Pregnancy on scar

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Abstract

Scar pregnancy, characterized by the implantation of a pregnancy on a previous uterine scar, is a rare and complex condition. This article presents a series of 11 cases of scar pregnancies, providing insights into the clinical features, diagnostic methods, and management strategies employed.

A retrospective analysis was conducted on 11 cases of scar pregnancies diagnosed and managed at our institution between (date range. Patient demographics, obstetric history, presenting symptoms, ultrasound findings, serum beta-Human Chorionic Gonadotropin (β-hCG) levels, and treatment outcomes were evaluated.

The study cohort had a mean age of (mean age) years, with an age range of (age range). All patients had a history of previous cesarean section. Vaginal bleeding was the most common presenting symptom, followed by abdominal pain. Transvaginal ultrasound played a pivotal role) in diagnosis, revealing characteristic features such as an empty uterine cavity, gestational sac within the scar tissue, and absence of myometrial layer. Serum β-hCG levels were monitored to assess the progression and viability of the pregnancies. Management approaches included medical treatment with methotrexate, surgical intervention via dilatation and curettage, and, in some cases, hysterectomy.

Scar pregnancy represents a rare and challenging condition that necessitates prompt recognition and appropriate management to mitigate potential complications such as uterine rupture and maternal morbidity. This series of 11 cases contributes to the existing body of knowledge by elucidating the clinical manifestations, diagnostic modalities, and therapeutic interventions for scar pregnancies. Further research is warranted to refine our understanding of this condition and optimize its management strategies.

Keywords: cesarean delivery, cesarean scar pregnancy, diagnosis, ultrasound

Introduction

Scar pregnancy, defined as the implantation of a pregnancy on a previous uterine scar, is a rare and intricate obstetric condition. While the overall incidence of scar pregnancies remains low, their clinical significance lies in the potential for severe complications such as uterine rupture, hemorrhage, and maternal morbidity. Managing these cases requires a thorough understanding of the unique challenges they present and the adoption of appropriate diagnostic techniques and treatment strategies.

Over the years, advancements in obstetric care and the rising rate of cesarean sections have contributed to an increased awareness of scar pregnancies. However, due to their rarity, there is still limited literature available to guide clinicians in the management of these cases. Therefore, the aim of this article is to present a series of 11 cases of scar pregnancies, shedding light on the clinical characteristics, diagnostic approaches, and management strategies employed.

The series of cases reported here provides valuable insights into the demographic profile of patients with scar pregnancies, including their previous obstetric history and presenting symptoms. Additionally, the use of transvaginal ultrasound and serum beta-Human Chorionic Gonadotropin (β-hCG) levels for accurate diagnosis and monitoring of scar pregnancies is highlighted. The management approaches utilized in this series encompass a range of interventions, including medical treatment with

methotrexate, surgical intervention through dilatation and curettage, and, in certain cases, hysterectomy.

By presenting this series of cases, we aim to contribute to the existing body of knowledge surrounding scar pregnancies and provide clinicians with a comprehensive overview of the clinical presentations, diagnostic modalities, and therapeutic options available. Furthermore, this article emphasizes the importance of early recognition and appropriate management to prevent potentially life-threatening complications associated with scar pregnancies.

Given the limited research available on scar pregnancies, further studies are warranted to enhance our understanding of this condition. Such investigations could focus on refining diagnostic methods, optimizing treatment strategies, and assessing long-term outcomes for both the mother and the fetus. By advancing our knowledge in this field, we can ensure the provision of optimal care to patients with scar pregnancies, ultimately improving their prognosis and minimizing the associated risks.

Case Presentation

This retrospective study collected data from a total of 11 patients who received care for scar-bearing pregnancies at Tunisia Maternity and Neonatology Center, specifically Service D, between the period of 2018 and 2022. The study was conducted to investigate the clinical characteristics, diagnostic approaches, and management strategies employed in these cases.

Patient data, including demographic information, obstetric history, presenting symptoms, diagnostic findings, and treatment outcomes, were collected from medical records and electronic databases. The inclusion criteria consisted of patients with scar pregnancies who sought medical attention at the designated center during the specified timeframe.

Ethical considerations were taken into account, ensuring patient confidentiality and adherence to local regulations. Institutional review board approval was obtained prior to the commencement of data collection.

The collected data were analyzed descriptively. Patient demographics, such as age, parity, and previous cesarean section history, were summarized using mean, median, and range. Clinical features and presenting symptoms were documented to identify common patterns among the cases. Diagnostic approaches, primarily focused on transvaginal ultrasound findings, including the presence of a gestational sac within the scar tissue and absence of the myometrial layer, were analyzed.

Furthermore, serum beta-Human Chorionic Gonadotropin (β-hCG) levels were recorded at various time points to evaluate the progression and viability of the scar pregnancies. Treatment outcomes, including medical interventions with methotrexate, surgical procedures such as dilatation and curettage, and cases requiring hysterectomy, were documented and assessed for their effectiveness and associated complications.

The data were analyzed using appropriate statistical methods, and the results were presented as descriptive statistics, including frequencies, percentages, means, and standard deviations, as applicable.

It is important to note that this study solely utilized retrospective data, limiting the ability to establish causal relationships or draw definitive conclusions. However, the findings obtained from this analysis serve as a valuable contribution to the understanding of scar pregnancies, aiding in the identification of trends and informing future research endeavors in this area.

Results

The mean maternal age at diagnosis was 35.7 years **(FIGURE 1)**.

Mean values for gestity and parity were 4.64 and 2.27, respectively.

The number of previous cesarean deliveries averaged 2.09 **(FIGURE 2).**

The mean number of suctions was 1.18.

The reason for consultation was: metrorrhagia 72.7%, pelvic pain 90.9 and amenorrhea 9.09% **(FIGURE 3).**

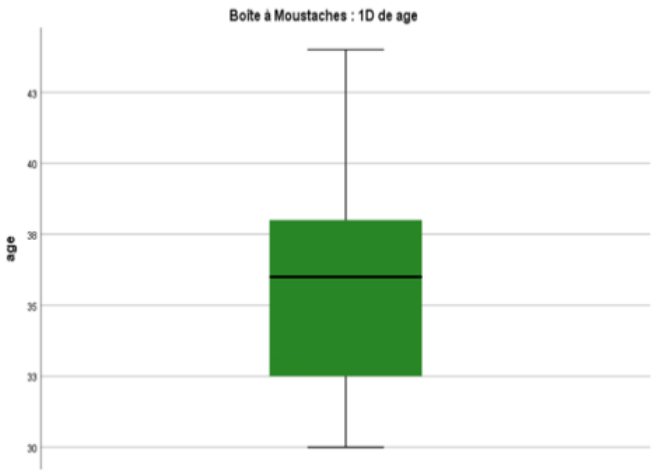

FIGURE 1. Age.

Mean gestational age at diagnosis ranged from 6 to 12 SA **(FIGURE 4)**.

The diagnosis of pregnancy on scar is carried by ultrasound in all cases in our service **(FIGURE 5).**

Snapshots that objectify scar pregnancy.

The treatment modalities were as follows: methotrexate in situ 63.6% of which 87.5% combined with methotrexate im, 9.09% methotrexate in alone, 18.2% hysterectomy **(FIGURE 6).**

Only one patient developed hemorrhagic shock with a large hemoperitoneum. The decision was to have a hysterectomy right away with a 2-day resuscitation visit.

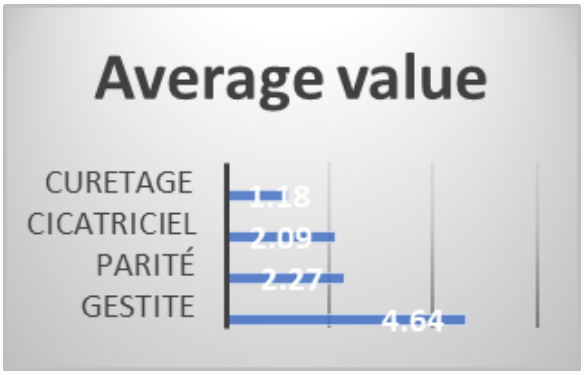

FIGURE 2. Average value.

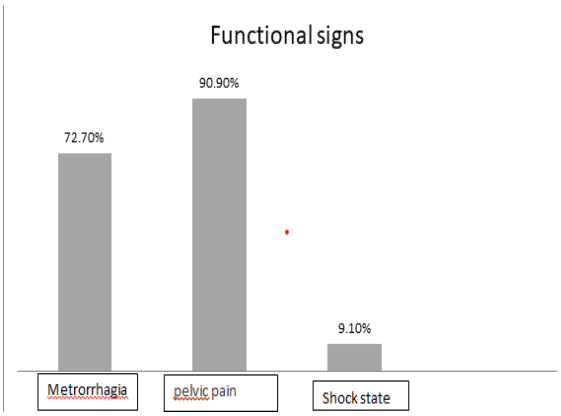

FIGURE 3: Functional sign.

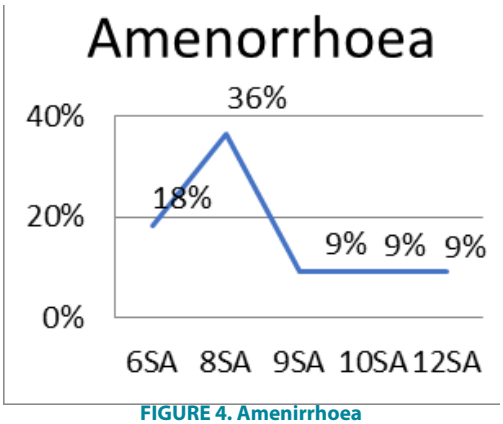

FIGURE 4. Amenirrhoea

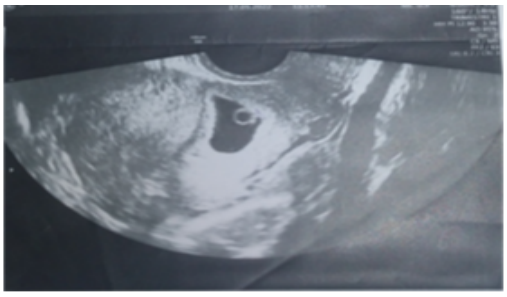

FIGURE 5. Ultrasound images showing in scar pregnancy.

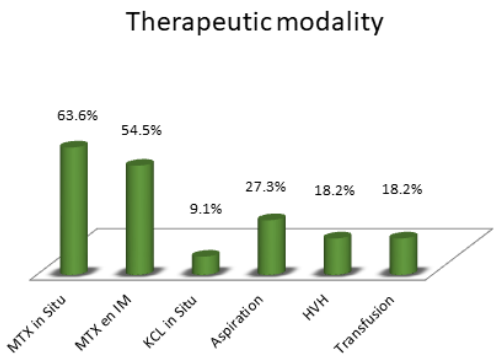

FIGURE 6. Therpeutic options.

Discussion

■ Epidemiology

Frequency: It is often said that scar pregnancy is a rare form of ectopic pregnancy since the first case was reported in 1978 and until 2001 only 19 cases have been reported but unfortunately its frequency is no longer rare since the number is

increasing it is estimated to be 6.1% of ectopic pregnancies 161 cases in 2007, in 2021 more than 1000 cases have been reported [1-4].

Risk factors: Cesarean delivery remains the primary risk factor for scarred pregnancies. In our study of 11 patients: 18% of cases after a cesarean section, 36% after 2 cesarean sections and 36.36% with a tricicatricial uterus.

Previous endometrial procedures (curettage, manual revision of the uterus) are also a risk factor for ectopic pregnancy [5].

In vitro fertilization would be incriminated, even in the absence of any prior uterine surgery [6]. In the literature, only one case of Halyan Yu. was reported in 2016. One pregnancy implanted on the scar and the second pregnancy was active intrauterine.

In our study the 11 patients had a history of cesarean section and 63.6% had received at least one aspiration.

■ Pathophysiology

The pathophysiologic mechanism for implanting the pregnancy into the scar is unclear. The most likely hypothesis is myometrial invasion by the blastocyst because there is a microdefect in the hysterotomy scar [5]. Uterine procedures may also cause arteriovenous malformations and may be the bed of scarred pregnancy with a high risk of bleeding.

Two clinical forms are described [1-5].

- Type I: Endogenic: Pregnancy with development into the uterine cavity or cervicoisthmic canal. Thus, the implant is shallow in the scar.
- Type II: Exogenous: Pregnancy with development into the bladder in this case deep in the scar.

■ Diagnosis of scar pregnancy

Clinical presentation is variable, with 72% of cases being metrorrhagia of small abundance isolated or which may be associated with pelvic pain, but asymptomatic women may be present (only one patient illustrated by in our study).

But the most dramatic situation was shock in a woman of reproductive age with uterine rupture. Published literature reveals that up to 13.6% of scar pregnancies are misdiagnosed and mismanaged as unavoidable miscarriages with a low bag or cervical pregnancies causing massive bleeding [6].

a. Ultrasound

Transvaginal ultrasonography is the first-line and baseline test. The ultrasound signs described in the literature were present in the images of our patients:

- An empty uterus and cervical canal
- A gestational sac in the myometrium at the anteroisthmic level.
- Absence of myometrial tissue or a decrease in the thickness of the myometrium between the gestational sac and the bladder that is distinguishable from cervical or cervicoisthmic pregnancy.
- Color-mode Doppler imaging allows visualization of the blood supply growing in contact with the trophoblast, thus delineating the gestational sac within the thickness of the myometrium.

In our study, ultrasonography was used to diagnose all scar pregnancies.

b. Magnetic Resonance Imaging (MRI)

If the diagnosis is still in doubt, pelvic MRI can help determine the depth of trophoblastic invasion in the myometrium and potential involvement of the serosal or bladder, as well as the exact position of the gestational sac.

Sagittal and transverse sections in weighted sequence T1 and T2 allow the ovular sac located in the anterior wall of the uterus to be clearly shown, but only when located on the outer surface of the cervical canal [5].

■ Treatment of scarred pregnancy

Management should be prompt given the major risk of uterine rupture and bleeding and close monitoring is recommended. Treatment is either medical (methotrexate in situ or im) or surgical (laparotomy or laparoscopy or uterine artery embolization).

The choice depends essentially on the hemodynamic status of the patient, gestational age, the available therapeutic means, the desire for subsequent pregnancy, the experience of the therapeutic team while favoring the conservative attitude except in case of therapeutic failure with hemodynamic instability or lack of desire to preserve fertility.

In our series, 63% of the patients received methotrexate in situ of which 87.5% with methotrexate im with a success rate of 90%, 18.2% of the patients had received hysteria.

Conclusion

In conclusion, this retrospective study examined 11 cases of scar-bearing pregnancies at Tunisia Maternity and Neonatology Center, Service D, between 2018 and 2022. The findings shed light on the clinical characteristics, diagnostic approaches, and management strategies employed for these challenging cases.

The study revealed that scar pregnancies are a complex obstetric condition with potentially severe complications. The majority of the patients had a history of previous cesarean sections, highlighting the relevance of this risk factor in the development of scar pregnancies. Vaginal bleeding was the most common presenting symptom, emphasizing the importance of prompt recognition and appropriate management.

Transvaginal ultrasound played a crucial role in diagnosing scar pregnancies, with characteristic findings including the presence of a gestational sac within the scar tissue and absence of the myometrial layer. Serum beta-Human Chorionic Gonadotropin (β-hCG) levels were valuable in assessing the progression and viability of these pregnancies.

Management strategies varied depending on the individual cases, with options ranging from medical interventions with methotrexate to surgical procedures such as dilatation and curettage or, in some cases, hysterectomy. The effectiveness of these treatments varied, and complications were noted in certain instances, highlighting the need for careful evaluation and individualized management plans.

This study contributes to the existing body of knowledge surrounding scar pregnancies by presenting a series of cases from a specific center, providing insights into the clinical presentations, diagnostic methods, and treatment outcomes. However, it is important to acknowledge the limitations of this study, primarily due to its retrospective nature and small sample size. Further research is warranted to validate these findings and explore additional factors that may influence the management and outcomes of scar pregnancies.

Overall, this study emphasizes the importance of early recognition, accurate diagnosis, and individualized management of scar pregnancies to mitigate potential complications and improve maternal and fetal outcomes. By increasing awareness and understanding of this rare condition, healthcare providers can enhance their ability to provide appropriate care to patients with scar-bearing pregnancies, ultimately improving patient outcomes and reducing associated risks.

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