International Journal
of
Radiology and Diagnostic Imaging

E-ISSN: 2664-4444
P-ISSN: 2664-4436
www.radiologypaper.com
IJRDI 2024; 7(4): 25-28
Received: 13-08-2024
Accepted: 19-09-2024

Dr. Anagha R Joshi
Department of Radiology, Lokmanya Tilak Municipal Medical College, Sion, Mumbai, Mumbai, Maharashtra, India

Dr. Archana K Bagada
Department of Radiology, Lokmanya Tilak Municipal Medical College, Sion, Mumbai, Mumbai, Maharashtra, India

Dr. Anujay Menon
Lokmanya Tilak Municipal Medical College, Sion, Mumbai, Mumbai, Maharashtra, India

Corresponding Author:
Dr. Archana K Bagada
Department of Radiology, Lokmanya Tilak Municipal Medical College, Sion, Mumbai, Mumbai, Maharashtra, India

Imaging in early diagnosis of caesarean scar ectopic pregnancy: A case report

Dr. Anagha R Joshi, Dr. Archana K Bagada and Dr. Anujay Menon

DOI: https://doi.org/10.33545/26644436.2024.v7.i4a.411

Abstract
A Caesarean Scar Ectopic pregnancy is implanted in the myometrium or fibrous scar tissue of a previous caesarean section. It is presented with transvaginal bleeding with history of amenorrhea, previous caesarean delivery and positive urine pregnancy test most of the times. They are usually diagnosed on transvaginal ultrasound by visualizing the thinned-out myometrium at anteroinferior aspect of uterus at previous scar site with gestational sac within it but the confirmation is done with MRI. It is not diagnosed and treated on time, it can lead to bleeding, uterine rupture and in some case even maternal death. This case report presents a caesarean scar ectopic pregnancy as suspected by transvaginal ultrasonography and confirmed by MRI pelvis with further intraoperative confirmation of the same.

Keywords: Caesarean scar ectopic pregnancy, ectopic pregnancy, previous caesarean section, transvaginal ultrasonography, MRI

Introduction
Ectopic pregnancy is a type of pregnancy where embryo gets implanted in location other than uterine endometrium. These include fallopian tubes, uterine cornu, ovary, cervix, previous caesarean scar and lastly abdomen [1]. A caesarean scar pregnancy is implanted in the myometrium or fibrous scar tissue of a previous caesarean section [2]. It accounts for only 4% of ectopic pregnancies and occurs in 1 in 500 pregnancies among women who previously underwent caesarean delivery [3]. Patients with scar ectopic pregnancy present with transvaginal bleeding with history of amenorrhea, previous caesarean delivery and positive urine pregnancy test most of the times. They are usually diagnosed on transvaginal ultrasound by visualizing the thinned-out myometrium at anteroinferior aspect of uterus at previous scar site with gestational sac within it, either bulging anteriorly into the pelvis or extending within the endometrium of uterus [4]. Further confirmation with MRI pelvis is necessary, due to deep implantation of gestation into the fibrous tissue, treatment is challenging and requires hysterectomy in most cases [5]. If scar ectopic pregnancy is left untreated, it can lead to bleeding, uterine rupture and in some case even maternal death [6]. We present a rare case of caesarean scar ectopic pregnancy as suspected by transvaginal ultrasonography and confirmed by MRI pelvis with further intraoperative confirmation of the same.

Case Report
A 28 year old female with 8 weeks amenorrhea and history of one caesarean delivery in the past, presented to the casualty with bleeding per vagina. Urine pregnancy test was positive. Transvaginal ultrasound detected thinning of the myometrium in the anterior inferior uterine wall, i.e. at the site of previous caesarean scar. A gestational sac like hypoechoic structure was noted within this region on sagittal plane. The fundic endometrium was thickened. [Figure 1] [Figure 2].
Transvaginal sagittal ultrasound image as seen in figure 1 reveals anechoic cystic lesion in the lower endometrial cavity extending into the scar site in the antero-inferior myometrium. Thinning of adjacent myometrial wall is noted. Posterior myometrium appears normal. No evidence of fetal pole is noted.

Fig 1: Transvaginal sagittal ultrasound image of Uterus

Fig 2: Transabdominal ultrasound image of Uterus in sagittal and transverse plane

Transabdominal ultrasound image in sagittal and transverse plane (Figure 2), reveals heterogeneously echogenic endometrium, representing blood clots. MRI pelvis confirmed the findings. A well-defined T_2 hyperintense and T_1 hypointense cystic lesion was seen at the scar site with T_1, T_2 hyperintense (With regards to myometrium), non-enhancing lesion, representing decidual reaction surrounding it. This lesion was projecting into the lower uterine body. The endometrial cavity was distended with blood clots in the fundus and proximal body. [Figure 3] [Figure 4].

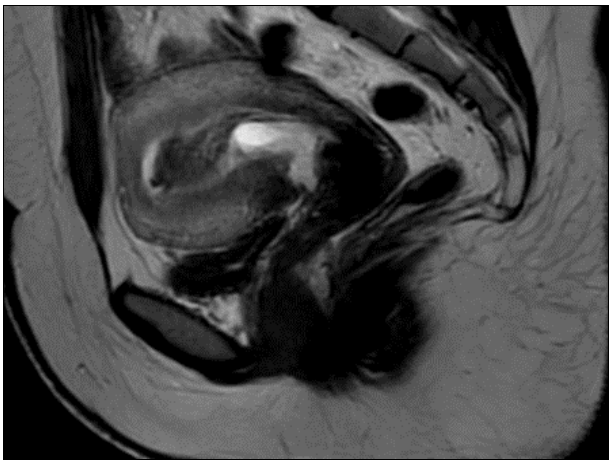

Fig 3: T_2 weighted fast spin echo sequence of pelvis in sagittal plane

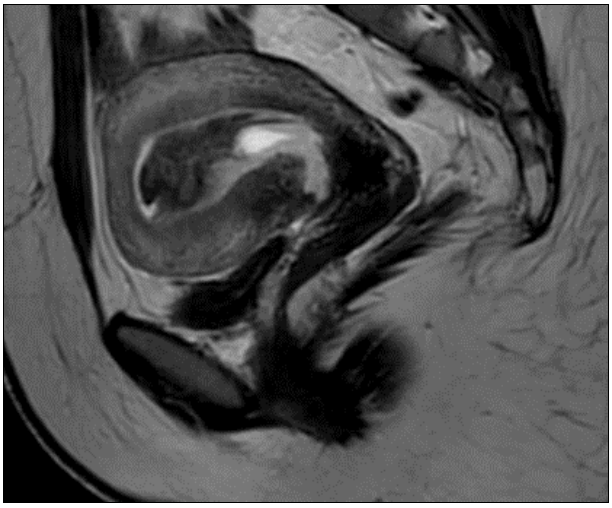

Fig 4: T_1 weighted fast spin echo sequence of pelvis in sagittal plane

These images show thinning of lower part of anterior myometrium along the scar site, with a heterogeneously T_1/T_2 iso-hyperintense (With respect to myometrium) decidual reaction within the scar and a well-defined cystic structure appearing T_1/T_2 hyperintense extending from the scar into the endometrium. Endometrial cavity is distended and filled with T_1/T_2 hypointense area representing hemorrhage, noted distending the endometrium.

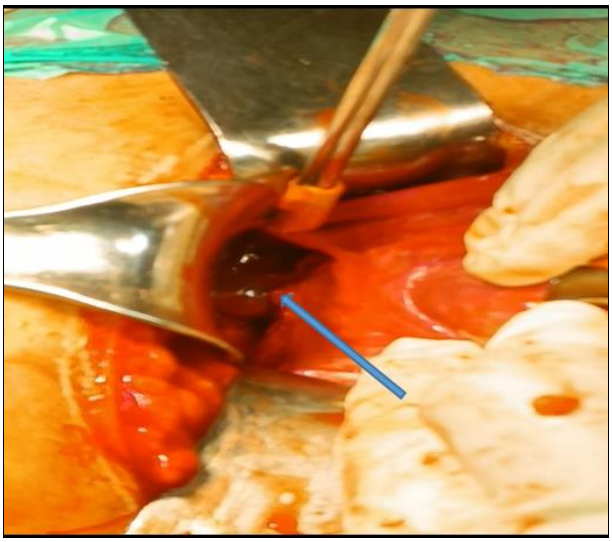

Fig 5: Intraoperative image revealing a cystic structure at the myometrial scar site (Blue arrow), which was confirmed as gestational sac

Discussion

In recent years, the incidence of Cesarean scar ectopic pregnancies has increased due to the growing frequency of cesarean sections [2]. This increase in rate of CSP (Caesarean scar pregnancy) detection may also be due to improvements in image quality of transvaginal ultrasound as well as the increasing use MRI pelvis for confirmation of scar ectopic [6]. This unusual condition was first described by Larsen and Solomon in 1978 [7]. In a review, 107 of 751 cases of caesarean scar ectopic were missed and a similar number of cases remained undiagnosed [8]. The most common clinical finding is vaginal bleeding [9]. In a series of 57 patients, low abdominal pain alone or combined with vaginal bleeding was found in 24.6% of cases [10]. However, approximately

one third of incidentally diagnosed caesarean pregnancies are asymptomatic [11, 12]. Caesarean scars are believed to form a "niche" or "diverticulum," which communicates with the endometrial cavity, allowing the blastocyst to enter and implant. First trimester transvaginal ultrasound plays an essential part in early diagnosis of CSP in symptomatic pregnant patients with reported detection rates of 84.6%. The diagnostic features of an early pregnancy primarily include location of the gestational sac within the anterior myometrium of the LUS at the scar site, usually with little or no separation from the urinary bladder. There is significant color Doppler flow around the sac, and in some cases the sac may produce an outward bulge in the scar. Additionally, no gestational sac is present within the endometrial cavity or in the cervical canal [4]. On ultrasound imaging, a mass or gestational sac, often highly vascular, will be observed separate from the endometrial canal extending into the anterior myometrial wall at the lower uterine segment, at the site of the cesarean incision scar just above the internal cervical os. If the sac is large, serosal bulge toward the bladder will be observed. Discontinuity of the anterior uterine surface in the sagittal plane and trophoblastic tissue situated between the bladder and the anterior uterine wall should be promptly searched to rule out uterine rupture. There are two types of CSP, differentiated by the depth of invasion. The first type is implanted deeply into the scar defect, up to the serosal lining and possibly into the bladder or abdominal cavity. The second type implants in the scar but grows away from the serosal lining and toward the uterine cavity [6]. MRI helps as problem solving tool for confirmation of diagnosis with higher soft tissue resolution. MR imaging can be helpful in cases when there is a need to confirm the ectopic location of the gestational sac, evaluate placentation, and to precisely determine the gestation position relative to adjacent structures. The MR findings of early CSEP are similar to those seen on ultrasound, including implantation of the gestation on the cesarean section scar, initially centered in the myometrial defect, in conjunction with an empty endometrial cavity and endocervical canal. Ultrasound is almost always the first modality that raises concern for abnormal placentation in the second and third trimesters, but many of these cases will be referred for MR imaging to evaluate placental location and degree of invasion [4]. Medical therapy for cesarean scar ectopic pregnancies includes ultrasound-guided injection of MTX (Methrotrexate) directly into the embryo or the gestational sac, or systemic MTX. D&C is extremely risky in these patients in view of risk of rupture. Surgical options include excision with revision of the scar or hysterectomy. Adjunctive uterine artery embolization has been used to control hemorrhage. Combined surgical and medical treatment is recommended [13]. Ultrasound is the initial imaging test of choice for diagnosis of scar ectopic gestation with a sensitivity of 72.73% and 3.0 Tesla MRI has higher sensitivity of 93.94% used for confirmation [14]. Misdiagnosis of a caesarean scar ectopic or confusion with other pregnancy variants such as incomplete miscarriage, cervical pregnancy, or intrauterine pregnancy may impact the success of treatment [15].

Conclusion

Ectopic pregnancies being uncommon, with scar ectopic being the rarest form, it is essential to increase knowledge and awareness about the same. Transvaginal ultrasonography and magnetic resonance imaging and have a critical role in early detection and definite diagnosis of ectopic pregnancy, as demonstrated by this rare case of caesarean scar ectopic pregnancy. This highlights the value of dual modality diagnostic imaging and a multidisciplinary approach in obstetric patient care.

Acknowledgments

Dr. Anagha R. Joshi, Professor and Head, Department of Radiology, Lokmanya Tilak Municipal Medical College, Sion, Mumbai-22, Mumbai, India.

Conflict of Interest

Not available.

Financial Support

Not available.

References

1. Lee R, Dupuis C, Chen B, Smith A, Kim YH. Diagnosing ectopic pregnancy in the emergency setting. Ultrasonography. 2018;37:78-87.
2. Abbas AM, Ali SS, Nagy M, Nasif F. Accidental diagnosis and conservative management of a case of first-trimester caesarean scar ectopic pregnancy. Int. J Reprod Contracept Obstet Gynecol. 2018;7:1628-30.
3. Maymon R, Svirsky R, Smorgick N, Mendlovic S, Halperin R, Gilad K, *et al*. Fertility performance and obstetric outcomes among women with previous cesarean scar pregnancy. J Ultrasound Med. 2011;30:1179-84.
4. Riaz RM, Williams TR, Craig BM, Myers DT. Cesarean scar ectopic pregnancy: imaging features, current treatment options, and clinical outcomes. Abdom Imaging. 2015;40:2589-99.
5. Gonzalez N, Tulandi T. Cesarean scar pregnancy: A systematic review. J Minim Invasive Gynecol. 2017;24:731-8.
6. Hoffman T, Lin J. Cesarean scar ectopic pregnancy: Diagnosis with ultrasound. Clin Pract Cases Emerg Med. 2020;4:65-8.
7. Ash A, Smith A, Maxwell D. Caesarean scar pregnancy. BJOG. 2007;114:253-63.
8. Ko JKY, Li RHW, Cheung VYT. Caesarean scar pregnancy: a 10-year experience. Aust N Z J Obstet Gynaecol. 2015;55:64-9.
9. Zhang Y, Gu Y, Wang JM, Li Y. Analysis of cases with cesarean scar pregnancy. J Obstet Gynaecol Res. 2013;39:195-202.
10. Vial Y, Petignat P, Hohlfeld P. Pregnancy in a cesarean scar. Ultrasound Obstet Gynecol. 2000;16:592-3.
11. Rheinboldt M, Osborn D, Delproposto Z. Cesarean section scar ectopic pregnancy: a clinical case series. J Ultrasound. 2015;18:191-5.
12. Liu H, Leng J, Shi H, Lang J. Expectant treatment of cesarean scar pregnancy: two case reports and a glimpse at the natural courses. Arch Gynecol Obstet. 2010;282:455-8.
13. Satyam, Swarup MS, Garg A. Ectopic uterine scar pregnancy: A case report. Ultrasound. 2021;29:57-63.
14. Guo S, Wang H, Yu X, Yu Y, Wang C. The diagnostic value of 3.0T MRI in cesarean scar pregnancy. Am J Transl Res. 2021;13:6229-35.
15. Maheux-Lacroix S, Li F, Bujold E, Nesbitt-Hawes E,

Deans R, Abbott J. Cesarean scar pregnancies: A systematic review of treatment options. J Minim Invasive Gynecol. 2017;24:915-25.

How to Cite This Article
Joshi AR, Bagada AK, Menon A. Imaging in early diagnosis of caesarean scar ectopic pregnancy: A case report. International Journal of Radiology and Diagnostic Imaging. 2024;7(4):25-28.