

A Study of Spectrum of imaging findings in post-operative complications of cesarean section scar

Rajani Gorantla¹, Sameera Allu^{2*}, Sreedevi Meka³, Ankamma Rao D⁴

¹Associate Professor, ³Senior Resident, ⁴Professor, Department of Radio diagnostics, NRI Medical College and Hospital, Mangalagiri, Guntur District, INDIA.

²Senior Resident, Department of Radio diagnostics, King George Hospital, Visakhapatnam, INDIA.

Email: allu.sameera90@gmail.com

Abstract

Background: Cesarean delivery is one of the most common abdominal surgeries performed in women, with a global incidence of 15%. There will be alteration in the radiological anatomy of the uterus due to post-surgical changes, the knowledge of which is essential to differentiate the normal post-op changes from the post-operative complications. These complications can be divided into acute and chronic complications. Radiological investigations, including ultrasound, computed tomography, and magnetic resonance imaging, play a vital role in diagnosing these conditions. This article illustrates these complications with relevant images of cases presented with complaints following cesarean section requiring imaging for diagnosis.

Keywords: post-operative, cesarean section, complications, imaging, cesarean scar, scar rupture, scar dehiscence, endometrioma

*Address for Correspondence:

Dr Sameera Allu, Senior Resident, Department of Radio diagnostics, King George Hospital, Visakhapatnam, INDIA.

Email: allu.sameera90@gmail.com

Received Date: 18/06/2021 Revised Date: 13/07/2021 Accepted Date: 06/08/2021

DOI: <https://doi.org/10.26611/10132011>

This work is licensed under a [Creative Commons Attribution-NonCommercial 4.0 International License](https://creativecommons.org/licenses/by-nc/4.0/). 

Access this article online

Quick Response Code:



Website:

www.medpulse.in

Accessed Date:
02 October 2021

INTRODUCTION

Cesarean delivery is one of the most common abdominal surgeries performed in women, with a global incidence of 15%¹ and an overall post-operative complication rate of 14.5%.² There has been a recent increase in the number of cesarean deliveries, given improved outcomes. There will be alteration in the radiological anatomy of the uterus due to post-surgical changes, the understanding of which is essential to differentiate these normal postoperative

changes from the complications or pathologies arising in the cesarean scar. Sound knowledge of normal postoperative changes after cesarean delivery helps differentiate these changes from acute and chronic complications. The complications commonly encountered are infections and abscesses, cesarean scar defect (CSD), and other rarer entities like cesarean scar endometrioma, scar pregnancy. These can be divided into acute and chronic complications; infections, uterine scar dehiscence/rupture are acute complications, cesarean scar niche, scar endometriosis, and ectopic scar pregnancy are chronic complications. Radiological investigations, including ultrasound, computed tomography (CT), and magnetic resonance imaging (MRI), play a vital role in diagnosing these conditions. Ultrasound is the initial modality for diagnosing complications. CT and MRI, on the other hand, give further anatomical details and help to arrive at an accurate diagnosis. In this pictorial essay, the post-operative complications of cesarean section scar are discussed and illustrated with relevant images in different cases.

How to cite this article: Rajani Gorantla, Sameera Allu, Sreedevi Meka, Ankamma Rao D. A Study of Spectrum of imaging findings in post-operative complications of cesarean section scar. *MedPulse International Journal of Radiology*. October 2021; 20(1): 01-06.

<http://www.medpulse.in/Radio%20Diagnosis/>

Normal post-operative changes

Like any surgery, there will be an alteration of radiological anatomy in the post-operative period, which is considered normal. Radiologists must be aware of these changes to avoid pitfalls while diagnosing the complications and avoid unnecessary intervention in the patients. These changes are seen in almost all post-partum women delivered with cesarean section. The postpartum uterus generally takes a few weeks to return to the non-pregnant state. The involution trend of the uterus is similar in primiparous and multiparous women but lasts longer than 6–8 weeks in multiparous women.³ With the knowledge of typical uterine changes in the puerperal period, unnecessary interventions for alleged retained products of conception or atonic uterus can be avoided.⁴⁻⁶ These post-op changes include the enlarged uterus, endometrial cavity less than 2cms, fluid in the endometrial cavity, and intracavitary gas, which may be seen in asymptomatic women for approximately three weeks.⁷ (Fig.1). If the size of the hematomas at the uterine incision site is smaller than 1.5 cm, it is considered clinically insignificant.^{8,9} Small hematomas, less than 4cms, in subfascial and bladder flap locations, are also not significant.¹⁰ According to a study, on CT imaging, discontinuity is seen at the uterine incision site in the immediate post-operative period after cesarean section. This hypo attenuation at the uterine scar site is a normal finding of edema and should not be mistaken for uterine rupture or dehiscence.¹¹ Sound knowledge of normal post-operative changes in cesarean section helps the radiologist delineate the complications associated with the surgery and alert the clinician for immediate action.

ACUTE COMPLICATIONS

Acute complications of cesarean delivery generally occur in the first few days after the surgery. The most common complications are infection and hemorrhage; infections include endometritis, abscess, and wound infection. The weakening of uterine scar resulting in scar dehiscence and rupture are relatively rare complications.

Infections

One of the most common complications of cesarean delivery is infection. It includes a spectrum of wound infection, endometritis, and infected fluid collections, resulting in post-partum fever, warranting further investigations, including ultrasound or CT/MRI. Endometritis was more common in cesarean section than normal vaginal delivery¹²; this was probably when the prophylactic antibiotics were not used for emergency cesarean or therapeutic abortions.¹³ Post-operative infection can result in infected collections in the pelvis at various locations. The abscess appears as loculated heterogenous fluid collections on ultrasound; few may show internal debris (Fig.2).

Uterine scar dehiscence

Uterine scar dehiscence results from incomplete rupture of the uterine wall with an intact serosal layer. Dehiscence involves endometrium and myometrium without loss of integrity of serosa. Associated features include peritoneal free fluid, large bladder flap hematoma (size greater than 5cms), and pleural effusions.¹⁴ On ultrasound imaging, the cesarean scar site appears extremely thinned with disruption of endo-myometrium and only the serosal layer intact. The same imaging findings are seen in CT/MRI, with MRI having more soft tissue resolution. (Fig.3)

Uterine scar rupture

Uterine scar rupture is the deadliest complication of cesarean section scar resulting from the separation of all layers of uterus endometrium, myometrium, and even the serosa. There will be communication between the endometrial and peritoneal cavity.¹⁰ This condition is usually diagnosed clinically, and clinical-radiological correlation seems to be low. This is a life-threatening condition, and the clinical status of the patient guides management. This is a rare condition, and no standard radiological diagnostic criteria have not been defined. However, detecting the endometrial cavity's continuity with the peritoneal cavity can be considered the confirmatory diagnostic feature. Uterine scar rupture can also be encountered as a late complication of the cesarean delivery during the successive pregnancy (Fig.4).

CHRONIC COMPLICATIONS

Chronic complications occur many months or years after the surgery. Cesarean scar defect or scar niche being the most common late complication. The uterus can adhere to the overlying tissues at the scar site. Endometriotic tissue can be accidentally implanted in the abdominal wall or at the scar site during the surgical handling of the tissues, resulting in an endometrioma. Rarely pregnancy can occur at the scar site, or retained products of conception can be seen. Abnormal placentation with penetration of placental tissue into the myometrium can occur due to the thinning of the uterine wall from the scar resulting in morbidly adherent placenta. Very rarely, a uterocutaneous fistula can also develop.

Uterine scar niche

Uterine scar niche or scar defect is a common complication of cesarean delivery, which results from thinning of myometrium at the scar site. Clinical presentation is quite variable, with the majority being asymptomatic; other symptoms include vaginal bleeding, pelvic pain, infertility. Abnormal bleeding generally occurs within 2 days to 2 weeks of the menstrual phase,¹⁵ resulting probably due to accumulation of blood in the niche and bleeding occurring later. Severe cesarean scar defect can result in ectopic implantation, scar rupture, and placental adhesion. On

ultrasound imaging has a sensitivity and specificity of 100% in detecting cesarean delivery scars¹⁶, the uterine wall appears thinned out at the site of the scar with tethering of endometrium. The same findings are appreciated on the MR imaging with fair soft-tissue resolution (Fig. 5).

Adhesions

Post-surgical changes include the formation of adhesions between different structures in the abdomen. A cesarean section involves handling pelvic structures and peritoneum, which can result in the formation of adhesions. These adhesions can lead to bowel obstruction, chronic pelvic pain, and infertility. There is a change in the orientation of the uterus with anteversion and retroflexion. Sometimes the uterus may form adhesions with the anterior abdominal wall or urinary bladder. Adhesions can result in the abnormal orientation of the uterus with a focal loss of fat plane between the uterus at the scar site and overlying urinary bladder or anterior abdominal wall (Fig. 6 and 7)

Endometrioma

This is a relatively rare complication with less than 0.5% incidence due to accidental seeding of endometriotic tissue in the abdominal wall or at the scar site during cesarean section.¹⁷ The patient classically presents with cyclical pain at the endometriotic implant site during the menstrual cycle. Ultrasound is initially used to evaluate these cases, where a round or oval hypoechoic mass might be seen anywhere from the surgical scar site to abdominal wall layers. Therefore, with a high degree of suspicion, it is necessary to scan the superficial layers of the abdomen to rule out any endometriotic implant, which is generally not taken up in the routine ultrasound scan of the abdomen. The lesion may appear mildly heterogeneous with few small cystic areas, which represent a recent bleed. An accurate diagnosis can be arrived at, with the ultrasound findings correlating with the clinical suspicion. Cross-sectional imaging with CT/MRI may provide further detail about the extent of the disease, with MRI having a more excellent soft-tissue resolution. CT imaging reveals a solid soft tissue lesion with variable enhancement and surrounding inflammatory changes. A typical lesion appears T1 hyperintense at MRI representing the blood products; this feature differentiates it from other abdominal wall lesions like desmoid, surgical scar. (Fig. 8 and 9)

Ectopic scar pregnancy

Ectopic implantation can occur at the previous cesarean scar site, which was rare previously. However, the incidence has been increasing due to the rise in cesarean delivery and increasing detection of this condition.¹⁸ This condition should be carefully diagnosed because of the increased risk of uterine rupture, resulting in a fatal course. This ectopic implantation was believed to be due to

disruption of the endometrium and myometrium by any process like a cesarean section, curettage, myomectomy.¹⁷ The sensitivity of ultrasound in picking up this entity was reported to be 86.4%, according to a study conducted by Rotas MA *et al.*; therefore, only ultrasound can be used to diagnose this ectopic with adequate confidence levels.¹⁹ Doppler ultrasound plays an essential role in diagnosing this condition and differentiating it from other closely mimicking conditions like spontaneous abortion in progress and cervical ectopic pregnancy,²⁰ where the gestational sac is seen in the lower uterine segment. Doppler studies with colour and pulse show low resistance arterial flow in the peritrophoblastic region, mainly in the vesicouterine space for an ectopic scar pregnancy.²¹ On the contrary, there will be no flow noted around the aborting gestational sac in the lower uterine segment, which may appear irregular and located in the endometrial-endocervical canal. Cervical ectopic pregnancy is also situated in the endocervical canal rather than the anterior myometrium.²⁰ Treatment of this type of ectopic pregnancy can be done with an injection of methotrexate into the gestational sac or rarely injecting potassium chloride into foetal thorax under ultrasound guidance, which showed promising results in few studies.²⁰ If these techniques fail, then a surgical approach may be needed. (Fig. 10 and 11).

Morbidly adherent placenta

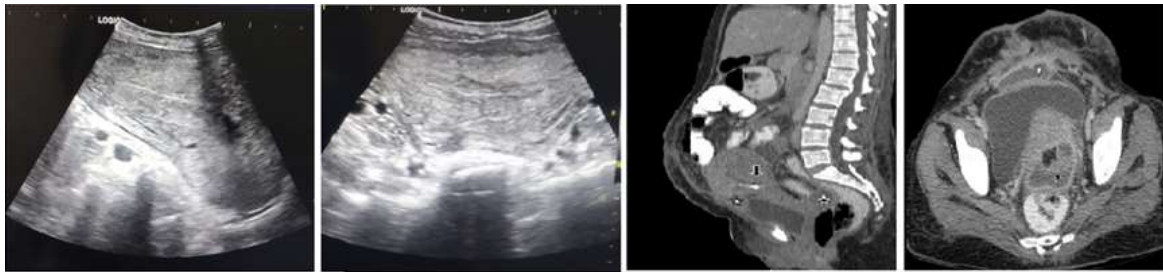
The morbidly adherent placenta results from the invasion of placental tissue into the uterine wall with non-separation of the placenta at the time of delivery. It is classified into accrete, increta, and percreta depending on the depth of invasion into uterine myometrium and adjacent structures. Ultrasound is the initial modality for evaluating the placenta but with a sensitivity of 67%–86% and a specificity of 50%–93% in detecting placenta accrete.²² sensitivity in picking up the morbidly adherent placenta. Few findings on ultrasound are loss of normal retroplacental hypoechoic space, direct visualization of placental tissue bulging out of the uterine wall into the urinary bladder, and thinning of myometrium at the site of placental invasion. MRI is employed for cases challenging to be diagnosed on ultrasound. MRI findings include T2 hypointense intraplacental bands, bulging of the placenta out of the uterine myometrium, and heterogeneously appearing placenta²³ (Fig.12).

Uterocutaneous fistula

The majority of uterine fistulae occur due to pelvic surgeries or any infectious processes, and they commonly happen between the uterus and colon (uterocolonic) or urinary bladder (uterovesical).²⁴ However, a rarer presentation of uterocutaneous fistula is also reported with no clear understanding of its pathophysiology, and the cause is attributed to pelvic surgeries, improper incision

closure, and drains usage.²⁵ Lower segment cesarean section is one such surgery that can lead to the formation of this fistula. The time of clinical presentation is quite variable, ranging from 2 months to 6 years after surgery.²⁶

This condition can be readily diagnosed with radiological imaging, including modalities like fluoroscopy or cross-sectional imaging of CT and MRI.²⁷ (Figs. 13).



Figures 1A and 1B: Normal post-operative changes

Figure 2A and 2B: Post-operative infections

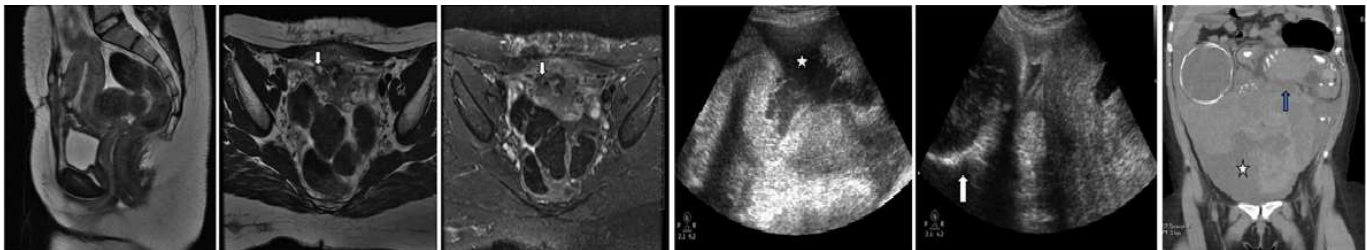


Figure 3A, 3B and 3C: Uterine scar dehiscence

Figure 4A, 4B and 4C: Uterine scar rupture

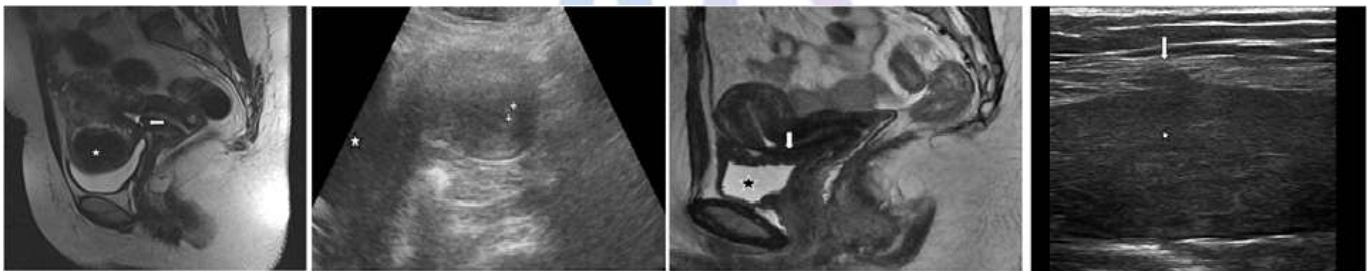
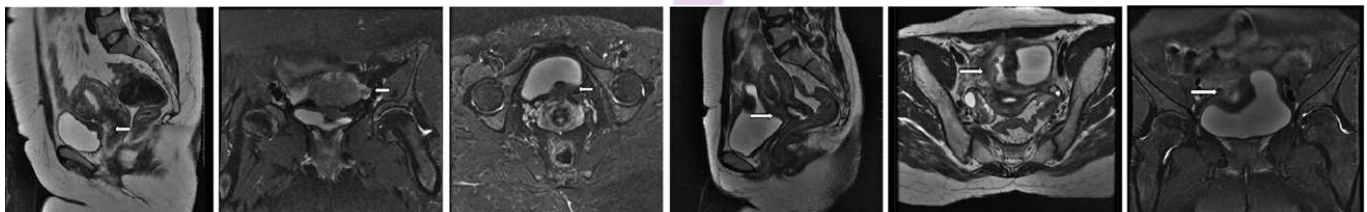


Figure 5: Cesarean scar niche

Figure 6A and 6B: Post-operative adhesions

Figure 7



Figures 8A, 8B, and 8C: Endometrioma

Figures 9A, 9B and 9C: Endometrioma

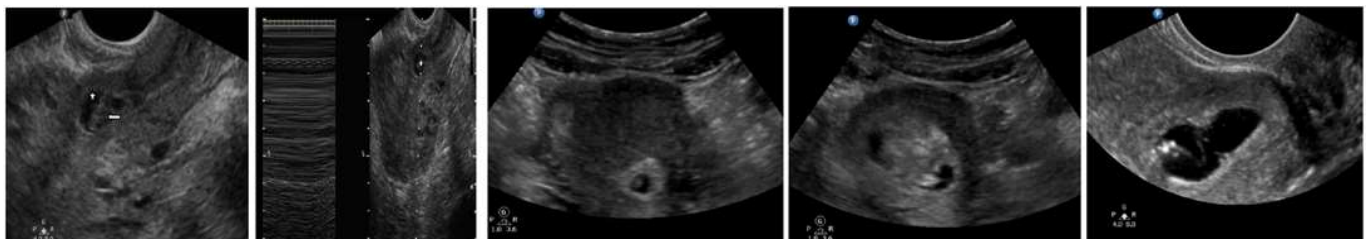
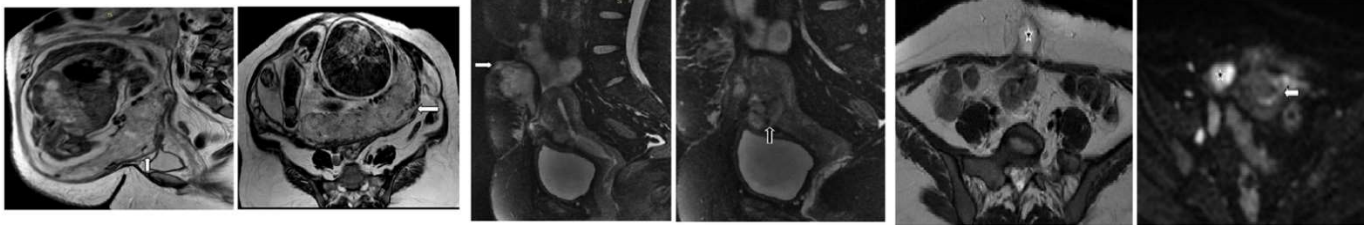


Figure 10A and 10B: Ectopic scar pregnancy

Figure 11A, 11B and 11C: Ectopic scar pregnancy



Figures 12A and 12B: Morbidly adherent placenta.

Figures 13A,13B,13C and 13D: Uterocutaneous fistula

Figures 1A and 1B: Ultrasound images depict the normal post-operative changes in a 28-year-old female who underwent cesarean section two days ago. Figure 1A shows sagittal image of the postpartum uterus which is enlarged with dilated vessels in the peripheral myometrium (black arrow). Minimal fluid seen in the uterine incision site (white arrow). Figure 1B shows axial section of the enlarged postpartum uterus in the same woman; **Figure 2A and 2B:** Post-operative infected collections resulting abscesses seen in pelvis, anterior to urinary bladder (white star) and in pouch of douglas (black star), as loculated hypodense collections with enhancing walls in a 36-year-old female who underwent cesarean section 5 days ago. Streak artefact of intra uterine contraceptive device is seen in the endometrial cavity (black arrow); **Figure 3A, 3B and 3C:** A 25-year-old female underwent cesarean section, and 40 days after the surgery, she presented with a complaint of lower abdominal pain. MRI revealed a defect in endo-myometrium in the anterior wall at the scar site in the right lateral aspect; however, the serosal layer appeared intact (white arrow). Thus, the diagnosis of uterine scar dehiscence was made. **Figure 4A, 4B and 4C:** Uterine scar rupture presented as a late complication in this 25-year-old second gravida woman during 32 weeks period of gestation in her successive pregnancy. She underwent a cesarean section 1 year ago and presented with severe abdominal pain and loss of fetal movements in her second pregnancy. Initial investigation with ultrasound showed a complete defect in the lower anterior uterine wall suggestive of uterine scar rupture (Fig 4A) (white star), and a dead fetus was seen in the peritoneal cavity (Fig 4B) (white arrow). CT imaging also revealed the same findings with uterine wall complete defect (white star) and fetus lying in the peritoneal cavity (white arrow) (Fig.4C); **Figure 5:** This is a case of 45-year-old female who underwent cesarean section 10 years ago, presented with abnormal vaginal bleeding. MRI imaging in sagittal section shows cesarean scar niche (white arrow) with thinning of myometrium and endometrial tethering at the scar site. There is also an anterior subserosal fibroid in the body of uterus (white star) indenting the urinary bladder; **Figure 6A and 6B:** This is a case of a 26-year-old female with a previous cesarean section showing changed orientation of the uterus with anteversion and retroflexion on both ultrasound and MRI imaging. White/black star marking the urinary bladder. There is a focal loss of fat plane between the lower anterior uterus below the cesarean scar and posterior urinary bladder wall, probably due to adhesion (Fig 6B) (White arrow); **Figure 7:** This is another post cesarean section case showing adhesion of uterus to the anterior abdominal wall (rectus muscle) at the scar site (white arrow). Uterus is marked with a white star; **Figures 8A, 8B, and 8C:** These MRI images depict endometriotic implant at the surgical scar site (white arrow) in the uterine wall in a 35-year-old female who presented with dyspareunia, dysmenorrhea, and dysuria during menstruation. She had a cesarean section 3 years back. MRI shows a lesion from the anterior myometrium extending into vesicouterine space, infiltrating the posterior bladder wall in keeping with endometrioma at the cesarean scar site. **Figures 9A, 9B and 9C:** Another case of a 23-year-old female with two previous cesarean sections complained of dysmenorrhoea. MRI showed scar endometrioma in the lower uterine segment at the scar site, infiltrating the posterior urinary bladder wall and extending up to the rectus sheath (white arrow); **Figure 10A and 10B:** Ectopic scar pregnancy was seen in a 35-year-old female in her third pregnancy with a history of cesarean section 5 years ago; she visited the antenatal clinic because of a positive urine pregnancy test. Ultrasound of pelvis revealed gestational sac in the lower anterior myometrium at the surgical scar site (white star). A fetal pole was also noted in the gestational sac (white arrow). Fetal heart tracing on M-mode noted (Figure 10B). The endometrial cavity was empty, confirming the diagnosis of ectopic scar pregnancy. **Figure 11A, 11B and 11C:** Another case of a 28-year-old second gravida with prior cesarean section 2 years ago, was diagnosed with ectopic scar pregnancy on ultrasound examination. This case was successfully managed by injecting methotrexate into the gestational sac under transvaginal ultrasound guidance (FIG 11B). Figure 11C shows gestational sac distended with injected methotrexate; **Figures 12A and 12B:** A 37-year-old female with two previous cesarean sections, presented in 32 weeks period of gestation of her third pregnancy. MR imaging revealed low lying placenta with focal bulge of placenta and thinning of adjacent myometrium extending from the anterior to the left lateral aspect in the lower uterine segment probably at the previous cesarean scar site (white arrow). These imaging features are in keeping with central placenta previa with placenta accreta / increta; **Figures 13A,13B,13C and 13D:** A 20-year-old female underwent cesarean section which was complicated with infection formation in the early post-operative period and was managed conservatively. Four months later, she again presented chronic pelvic pain and discharge through the scar of the cesarean section. On MR imaging, heterogenous fluid collections tracking onto the skin surface in the infra umbilical region (white arrow) (Fig. 13A) and communicating with endometrial cavity at the cesarean scar site (black arrow) (Fig. 13B) was noted in the sagittal T2 fat suppressed images. T2 axial images show the fluid collection in the subcutaneous planes of anterior abdominal wall (black star) (Fig. 13C). In figure 13D, diffusion weighted images showing restricted diffusion in the fluid collections in pelvis, in keeping with abscesses (black star) and communication with endometrial cavity at the cesarean scar site (white arrow). These imaging features are in keeping with uterocutaneous fistula.

CONCLUSION

With the increase in cesarean delivery rate, imaging for complications of post-surgery has also increased. Therefore, sound knowledge of both the normal post-operative changes and the complications associated with a cesarean section is necessary to warrant the clinician at the appropriate time. These complications are divided into early and late complications, of which infections account for the most common early complication and cesarean scar defect being the most common chronic complication. The radiologists should also familiarise themselves with rare complications like scar ectopic pregnancy and endometrioma to guide proper management.

REFERENCES

1. Betrán AP, Merialdi M, Lauer JA, Bing-Shun W, Thomas J, Van Look P, *et al.* Rates of caesarean section: analysis of global, regional and national estimates. *Paediatr Perinat Epidemiol* 2007;21(2):98-113.
2. Nielsen TF, Hökegård KH. Postoperative cesarean section morbidity: a prospective study. *Am J Obstet Gynecol* 1983;146(8):911-916.
3. Paliulyte V, Drasutiene GS, Ramasauskaite D, Bartkeviciene D, Zakareviciene J, Kurmanavicius J. Physiological Uterine Involution in Primiparous and Multiparous Women: Ultrasound Study. *Obstet Gynecol Int* 2017;6739345:1-10.
4. A. Mulic-Lutvica, O. Axelsson. Postpartum ultrasound in women with post-partum endometritis, after cesarean section and after manual evacuation of the placenta. *Acta Obstet Gynecol Scand* 2007;86:210-217.
5. A. Mulic-Lutvica, K. Eurenus, O. Axelsson. Uterine artery Doppler ultrasound in post-partum women with retained placental tissue. *Acta Obstet Gynecol Scand* 2009;88:724-728.
6. A. Mulic-Lutvica, O. Axelsson. Ultrasound finding of an echogenic mass in women with secondary post-partum hemorrhage is associated with retained placental tissue. *Ultrasound Obstet Gynecol* 2006;28:312-319.
7. Rosa F, Perugin G, Schettini D, Romano N, Romeo S, Podestà R, *et al.* Imaging findings of cesarean delivery complications: cesarean scar disease and much more. *Insights Imaging* 2019;10(1):98.
8. Baker ME, Kay H, Mahony BS, Cooper CJ, Bowie JD. Sonography of the low transverse incision, cesarean section: a prospective study. *J Ultrasound Med* 1988;7:389-393.
9. Koutsougeras G, Karamanidis D, Chimonis G, Gottas N, Polydorou A, Elmazis Ch, *et al.* Evaluation during early puerperium of the low transverse incision after cesarean section through vaginal ultrasonography. *Clin Exp Obstet Gynecol* 2003;30(4):245-247.
10. diFlorio-Alexander R, Harris RD. Post-partum complications. In: Fielding JR, Brown DL, Thurmond AS, ed. *Gynecologic imaging*. Philadelphia: Elsevier, 2011: 381-398.

11. Twickler DM, Setiawan AT, Harrell RS, Brown CE. CT appearance of the pelvis after cesarean section. *AJR Am J Roentgenol* 1991;156(3):523-526.
12. Maharaj D. Puerperal pyrexia: a review. Part I. *Obstet Gynecol Surv* 2007;62(6):393-399.
13. Low N, Mueller M, Van Vliet HA, Kapp N. Perioperative antibiotics to prevent infection after first-trimester abortion. *Cochrane Database Syst Rev* 2012;2012(3):CD005217.
14. Shuchi K, Rodgers, Cheryl L, Kirby, Ryan J, Smith, and Mindy M. Horrow. Imaging after Cesarean Delivery: Acute and Chronic Complications. *Radiographics* 2012;32(6):1693-1712.
15. Thurmond AS, Harvey WJ, Smith SA. Cesarean section scar as a cause of abnormal vaginal bleeding: diagnosis by sonohysterography. *J Ultrasound Med* 1999;18(1):13-16.
16. Armstrong V, Hansen WF, Van Voorhis BJ, Syrop CH. Detection of cesarean scars by transvaginal ultrasound. *Obstet Gynecol* 2003;101(1):61-65.
17. Balleyguier C, Chapron C, Chopin N, Hélénon O, Menu Y. Abdominal wall and surgical scar endometriosis: results of magnetic resonance imaging. *Gynecol Obstet Invest* 2003;55(4):220-224.
18. Litwicka K, Greco E. Cesarean scar pregnancy: a review of management options. *Curr Opin Obstet Gynecol* 2011;23(6):415-421.
19. Rotas MA, Haberman S, Levгур M. Cesarean scar ectopic pregnancies: etiology, diagnosis, and management. *Obstet Gynecol* 2006;107(6):1373-1381.
20. Fylstra DL. Ectopic pregnancy within a cesarean scar: a review. *Obstet Gynecol Surv* 2002;57(8):537-543.
21. Jurkovic D, Hillaby K, Woelfer B, Lawrence A, Salim R, Elson CJ. First-trimester diagnosis and management of pregnancies implanted into the lower uterine segment Cesarean section scar. *Ultrasound Obstet Gynecol* 2003;21(3):220-227.
22. Finberg HJ, Williams JW. Placenta accreta: prospective sonographic diagnosis in patients with placenta previa and prior cesarean section. *J Ultrasound Med* 1992;11(7):333-343.
23. Lax A, Prince MR, Mennitt KW, Schwebach JR, Budorick NE. The value of specific MRI features in the evaluation of suspected placental invasion. *Magn Reson Imaging* 2007;25(1):87-93.
24. Gonca Eldem, Baris Turkbey, Sener Balas, Erhan Akpınar. MDCT diagnosis of uterocutaneous fistula. *Eur J Radiol* 2008;67:129-123.
25. Thubert T, Denoiseux C, Faivre E, Naveau A, Trichot C, Deffieux X. Combined conservative surgical and medical treatment of a uterocutaneous fistula. *J Minim Invasive Gynecol* 2012;19(2):244-247.
26. Dragoumis K, Mikos T, Zafrakas M, Assimakopoulos E, Stamatopoulos P, Bontis J. Endometriotic uterocutaneous fistula after cesarean section. A case report. *Gynecol Obstet Invest* 2004;57(2):90-92.
27. Pant PR. Utero-cutaneous fistula: Rare complication of caesarean section. *Nepal J Obstet Gynaecol* 2012;7:66-67.

Source of Support: None Declared
Conflict of Interest: None Declared