miscarriage, at 9 weeks' gestation, dated 4 years ago.

The mother was conscious and oriented with pelvi-abdominal tenderness of maximum intensity near her previous pfannenstiel incision. Vaginal examination showed cervical dilatation of 3cm and effacement of 60%. A transabdominal ultrasound was preformed revealing a single viable fetus, 37 weeks, with cephalic presentation, fundoanterior placenta and present fetal heart sounds (FHS). The patient was admitted, vital signs were stable and laboratory investigations showed: PT: 12.7 sec, INR: 1, Serum Creatinine: 0.38 mg/dL, Hb: 9.2 g/dl, Hct: 25.7%, RBC: 3.19 million/mm³, WBC: 12.7 thousand/mm³. Upon reevaluation 30 minutes later, the patient was still conscious and hemodynamically stable, with BP of 140/90 and HR of 95, yet transabdominal ultrasound revealed intrauterine fetal dead (IUFD) with absent FHS and a retroplacental hematoma measuring 5cm x 6cm.

The patient was rushed to the operating room and a decision to perform a pfannenstiel exploratory laparotomy was taken. After opening the skin, subcutaneous tissue, muscles and peritoneal layers, the pelvic floor was found flooded with blood and the fetus was noted to be extra-uterine intraabdominal. The placenta was also found intraabdominal completely dissociated from the uterus. After blood suction and removal of the non-viable fetus and placenta, inspection of the uterus showed a completely intact anterior uterine wall; including the scar of previous cesarean section. Further suction and dissection revealed an 8cm posterolateral uterine wall rupture. (Figure 1)

A decision for total abdominal hysterectomy was taken due to intractable bleeding and signs of hemodynamic instability. However, after hysterectomy was completed, pelvic floor bleeding persisted with a right-sided origin. The pelvic floor was meticulously dissected, and the source of bleeding was identified as the right external iliac vein (EIV). The vessel was clamped with a Satinsky vascular clamp and careful examination of the vessel showed 3 full vessel wall rents, each approximately 3-4 mm. The external iliac artery and internal iliac artery and vein were all intact. The vascular team was consulted and the EIV was repaired by direct suturing with 6/0 proline.

Total blood loss at closing was 2400 cc by suction plus 30 blood-soaked towels, and total urine output was 2600 cc. Closing BP was 130/80. Collectively, the patient received 4 units packed RBCs, 10 units cryoprecipitate, 4 units plasma, 2 units platelets, 2L crystalloids and 500 cc Voluven. The patient was then transferred to the ICU. Vitals remained stable and there were no signs of postoperative complications. Twenty-four hours later the patient was moved to a wardroom and put under observation where she was conscious, oriented and hemodynamically stable, with normal vital signs, and thus was discharged after seventy-two hours and scheduled for follow up.

Discussion

When classifying uterine rupture according to its site, anterior uterine wall injury presents as the most common site, which could be explained by the fact that CS is the most common risk factor of uterine rupture. [2,4] Whereas, isolated posterior uterine rupture is a very rare condition in unscarred uterus and have even been documented only a number of times in scarred uterus. [4,6-14] The cause of posterior uterine rupture in a scarred uterus remains not fully understood. Literature review suggests that other than the previous CS, an additional factor usually seems to play a role in causing the atypical site rupture. In some cases, the additional factors seem to be clear and could

correlate with direct injury to the site of rupture, such as ectopic angular implantation, abnormal transverse fetal lie, or abnormal placentation. [5-7] However, in some cases the additional factors remain unclear. [8-10]

In trial to explain the atypical site rupture in a scarred uterus, it has been suggested that the use of PG and/or oxytocin for induction could be the main factor. [11-13] The theory suggests that the anterior lower segment scar, from previous CS, interferes with the normal balance of contraction forces, and the use of induction further augments such misbalance creating unequal stress on the uterine wall. [9,11] Another factor seems to be the history of D&C. [14] Despite D&C not causing any frank uterine perforations, uneven curettage, which is inevitable, leaves some areas of the uterine wall more vulnerable; increasing their risk of rupture. [6,15] Finally, though it is agreed upon that anterior wall rupture due to previous CS is the most common presentation of scarred uterine rupture, with time the incision site is replaced by tough inelastic fibrous tissue. Paradoxically, scar maturation makes it stronger than the rest of the uterine wall and thus the uterus ruptures in atypical sites. [9,12,13]

Uterine rupture could be further complicated by injury to anatomically related abdominopelvic structures; where bladder injury has been documented as the more commonly associated injury. [2,4] However, this should not exclude the possibility of injury to other structures - especially in atypical site injury. In our presented case, the expulsion of intrauterine contents through a posterolateral tear caused direct injury to the external iliac vein which has not been previously documented. MRI scans have already demonstrated the close association of major vessels to the posterior and lateral walls of a gravid uterus. [16] Thus, it is of key importance to meticulously check the integrity of structures and vessels anatomically related to the rupture site.

Conclusion

Uterine rupture does not always present with profound manifestations of shock or acute abdomen; the patients usually have minimal symptoms and normal vital signs especially in posterior wall rupture due to the concealment and tamponade of the bleeding. [2,10] Thus, the condition should be diagnosed with high index of susceptibility especially in patients with history of D&C or old CS; or when PG and/or oxytocin have been used for induction. Management in a timely manner is crucial to ensure the best possible outcome for both the mother and the fetus. [3,4] Finally, whichever management plan is decided upon, meticulous examination of the anatomically related structures and vessels, and the repair of any associated injuries, is essential.

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