

Uterine Isthmocele: An Overview of Diagnosis and Treatment of a Large Isthmocele

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Abstract

Introduction: An isthmocele, also known as a cesarean scar defect or uterine niche, is a late complication of cesarean section. The majority of isthmoceles are asymptomatic, however it can manifest with chronic pelvic pain, abnormal menstruation or infertility. The objective of this review is to present the case of a patient with a large isthmocele, including its risk factors, symptoms, imaging, and therapeutic management. Materials and Methods: In this review, we present the case of a patient who presented a post caesarean large isthmocele taken in charge at the Gynecology Department of the Souissi Maternity of Rabat July 6. Results: The patient was 29 years old, who had two cesarean sections. She presented in our hospital with a pelvic pain and abnormal uterine bleeding (metrorrhagia). Her clinical examination was normal. Imaging studies (ultrasound, MRI) had revealed a voluminous isthmocele with a large diverticulum. A laparoscopy was proposed as a treatment for our patient but its realization was very difficult (excessive weight and adhesive pelvis), we converted to a laparotomy with resection of the isthmocele, drainage and closure of the residual cavity. The evolution was favorable with disappearance of the symptoms. Conclusion: Isthmocele is an anatomo clinical entity still lacking standardization in its diagnostic and therapeutic approaches. Therefore, it is important to know well one's classification, whether the symptoms are noisy or not, to choose the right imaging for diagnosis, and to provide adequate management. The treatment currently relies on laparoscopic detection and correction of the isthmic defect.

Subject Areas

Gynecology - Obstetric

Keywords

Cesarean Section, Isthmocele, Uterine Niche, Myometrium

1. Introduction

The isthmocele is a healing defect of the hysterotomy after a cesarean delivery, it forms a hernia, more or less deep, into the muscle of the uterine isthmus. In complete forms, it can reach the uterine serosa [1]. It is one of the delayed complications of cesarean section; its frequency has increased in recent years due to the rising rate of cesarean sections. However, the average cesarean rate worldwide is 18.6%. The trend is clearly increasing in everywhere in the world, with +12.5 in 121 countries analyzed between 1990 and 2014 [2]. In general, most isthmoceles are asymptomatic, being found incidentally on ultrasound by transvaginal sonography, saline instillation sonohysterography magnetic resonance imaging [3]. Some patients may present with diverse symptoms such as abnormal uterine bleeding, spotting after menstruation, and infertility. However, numerous women may remain asymptomatic and only diagnosed incidentally.

2. Case Report

A 29-year-old patient weighs 120 kg who had two cesarean sections, a first cesarean section in 2020 for acute fetal distress, and a more recent one in 2021 for a hemorrhagic placenta previa. She is currently presented at the hospital with pelvic pain, abnormal uterine bleeding (metrorrhagia) since her last cesarean. Her clinical examination was unremarkable and her ultrasound reveals an hypoechoic image in the isthmic region measuring 4 cm/5 cm, pushing the bladder anteriorly (**Figure 1**).



Figure 1. Ultrasound: hypoechoic image in the isthmic region measuring 4 cm/5 cm.

The diagnosis was confirmed by the MRI, allowing for a better mapping and measurements of the isthmocele, the MRI reveals a wide dehiscence measuring 33 mm at the cesarean scar with an intervesico-uterine cystic formation of regular contours, well defined with a hemorrhagic signal with hyperintensity on T1-weighted imaging and T2. This cystic formation measures 43×50 cm in diameter and exerts a mass effect on the bladder, which is displaced, with a clear separation interface (Figure 2), it has a thin wall measuring 1.3 mm.



Figure 2. MRI: large dehiscence measuring 33 mm and a cystic formation measures 43×50 cm in diameter.

In conclusion, the MRI describes an isthmocele with a large diverticulum.

Laparoscopy for the treatment of the isthmocele was suggested, but the patient had two major contraindications to laparoscopy: excessive weight and adhesive pelvis (two recent cesareans in a short interval).

The patient underwent a laparotomy, with dissection of the vesico-uterine adhesions, resection of the edges of the isthmocele, and drainage. Closure of the residual cavity was performed with cross-stitch sutures. The evolution was favorable with disappearance of the symptoms.

3. Discussion

A uterine isthmocele, also known as a uterine niche, is a new-generation pathology, it is one of the long-term complications of cesarean section, following its increased prevalence: from 56% to 84% [4]. It was described first by Morris in 1995, after studying a series of 51 hysterectomy specimens to delineate the pathological changes at the cesarean scar [5].

Several risk factors of the uterine isthmocele have been described:

- The factors related to surgical technique: Patients who have a very high uterine incision involving the endometrium are at higher risk of uterine isthmocele [6].

- The Factors related to childbirth: The performance of cesarean section at advanced cervical dilatation > 5 cm, or during prolonged labor [6].
- The Factors related to scar healing: poor healing of the uterine scar, which is considered an increased risk of uterine isthmocele [7].

For our patient, the risk factors were represented by the emergency cesarean section with advanced dilation in the first cesarean and the history of hemorrhage during the second cesarean section.

Most isthmoceles are asymptomatic. The symptoms are nonspecific and most commonly manifest as a pelvic plain or post-menstrual metrorrhagia due to accumulation of blood in the reservoir-like pouch created [8] which is the case with our patient.

The retention of blood and debris can also impair sperm transport and embryo implantation, leading to secondary infertility [9].

The uterine isthmocele is typically identified using transvaginal ultrasound, where it appears as an anechoic triangular defect communicating with the endometrial cavity or as a subtle deformity in the anterior uterus [10]. Hysterosonography allows for better diagnosis and measurement of isthmoceles compared to endovaginal ultrasound.

MRI allows for mapping the extent of lesions; their localization and precise measurements of the isthmocele [11].

Ultrasound also allows for classifying the isthmocele into three categories based on its measurements and surface area. (Base × Height)/2): grade 1 (\leq 15 mm²); grade 2 (16 - 25 mm²); and grade 3 (>25 mm²) [12]. There is another isthmocele classification by Ofili-Yebovi D *et al.* (2008) based on myometrial thickness at the defect site. It is measured by the ratio of the thickness of the defected myometrium to the thickness of the neighboring myometrium. A severe defect was defined as a ratio more than 50% and dehiscence as a ratio greater than 80% [13].

The decision to treat an isthmocele depends on various factors such as the size of the defect, the severity of symptoms, future fertility plans, and the presence of secondary infertility [14].

Is thmocele requires treatment in both symptomatic patients and asymptomatic patients who plan to have future pregnancies. It has been proven that surgery is the treatment for all isthmoceles [15]. Larger defects characterized by thin myometrium necessitate laparoscopic repair, this involves resecting the isthmocele and closing the defect in multiple layers. In contrast, smaller defects are treated by hysteroscopy.

In our case, the patient was a candidate for a laparoscopic treatment with laparoconversion due to her contraindications already described.

4. Conclusion

Isthmocele can be developed after a single cesarean section. Not all women with a cesarean section history are symptomatic and develop a visible isthmocele, however, common complaints such as postmenstrual spotting, pelvic pain, and secondary infertility are frequently encountered in a symptomatic case. Transvaginal ultrasound (TVUS) is the initial method to describe an isthmocele. Treatment should be offered only for symptomatic patients. Reducing the cesarean section rate is the most effective way to decrease the prevalence of isthmocele.

Strengths and Limitations

We have noticed that there are only hypotheses; there is no consensus about the definition of isthmocele, its classification, and prevalence. Moreover, in each study, surgical approaches and techniques were recommended. Therefore, our article focuses on the key concepts about isthmocele and summarizes the varied information gathered from the multiple recent studies reviewed.

Consent

Consent was obtained from the patient to publish this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Ethical Approval

This case report is exempt from ethical approval in our institute. Case reports are exempt from ethical approval in our University Hospital.

Conflicts of Interest

The authors declare that they have no competing interests relevant to the content of this article.

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