

Uterine Cervical Diverticulum Successfully Treated by Hysteroscopy: A Case Report

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Abstract

A 31-year-old woman presented with metrorrhagia of two years' duration. Transvaginal ultrasound revealed the presence of a uterine cervical diverticulum. The patient was referred to our center for a more thorough evaluation; a transvaginal gynecological ultrasound confirmed the cervical lesion. Hysteroscopy was performed and demonstrated a large cervical diverticulum. In an attempt to reduce its size, the walls of the diverticulum were sclerosed using rollerball coagulation. Subsequent transvaginal ultrasound showed a marked reduction in the size of the diverticulum. Following treatment, the patient regained a regular menstrual pattern and conceived spontaneously, five months after the final hysteroscopic procedure. The pregnancy progressed to term, and delivery was accomplished by cesarean section, resulting in the birth of a healthy female infant weighing 3,740 g.

Categories: Obstetrics/Gynecology

Keywords: cervix diverticulum, hysteroscopy, rollerball, treatment, uterine cervix

Introduction

Congenital Müllerian anomalies are identified in approximately 5.5% of women in the general population [1]. A cervical diverticulum is a blind-ended protrusion from the cervical canal; it communicates with the canal and may be lined by endocervical epithelium. A cervical diverticulum is an extremely rare cervical malformation that may be either congenital or acquired in origin [1]. Acquired diverticula are those that arise as a result of surgical procedures such as caesarean sections or procedures that may affect the cervix, such as dilation and curettage during an abortion. Clinical presentation of congenital diverticula is variable; affected women may be asymptomatic or present with atypical uterine bleeding (36.3%, 8/22), abdominal pain (27.2%, 6/22), infertility (18.2%, 4/22), dysmenorrhea (9.0%, 2/22), or prolonged menstruation (4.5%, 1/22) [2]. Owing to its rarity, the optimal management of cervical diverticula remains controversial, and no standardized treatment approach has been established.

We report the case of a 31-year-old woman with a symptomatic cervical diverticulum successfully treated using hysteroscopy alone.

Case Presentation

A 31-year-old woman presented with intermenstrual spotting of two years' duration. She had previously experienced regular menstrual cycles, and a gynecological ultrasound performed when she was 25 years old had been reported as normal. Her medical history included a voluntary surgical termination of pregnancy at 18 years of age without any complications, no subsequent pregnancies, appendicitis complicated by pelviperitonitis, and adenoidectomy. Due to persistent abnormal uterine bleeding, she attended the Department of Obstetrics and Gynecology at another hospital. A transvaginal ultrasound was performed to exclude uterine pathology and revealed a cervical diverticulum measuring 32 mm in diameter and containing heterogeneous material.

An outpatient diagnostic hysteroscopy was scheduled to evaluate the cervical diverticulum and assess the uterine cavity. Hysteroscopy demonstrated a large cavity containing mucus and clotted blood; however, the uterine cavity could not be identified. Two additional hysteroscopies were subsequently performed, one in the outpatient setting and one in the operating room. Neither procedure achieved access to the uterine cavity, and both resulted in perforation of the cervical canal. Perforation was managed conservatively and did not result in any associated complications.

Following the last intervention, the patient was treated with continuous combined estrogen and progesterone therapy, achieving amenorrhea for one year. This treatment was intended to control the persistent metrorrhagia caused by the accumulation of menstrual blood within the diverticulum.

The patient was referred to our center for further evaluation of the cervical abnormality in the context of her desire for future pregnancy in the short term, although not immediately.

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Transvaginal ultrasound confirmed the presence of the cervical diverticulum (Figure 1).

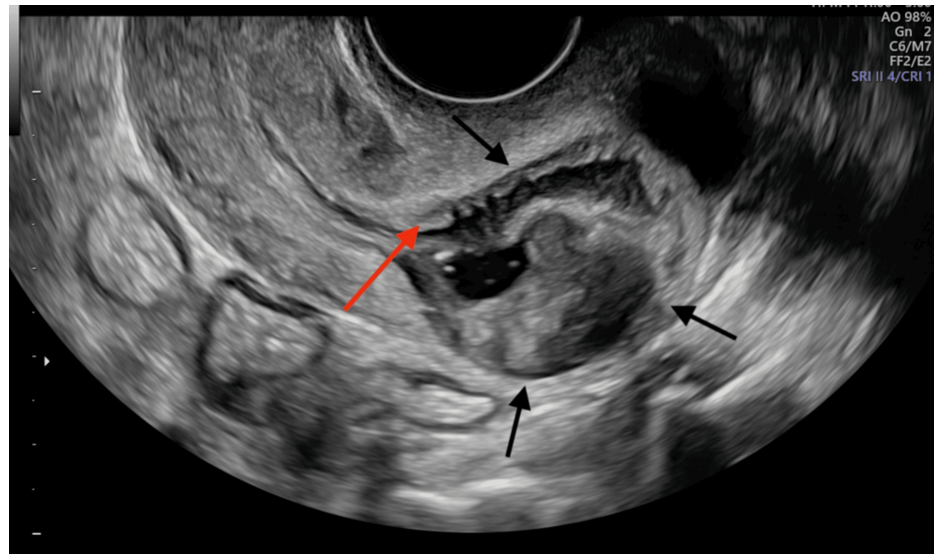


FIGURE 1: Vaginal ultrasound showed a uterine cervical diverticulum with heterogeneous contents (sagittal section)

The black arrows point to the cervical diverticulum, which measures 32 mm, and the red arrow indicates the location of the cervical canal.

An outpatient hysteroscopy was scheduled. The procedure was performed under local cervical anesthesia and sedation and revealed a large diverticulum located within the cervix, containing mucus and blood products, which were aspirated. The uterine distension solution used was saline. No biopsy of the diverticulum was performed because there was no suspicion of malignancy. Following evacuation of the cavity, the internal cervical os was identified, allowing access to the uterine cavity, which appeared normal. The walls of the diverticulum were then sclerosed using roller-ball coagulation with bipolar energy (Figure 2).

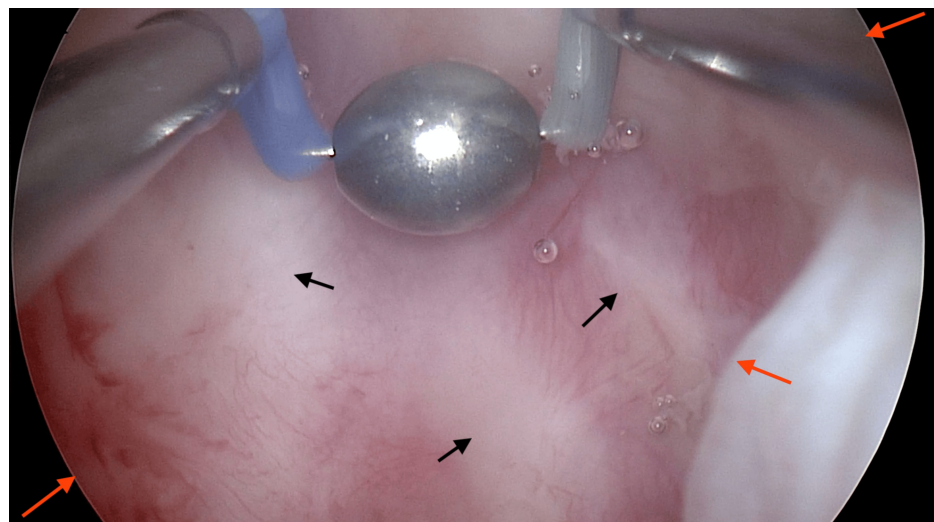


FIGURE 2: Hysteroscopic image with the roller-ball used to coagulate the walls of the diverticulum

The red arrows indicate the diverticulum, which occupies virtually the entire image, and the black arrows point to some of the areas coagulated with the roller-ball, which appear whiter than the diverticulum wall, which is more pinkish.

Multiple coagulations were performed on the diverticulum wall, causing the wall to retract and the

diverticulum to shrink in size. The patient's normal menstrual cycles returned one month after the hysteroscopy, with light bleeding mid-cycle.

A follow-up hysteroscopy performed five months later demonstrated a marked reduction in the size of the diverticulum, together with the development of endocervical epithelium lining its surface (Figure 3); previously, the diverticular cavity had been virtually devoid of epithelium (Figure 2). Additional coagulation of the diverticular walls was carried out to further reduce the residual cavity.

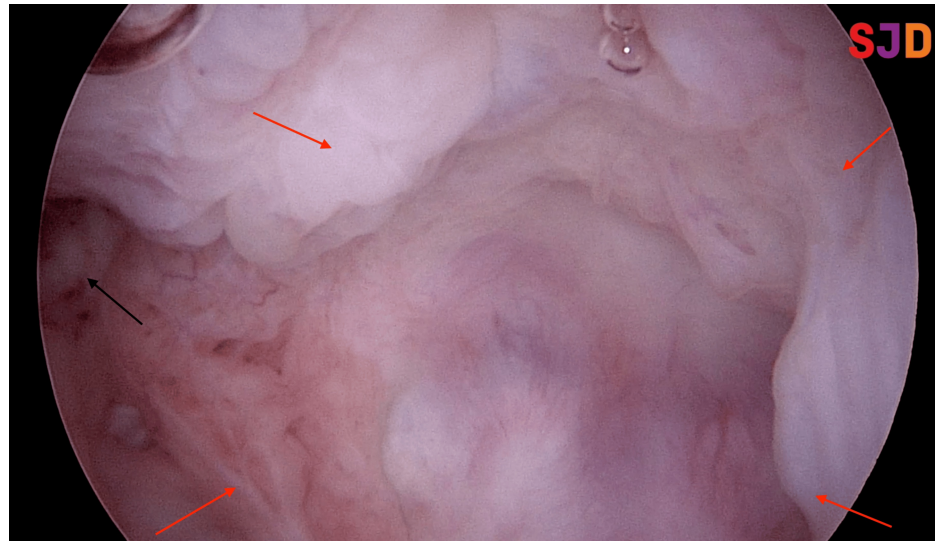


FIGURE 3: Hysteroscopic image of the diverticulum

Red arrows point to the diverticulum and black arrow indicates the internal cervical os. We can see that the endocervical epithelium already partially covers the diverticulum.

Postoperative transvaginal ultrasound after the second hysteroscopic procedure confirmed a substantial reduction in the size of the cervical diverticulum, which measured 14 mm (Figure 4). As she had stopped experiencing bleeding between periods, the patient was advised to try for a pregnancy.

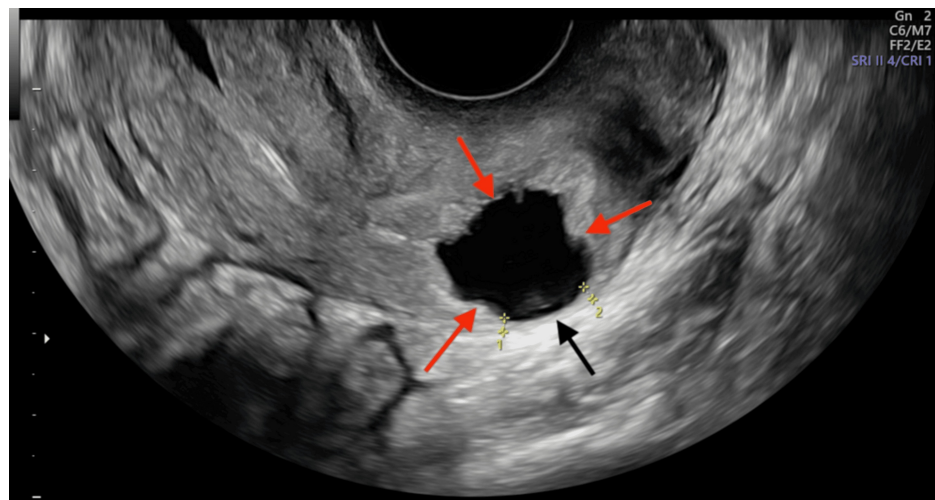


FIGURE 4: Vaginal ultrasound (sagittal view) following the two hysteroscopies performed

The red arrows point to the diverticulum after coagulation with the roller-ball; a significant reduction in its size - to less than half (14 mm) - can be observed. The black arrow points to the posterior wall of the diverticulum, which measures less than 2 mm.

The patient conceived five months after the final hysteroscopic procedure. During pregnancy, ultrasound

examination demonstrated an almost normal cervix, measuring 32 mm, with only slight irregularity of the posterior cervical wall. Routine antenatal follow-up and prenatal screening tests were unremarkable.

Given the history of extensive cervical pathology and the fact that the posterior wall of the diverticulum measured less than 2 mm after the last procedure, a prophylactic cervical cerclage was placed at 14 weeks of gestation to reduce the potential risk of pregnancy loss secondary to cervical insufficiency. The procedure was completed without complications.

The pregnancy proceeded without complications until full term. The patient did not wish to have a vaginal delivery, so an elective cesarean section was performed at 39 weeks' gestation, following the removal of the cerclage during the procedure, resulting in the birth of a healthy baby girl weighing 3,740 g, with good Apgar scores and normal neonatal adaptation. The decision to perform a cesarean section was made at the mother's request and to minimize the risk of cervical laceration during labor and vaginal delivery.

Two years after the cesarean section, the patient is seven weeks pregnant, and her cervix is completely normal.

Discussion

Primary uterine diverticula are exceptionally rare congenital malformations of the female genital tract, with only 22 cases reported in the literature to date [3]. Primary cervical diverticula are even rarer, with only six cases described [3]. The majority of cervical diverticula reported in the literature are acquired (secondary) lesions, most commonly diagnosed following uterine rupture during labor or as a consequence of previous cesarean delivery [2,4].

In the present case, a primary cervical diverticulum appears more likely, as the patient's only relevant gynecological procedure was a voluntary termination of pregnancy, and there was no history of cesarean section, uterine rupture, or major cervical surgery. Nevertheless, an acquired origin cannot be completely excluded, given the previous uterine instrumentation associated with the termination of pregnancy. Although the patient reports having had a normal transvaginal ultrasound scan prior to the onset of symptoms.

The diagnosis of cervical diverticulum is often challenging because of its rarity and nonspecific clinical presentation [5–8]. The most common presenting symptom is abnormal uterine bleeding, as observed in our patient. The mean age at diagnosis reported in the literature, based on 22 reported cases, is 35.4 years (range, 19–54 years) [2], which is comparable to the age of our patient, who was diagnosed at 31 years. Cervical diverticula are reported more frequently in the cervix (59%) than in the uterine corpus (22.7%) [2].

Diagnosis is primarily based on transvaginal ultrasonography, while magnetic resonance imaging (MRI) may provide more precise anatomical characterization and facilitate preoperative planning [9]. In our case, an MRI was not necessary because a definitive diagnosis could be made using transvaginal ultrasound and hysteroscopy, but in other cases, it may be useful for establishing a differential diagnosis with other conditions such as Nabothian cysts, cervical duplication or other Müllerian anomalies, accessory cavitated uterine mass, cystic adenomyosis, Gartner duct cyst, and degenerated cervical leiomyoma [5]. Hysteroscopy plays a key role in confirming the diagnosis by allowing direct visualization of the diverticular cavity and its relationship with the cervical canal and uterine cavity, as was demonstrated in our case.

We do not use any hormonal treatments or anti-adhesion products after hysteroscopy; a second hysteroscopy, as in our case, may be useful for assessing the outcomes of the first treatment. Follow-up visits for the patient will depend on the circumstances; if she remains asymptomatic, six months may be an appropriate timeframe. That is what we recommended to our patient, but she became pregnant after five months.

Cervical diverticula have been associated with infertility and adverse obstetric outcomes, including ectopic pregnancy, preterm delivery, and stillbirth [6,9,10]. In the present case, after successful treatment of the diverticulum and subsequent conception, a prophylactic cervical cerclage was placed because of concerns regarding possible cervical insufficiency. This decision was based on the history of extensive cervical pathology and treatment, together with the reduction in thickness of the posterior cervical wall, which could potentially compromise cervical integrity and increase the risk of second-trimester pregnancy loss or preterm birth.

The optimal management of cervical diverticula remains uncertain because of the extremely limited number of cases reported in the literature. A review of published cases identified two patients with cervical diverticula who were successfully treated by laparoscopic resection, with favorable clinical outcomes [2,4]. In one of these cases, the patient subsequently achieved pregnancy and delivered vaginally after surgery. In contrast, the patient described in the present report was diagnosed and treated hysteroscopically in two stages, resulting in spontaneous conception five months after the final procedure. Notably, pregnancy in the previously reported case was achieved through in vitro fertilization.

To the best of our knowledge, this is the first reported case of a cervical diverticulum successfully managed exclusively by hysteroscopic treatment, followed by spontaneous conception and a term pregnancy with favorable maternal and neonatal outcomes. These findings suggest that hysteroscopic management may represent a minimally invasive and fertility-preserving therapeutic option for selected patients with cervical diverticula, although additional cases are required to further define its role in clinical practice.

Conclusions

Uterine cervical diverticulum is an extremely rare cervical malformation associated with infertility and adverse obstetric outcomes. Its diagnosis is challenging because of its rarity and nonspecific clinical presentation, most commonly persistent abnormal uterine bleeding. Diagnosis relies on a combination of transvaginal ultrasonography and hysteroscopy; MRI has also proven useful in some cases. Owing to the limited number of reported cases, the optimal management of both primary and secondary cervical diverticula remains undefined. In the few cases described in the literature, surgical treatment has consisted of laparoscopic resection, either alone or in combination with hysteroscopy. To the best of our knowledge, this is the first reported case of a cervical diverticulum successfully treated exclusively by hysteroscopy, not taking into account post-cesarean isthmoceles, resulting in spontaneous conception and a term pregnancy with favorable maternal and neonatal outcomes. In this single case, two-stage hysteroscopic coagulation was associated with symptom resolution and an uncomplicated term pregnancy; further cases with longer follow-up are needed.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Concept and design: Eduardo Gonzalez-Bosquet, Santiago Gonzalez

Acquisition, analysis, or interpretation of data: Eduardo Gonzalez-Bosquet, Santiago Gonzalez, David Rodriguez, Cristina Salvador

Drafting of the manuscript: Eduardo Gonzalez-Bosquet

Critical review of the manuscript for important intellectual content: Eduardo Gonzalez-Bosquet, Santiago Gonzalez, David Rodriguez, Cristina Salvador

Disclosures

Human subjects: Informed consent for treatment and open access publication was obtained or waived by all participants in this study. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work. **Financial relationships:** All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. **Other relationships:** All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

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