



SCARS AND BEYOND: UNEXPECTED JOURNEYS OF UTERINE SCARS

Radio-Diagnosis

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ABSTRACT

The World Health Organization (WHO) suggests a medically adequate cesarean delivery of 10-15% to assure optimal prognosis for both mother and children. Recently for the past few decades, there has been a further increase in the incidence of caesarean sections worldwide. Although the rise in caesarian sections has been associated with a reduction in maternal and infant mortality in high-risk groups, it has also raised concerns over its associated post-operative complications. The most crucial concern of an uterine scar is its rupture, which is one of the rare and catastrophic complications, occurring in only 0.3% of cases. Uterine rupture refers to disruption in the myometrium extending via the serosa, leading to an abnormal communication between the uterine cavity and the peritoneum. Whereas, the partial rupture in a uterine wall, in which the serosa layer is still intact, refers to scar dehiscence. The diagnosis of complications of cesarean sections such as uterine scar dehiscence in the postnatal period still remains elusive due to its vague presentation. An incorrect diagnosis would lead to unnecessary interventions or delays in the management of such patients leading to maternal morbidity.

KEYWORDS

post-LSCS complications, uterine scar rupture, uterine scar dehiscence

INTRODUCTION

Cesarean delivery is a commonly performed operation, which has assured optimal prognosis for both mothers and children in the high-risk groups (1). For the past few years, the increased incidence of cesarean delivery has raised crucial concerns over its associated complications (2). Nonetheless, a higher incidence of cesarean sections also contributes to an increase in future caesareans, as the probability of having a new cesarean in a future pregnancy is >90% and raises concerns about complications related to the uterine scar (3). One of the serious acute complications is scar dehiscence or rupture. Uterine rupture refers to a disruption in the myometrium extending through the serosa, which leads to abnormal communication between the uterine cavity and the peritoneum that may facilitate the development and spread of infections. Most often the rupture is complete, which is seen extending throughout its length or it can be incomplete, when it is limited to a part of the scar. Whereas, partial rupture of the uterine wall, in which the serosa layer is intact, is known as scar dehiscence.

Here we describe two of the most unusual complications of uterine scars following cesarean sections.

Case Presentations

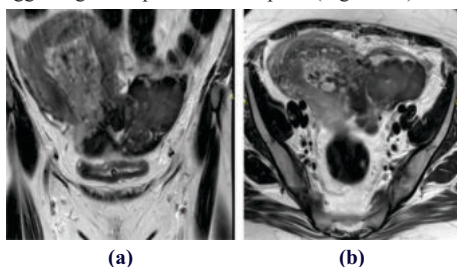
Case 1

A 31year old lady (G3L1A1) with a history of previous cesarean section, who recently underwent a medical termination of pregnancy (MTP), presented to the emergency department with complaints of excessive vaginal bleeding and lower abdominal pain on postoperative day 3. On examination, she was tachycardic, tachypneic, and pyrexial with abdominal tenderness and guarding. She was then referred for an ultrasound abdomen.

Imaging Findings

Ultrasound abdomen revealed a large lower abdominal hypoechoic area with no obvious internal vascularity around the posterolateral wall of the uterus with possible communication with the uterine cavity. As abdominal ultrasound findings are often non-specific, an MRI abdomen was advised to confirm the diagnosis.

On MR imaging, there was complete disruption in the left lateral wall of the uterus with extension of endometrial clots outside the uterine cavity suggesting incomplete uterine rupture (Fig 1a & b).



(a)

(b)

Fig 1(a & b). MRI T2 weighted coronal(1a) and axial(1b) images showing irregular hematoma at the left lateral aspect of the uterus seen in communication with the endometrial cavity through a dehiscence uterine scar.

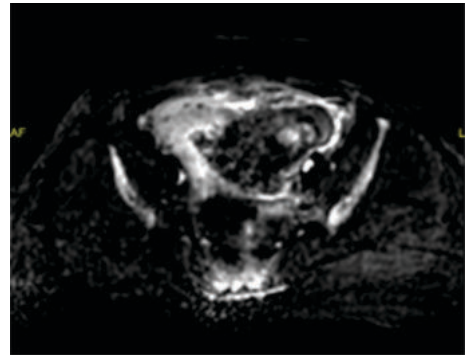


Fig 2. MRI DWI imaging shows no diffusion restriction suggesting the absence of infective collection.

Case 2

A 28-year-old female with a recent history of LSCS (Postoperative day 10) presented to emergency with complaints of on and off fever and burning micturition associated with lower abdominal pain. The urine routine showed the presence of pus cells and a few red blood cells. She was then referred to Radiology for abdominopelvic ultrasound evaluation.

Imaging Findings

On per-abdominal ultrasound imaging, an irregular heterogeneously hypoechoic collection was noted close to the uterine scar region with possible communication with the uterine cavity (Fig. 3).

Further contrast-enhanced CT abdomen and pelvis were performed, which demonstrated an organized collection (~20HU) anterior to the uterus. A low attenuation tract was noted to extend from the endometrial cavity to the fluid collection, traversing the myometrium in the anterior aspect of the lower uterus, at the level of cesarean scar (Fig. 4a & b).

Subsequently, a laparotomy was performed which confirmed the scar dehiscence.

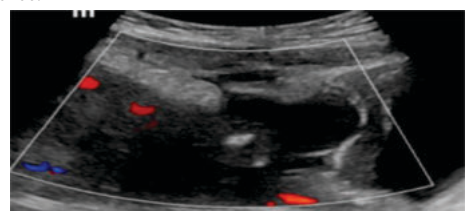


Fig 3. A transabdominal ultrasound scan (TAS) of the uterus shows a

heterogeneous avascular focus extending from the lower uterine caesarian scar and along the anterior surface of the uterus.

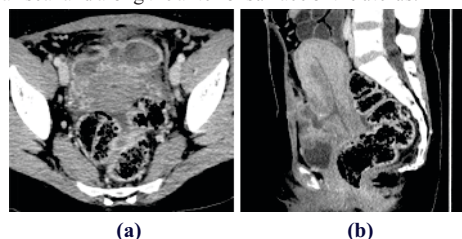


Fig 4(a & b). CECT scan images showing irregular heterogeneous collection seen in continuity with the endometrial lining at the caesarian scar site (4a), and along the anterior surface of the uterus (4b)

DISCUSSION

Uterine rupture is the most severe life-threatening complication of cesarian delivery and is defined as the separation of all the layers of the uterine wall, including the serosal layer which establishes an abnormal communication between the uterine cavity and the peritoneal cavity (5). Whereas, uterine scar dehiscence refers to a slight separation of prior scar causing complete or partial discontinuity in the myometrium with intact serosa. Theoretically, any insult to the uterine wall in the form of curettage, myomectomy, or previous caesarian section causes weakening of the uterine wall which can lead to uterine perforation in the subsequent pregnancies.

Radiologically, ultrasound as a primary investigation can detect pelvic collection, however, it can still be unclear as it fails to demonstrate the exact site of communication between the uterine cavity and the abdominal cavity. The presence of gas within the uterine defect extending from the endometrium along with the hemoperitoneum increases the likelihood of rupture in an appropriate clinical setting (7). Although "Reg flag signs" like the presence of bladder flap hematoma greater than 5cm and/or a large amount of blood or an infection in the myometrium that extends into an infected bladder flap hematoma or parametrial abscess should raise greater concern for uterine rupture, especially if direct communication with the endometrium is visualized (8).

CT with multiplanar reformatted reconstruction can be considered a good initial imaging modality in an acute clinical setting. Nonetheless, MR is superior to CT in differentiating uterine dehiscence from rupture as MR imaging delineates all uterine layers and identifies an intact hypointense serosa covering the myometrial gap (8). With the addition of DWI to routine MRI, it can clearly differentiate collection and possibility of infection if there is the presence of diffusion restriction (9).

Due to rare occurrences of these conditions and the lack of standardized imaging criteria for diagnosis, sometimes it is difficult to differentiate between uterine scar dehiscence and rupture on imaging alone. However, due to the poor correlation between radiological and surgical findings in uterine dehiscence or rupture, further management should be done based on the patient's clinical status.

Summary

Due to the increase in the frequency of cesarean deliveries over the past few decades, radiologists tend to frequently encounter its acute and chronic complications. Awareness of normal postprocedural findings such as myometrial defects and bladder flap hematomas should not be confused with its significant acute complications, such as major hematomas, uterine scar dehiscence, and rupture. Radiologists must be familiar with these pathological conditions to alert the referring clinicians for prompt management.

CONCLUSION

Although the caesarian section is an extremely safe procedure, cesarean delivery has a variety of acute and chronic complications. Its increasing frequency in the recent past has raised concerns over its associated post-operative complications. Therefore, a radiologist needs to be familiar with these entities and their appearances to differentiate them from normal postprocedural changes.

Abbreviations

MTP – Medical termination of pregnancy
CT – Computerized tomography
MRI – Magnetic Resonance Imaging
DWI – Diffusion-Weighted Imaging

LSCS – Lower Segment Cesarean Section
POD – Post-Operative Day

Conflicts Of Interest- None

REFERENCES

1. World Health Organization Human Reproduction Programme, 10 April 2015 (2015). WHO Statement on cesarean section rates. *Reproductive health matters*, 23(45), 149–150. <https://doi.org/10.1016/j.rhm.2015.07.007>
2. Betrán, A. P., Ye, J., Moller, A. B., Zhang, J., Gülmezoglu, A. M., & Torloni, M. R. (2016). The Increasing Trend in Caesarean Section Rates: Global, Regional and National Estimates: 1990–2014. *PLoS one*, 11(2), e0148343. <https://doi.org/10.1371/journal.pone.0148343>
3. Janevic, T., Lofthfield, E., Savitz, D. A., Bradley, E., Illuzzi, J., & Lipkind, H. (2014). Disparities in cesarean delivery by ethnicity and nativity in New York city. *Maternal and child health journal*, 18(1), 250–257. <https://doi.org/10.1007/s10995-013-1261-6>
4. Ali, M. B., & Ali, M. B. (2019). Late Presentation of Uterine Rupture: A Case Report. *Cureus*, 11(10), e5950. <https://doi.org/10.7759/cureus.5950>
5. Rosa, F., Perugin, G., Schettini, D., Romano, N., Romeo, S., Podestà, R., Guastavino, A., Casaleggio, A., & Gandolfo, N. (2019). Imaging findings of cesarean delivery complications: cesarean scar disease and much more. *Insights into imaging*, 10(1), 98. <https://doi.org/10.1186/s13244-019-0780-0>
6. Imaging after Cesarean Delivery: Acute and Chronic Complications Shuchi K. Rodgers Cheryl L. Kirby, Ryan J. Smith, Mindy M. Horrow <https://doi.org/10.1148/rg.326125516>
7. Nair, A. D., Manchanda, S., Gamanagatti, S., Kachhawa, G., & Bhatla, N. (2022). Post caesarean section complications conundrum: Role of imaging. *The British journal of radiology*, 95(1138), 20211344. <https://doi.org/10.1259/bjr.20211344>
8. Maldjian, C., Milestone, B., Schnall, M., & Smith, R. (1998). MR appearance of uterine dehiscence in the post-cesarean section patient. *Journal of computer assisted tomography*, 22(5), 738–741. <https://doi.org/10.1097/00004728-199809000-00014>
9. The role of diffusion weighted imaging in demonstrating communication between perituterine collection and uterine cavity following caesarean section Vivek Singh, Vaishali Tomar, Sunil Kumar, Rakesh K. Gupta <https://dergipark.org.tr/tr/download/article-file/62273>