CASE REPORT

A female patient with a history of uterine surgery exhibiting a large uterine diverticulum complicated by abnormal uterine bleeding: a case report

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Abstract

The main symptoms of a previous Caesarean uterine scar diverticulum include abnormal uterine bleeding, chronic pelvic pain, and Caesarean scar pregnancy. Currently, laparoscopy combined with hysteroscopy provides a clear surgical field, allowing precise access to the uterine incision site under direct vision. This approach effectively reduces the risk of bladder damage while facilitating the repair of myometrial tissue. A 37-year-old woman who had undergone a caesarean section seven years earlier presented with vaginal bleeding that had persisted for more than a year. The diagnosis of a large uterine diverticulum was confirmed by magnetic resonance imaging and ultrasound. Laparoscopy combined with hysteroscopy was performed to repair the uterine scar diverticulum defect and recover the anatomy of the uterine isthmus. The surgery was successful, and the patient recovered well. At the three month follow-up, no interphase bleeding was observed. Laparoscopic folding and docking sutures combined with hysteroscopy are appropriate treatment options for correcting the uterine defect.

Keywords: Caesarean section, Uterine diverticulum, Abnormal uterine bleeding, Laparoscopy, Hysteroscopy.

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Introduction

Previous caesarean uterine scar diverticulum (PCSD) is a hernia like sac formed by the protrusion of the endometrium, myometrium and serous layers at the incision site of the lower uterine segment, which is caused by poor healing of the incision after a caesarean section. The main symptoms of this disorder include abnormal uterine bleeding (AUB), chronic pelvic pain, and caesarean scar pregnancy. At present, the treatment methods for PCSD include transvaginal surgery, hysteroscopic surgery, and laparoscopic surgery. Laparoscopy combined with hysteroscopy provides a clear surgical view and effectively reduces the risk of bladder injury and facilitates the repair of myometrial tissue[1]

Here, we report a clinical case of abnormal uterine bleeding after a caesarean section in which a large uterine diverticulum was identified. Based on the analysis of this case, we discuss the clinical characteristics, diagnosis and treatment of this disease.

Case Report

The case presents a 37-year-old female with a history of one caesarean section performed eight years ago. She had experienced a high grade fever after surgery, which was successfully treated with antibiotics. The patient recovered well after discharge. In September 2023, at the age of 36 years, she experienced occasional episodes of heavy menstrual bleeding, along with dizziness and palpitations. According to previous ultrasound records, a diagnosis of uterine myoma was determined at Tongren Hospital, and the patient was treated with traditional Chinese medicine; however, her symptoms did not significantly improve.

On October 10, 2023, the patient visited Rui-jin Hospital for further evaluation. Ultrasonography revealed a mixed-echo zone protruding from the left wall of the caesarean section incision in the lower uterine segment that was 52×50×74 mm in size, irregular in shape and dominated by weak echoes. A few blood flow signals were observed around the area, indicating a connection with the uterine cavity. The thickness was 2 mm for the serosal layer, 2 mm for the residual myometrium, and 15 mm for the adjacent myometrium. The mass in the lower uterine segment was diagnosed as a PCSD (Fig. 1). Bimanual gynaecological examination revealed a cystic mass in front of the lower uterine segment approximately 5 cm in diameter with clear borders and no tenderness. A digital rectal examination (DRE) showed that the rectal mucosa was smooth.

When the patient was hospitalized, magnetic resonance imaging (MRI) revealed an abnormal signal in front of the lower uterine segment, measuring approximately 55×76.6×58.6 mm, with a smooth boundary. The mass appeared hyperintense on both T1-weighted (T1W) and

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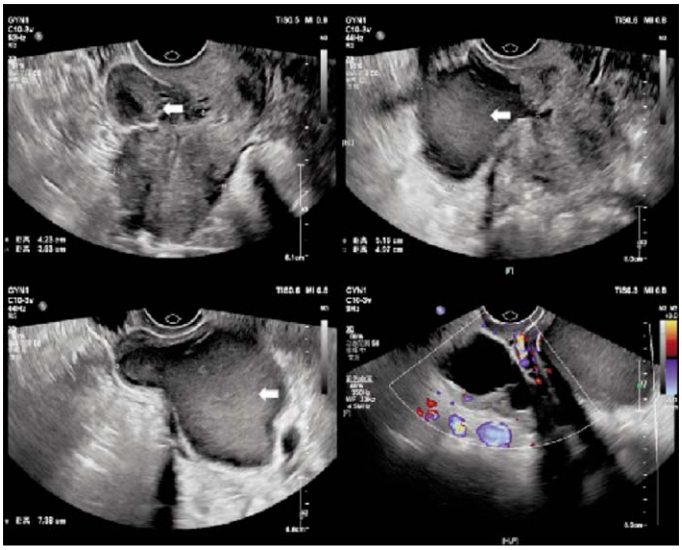

Figure-1: Gynaecologic ultrasound image.

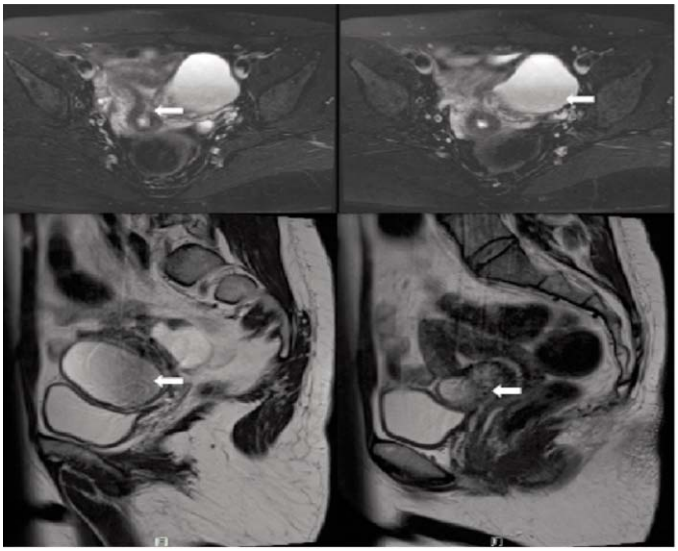

Figure-2: Magnetic resonance imaging image.

T2-weighted (T2W) imaging, suggesting a mass in the anterior part of the lower uterine segment with intraluminal haemorrhage, which seemed to communicate with the uterine cavity. A uterine incision diverticulum was suspected (Fig. 2).

After providing informed consent, the patient underwent laparoscopic uterine giant incision diverticulectomy and hysteroscopy under general anaesthesia.

On hysteroscopy, a depressed pore with a diameter of 1 cm could be seen in the upper left area of the cervical canal and the lower uterine segment, thus leading to the left side of the uterine cavity. The old blood that had accumulated was constantly flowing. The apertura uterinae was clear on both sides.

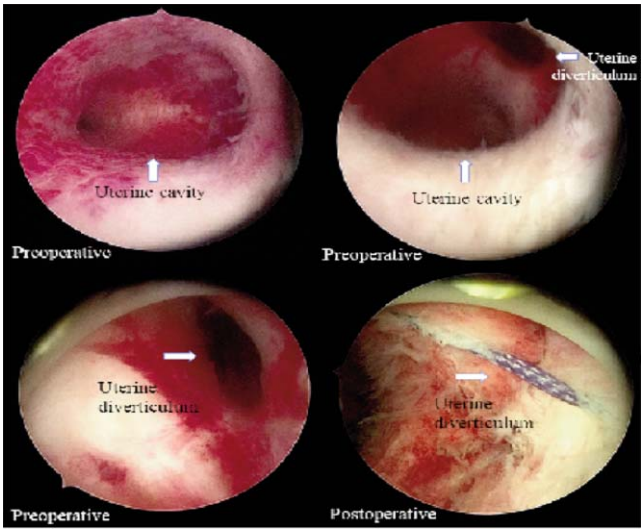

Figure-3: Hysterectomy.

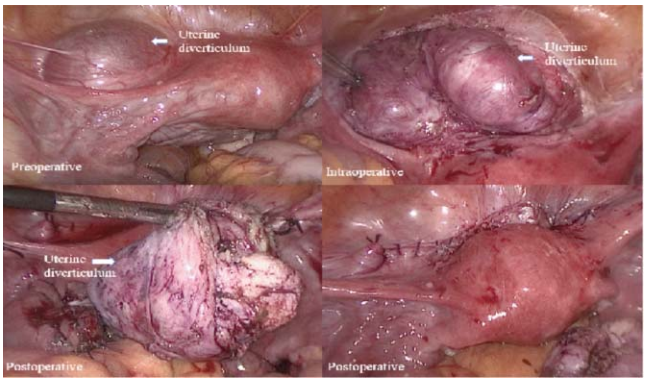

Figure-4: Laparotomy.

On laparoscopy, a 7 cm × 5 cm × 5 cm mass was identified in front of the uterus within the pelvis. Both the ovaries and fallopian tubes appeared normal. The mass originated from the left corner of the lower uterine caesarean section scar, was connected to the uterine cavity. The mass was excised along the base, revealing a muscular cyst wall and a large amount of old dark brown cystic fluid was observed. The caesarean section incision in the lower anterior wall of the uterus was further opened, the scar tissue around the incision was removed, and the incision was trimmed and sutured.

Hysteroscopy (performed at the end of surgery) revealed that the morphology of the cervical canal and uterine cavity was normal. The concave hole in the upper left area of the cervical canal and the lower uterine segment was closed by the sutures, and the bilateral fallopian tube openings were clear (Fig. 3 and Fig. 4).

During the postoperative period, the patient recovered well and was discharged from the hospital on the third postoperative day.

Histopathological examination (HPE) via microscopy, of sections from the cystic cavity near the opening of the uterine diverticulum revealed glandular epithelium and subepithelial tissue composed of fibrocollagenous and muscular tissue.

The patient was given oral dienogest for 3 months after surgery to avoid the recurrence of menstrual blood retention before the diverticulum repair had healed. The patient had no vaginal bleeding during the medication period, and her menstruation resumed after discontinuing the drug. A follow-up ultrasound performed three months postoperatively showed no abnormalities.

Discussion

Uterine diverticula can be classified as congenital and acquired based on the aetiology, and the most common type is PCSD.[2] The development of uterine diverticula following a caesarean section is closely associated with factors such as a history of multiple caesarean sections, uterine incision blood supply disorders, poor healing, local infection and other related conditions.

While some patients with uterine diverticula remain asymptomatic, others may experience prolonged menstrual periods with incomplete dripping (AUB), abdominal pain, and infertility.[3] Additionally, studies have shown that the live birth rate and clinical pregnancy rate of women with PCSD with a residual muscle thickness ≤2.2 mm or prolonged menstruation are reduced [4, 5].

Allornuvor GF6 revealed that uterine incision healing after caesarean section was associated with intraoperative blood loss < 150 ml, which acted as a protective factor for PCSD, whereas postpartum haemorrhage increased the incidence of PCSD. These effects may be related to local inflammation due to the effects of bleeding, ischaemia, and hypoxia on the healing of the uterine incision.

The diverticular ratio is the ratio of diverticulum depth to depth + residual myometrium thickness (RMT) (depth/(depth+RMT)) and reflects the degree of muscle loss at the uterine scar diverticulum site, thus better predicting the occurrence of abnormal uterine bleeding.[7] Rosa[8] reported that a higher diverticular ratio of the CSD corresponded to a higher probability of developing AUB. The RMT and adjacent myometrial thickness (AMT) were also used to assess the size of the diverticulum. The probability of postmenopausal spotting was higher with an RMT/AMT ratio <50%, and an increase in RMT was beneficial for improving the symptoms of AUB.[9]

Pan[10] suggested that the risk of CSD was increased in patients whose body temperature exceeded 38.5°C after Caesarean section. However the use of multiple doses of antibiotics significantly reduces the incidence of CSD. If the premature rupture of membranes is followed by childbirth, timely and appropriate antibiotic treatment should be administered to prevent infection and promote healing of the myometrium incision.[4]

In this study, the patient underwent a caesarean section after uterine ostium opening due to foetal intrauterine distress 8 years prior and developed fever for 3 days after surgery, after which she recovered after receiving antibiotics. The diverticular ratio (0.97) and RMT/AMT ratio (13.33) were significantly lower than 50%, and the clinical symptoms of AUB after menstruation were consistent with the diagnosis.

Uterine diverticula are often misdiagnosed as spindle cell tumours, large abdominal and pelvic masses, or uterine myomas, due to their similar presentation, making accurate diagnosis challenging for radiologists and gynaecologists.

Transvaginal ultrasonography is a commonly used diagnostic tool for uterine diverticulum due to its convenience and relatively low cost. [11] However, because of its high resolution of soft tissue, magnetic resonance can be used to observe the shape and boundary of the uterine scar diverticulum and the relationship between the uterine scar diverticulum and the surrounding muscle layer. Therefore, the preoperative images obtained by diagnostic MRI and ultrasound can more clearly display the diverticulum and be used to confirm the diagnosis. Hysteroscopy can be used to observe the structure of the uterine diverticulum under direct vision and is considered a good method for diagnosing uterine diverticulum.

Patients with no clinical symptoms can choose follow-up with observation. Drug therapy is applicable mainly for patients with a clinical manifestation of AUB, no fertility requirements, refusal of surgical treatment and no drug contraindications. In some studies, drug treatment, including oral contraceptives, intrauterine insertion of the Mirena ring and other methods can help alleviate prolonged bleeding symptoms in affected patients.[12] The surgical methods can include vaginal surgery, open surgery, hysteroscopic surgery and laparoscopic surgery.

Hysteroscopy combined with laparoscopy can clearly visualize the uterine cavity, uterine incision location and size of the diverticulum under direct guidance. This combined approach enhances surgical accuracy and minimize the risk of injury to surrounding normal tissues, such as the bladder.

Conclusion

The surgical treatment of a uterine diverticulum should be based on the location and size of the uterine incision diverticulum and the patient's fertility needs. A reasonable and safe surgical method should be carefully selected to ensure the safety of the treatment and the efficacy of the operation.

Consent: The patient provided written, informed consent for the publication of the case report.

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AUTHOR'S CONTRIBUTION:
HJ: Formal analysis, investigation, methodology, resources, writing-original draft and final approval.
LZ: Formal analysis, resources, writing, review, editing and final approval.
YS: Investigation, methodology, project administration, resources, writing, review, editing and final approval.