



Case report

Complete cervical stenosis after conization: Timing for the minimally invasive reconstructive surgery



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ARTICLE INFO

Article history:

Received 8 April 2013

Received in revised form

17 July 2013

Accepted 8 August 2013

Available online 7 June 2014

Keywords:

Cervical conization

Cervical stenosis

Hematometra

Shimodaira-Taniguchi conization

Surgical complication

ABSTRACT

Among various long-term complications after conization, complete cervical stenosis is rare (<1%) but significant. This condition is typically associated with secondary amenorrhea, cyclical lower abdominal pain, and hematometra during menstrual periods. The risk of developing this condition is strongly associated with an estrogen-deficient state. Recently, we experienced a case of complete cervical stenosis after conization performed during lactation amenorrhea. Because our patient visited us during an intermenstrual asymptomatic period, we wondered when was the best time to perform minimally invasive reconstructive surgery. Until now, there has been no report concerning suitable timing for surgery for this condition. The clinical course of our case and clinical considerations associated with this rare complication are discussed.

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Introduction

As the number of women of reproductive age affected by cervical intraepithelial neoplasia (CIN) increases, it has become more necessary to treat CIN conservatively.¹ Among conservative treatments, electrosurgical conization has recently become a widespread procedure because of its technical ease and cost-effectiveness.² Long-term major concerns after conization include some serious complications such as cervical stenosis, reproductive problems, and obstetric morbidity.¹ Complete cervical stenosis is the most severe form of cervical stenosis and is frequently accompanied by hematometra during menstrual periods.³ The incidence of this condition is reported to be <1%.⁴ This condition is typically manifested as secondary amenorrhea after conization and cyclical lower abdominal pain.⁵ Recently, we experienced a case of this rare complication after conization with these typical symptoms. In this case, we wondered when was the best time to perform a minimally invasive reconstructive surgery for complete cervical stenosis, because our patient consulted us during an intermenstrual asymptomatic

period. We present the clinical course of our case and discuss clinical considerations associated with this rare condition.

Case report

A healthy 34-year-old woman, gravida 1 para 1, visited our hospital because of secondary amenorrhea and cyclical abdominal pain for over 6 months. She had a history of cervical conization during lactation amenorrhea. Eighteen months ago, she underwent electrosurgical conization using the Shimodaira-Taniguchi conization method because of CIN3 4 months after giving birth to her first child. The depth of surgical excision of the cervix was short (<1 cm) because the squamocolumnar junction of her cervix was clearly visible and she desired a future pregnancy and childbirth. At the initial visit, we could not identify the external os of the cervical canal by vaginal examination, but the presence of a convergence of vaginal mucous folds indicated where her missing external os had been (Fig. 1A). Transvaginal ultrasonography demonstrated a normal-sized uterus with a small uterine fibroid and the uterine endometrium suggestive of the secretory phase. Inferring from her medical interview and vaginal examination findings, we made the clinical diagnosis of complete cervical stenosis following conization. At this time, we made a clinical judgment about the timing of reconstructive surgery and decided to perform the procedure during her next menstrual period. We speculated that

Conflicts of interest: The authors of this manuscript have no conflicts of interest to declare.

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<http://dx.doi.org/10.1016/j.gmit.2014.05.001>

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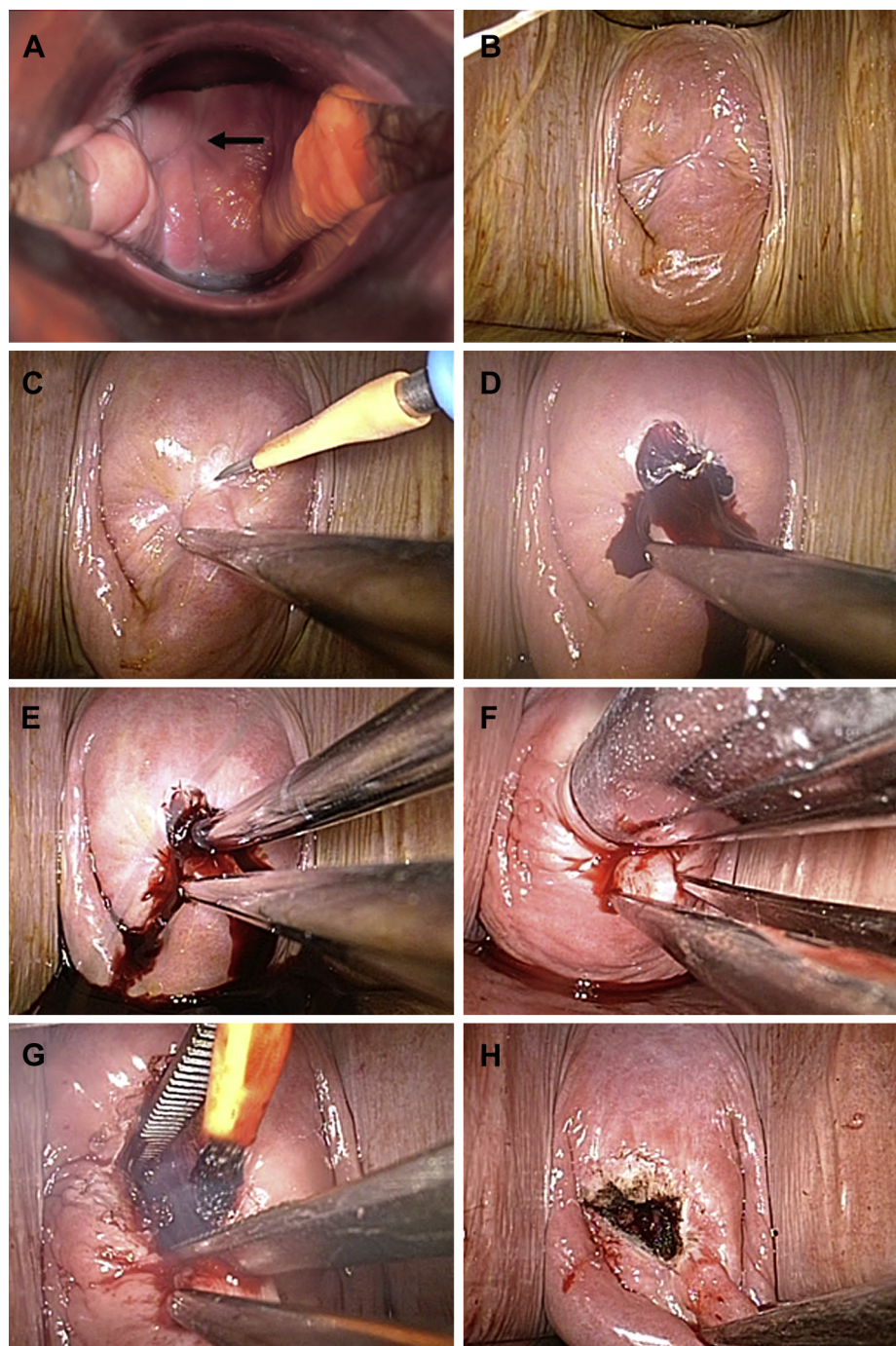


Fig. 1. Macroscopic findings at the first visit and during reconstructive surgery. (A) Vaginal speculum examination demonstrated an absence of external os, but the presence of a convergence of vaginal mucous folds (black arrow) indicated its past existence. (B) The outward bulging of the vaginal wall as a result of retained menstrual blood in the cervix. (C) Opening of the cervical canal using an electrosurgical knife. (D) A spout of accumulated blood from the new external os. (E) Cervical dilatation using a 4-mm Hegar dilator. (F) Cervical dilatation using a 15-mm Hegar dilator. (G) The all-around edge of the new external os was coagulated using an electrosurgical knife both for hemostasis and prevention of relapse. (H) The appearance of the new external os at the completion of surgery.

hematometra during menstruation allows easy detection of the external os and makes it safe to perform a mechanical cervical dilatation because of both the presence of menstrual blood pooling and the spontaneous dilatation of cervical canal. More than anything, it leads to a definitive diagnosis of the patient's disorder.

Three days later, she revisited our hospital because of lower abdominal pain without genital bleeding. Transvaginal ultrasonography demonstrated a pooling of fluid in the uterine cavity and marked dilatation of the uterine cervix. Magnetic resonance

imaging clearly revealed the presence of hematometra (Fig. 2). Reconstructive surgery was performed that day for complete cervical stenosis with the patient under lumbar spinal anesthesia (Fig. 1). Following the opening of the cervical canal using an electrosurgical knife and the confirmation of a spout of accumulated blood, the new cervical os was dilated gradually with Hegar dilators sized from 4 mm to 15 mm under ultrasonic guidance. For 1 month after the surgery, the patient visited our hospital twice a week for mechanical cervical dilatation using a synthetic osmotic dilator

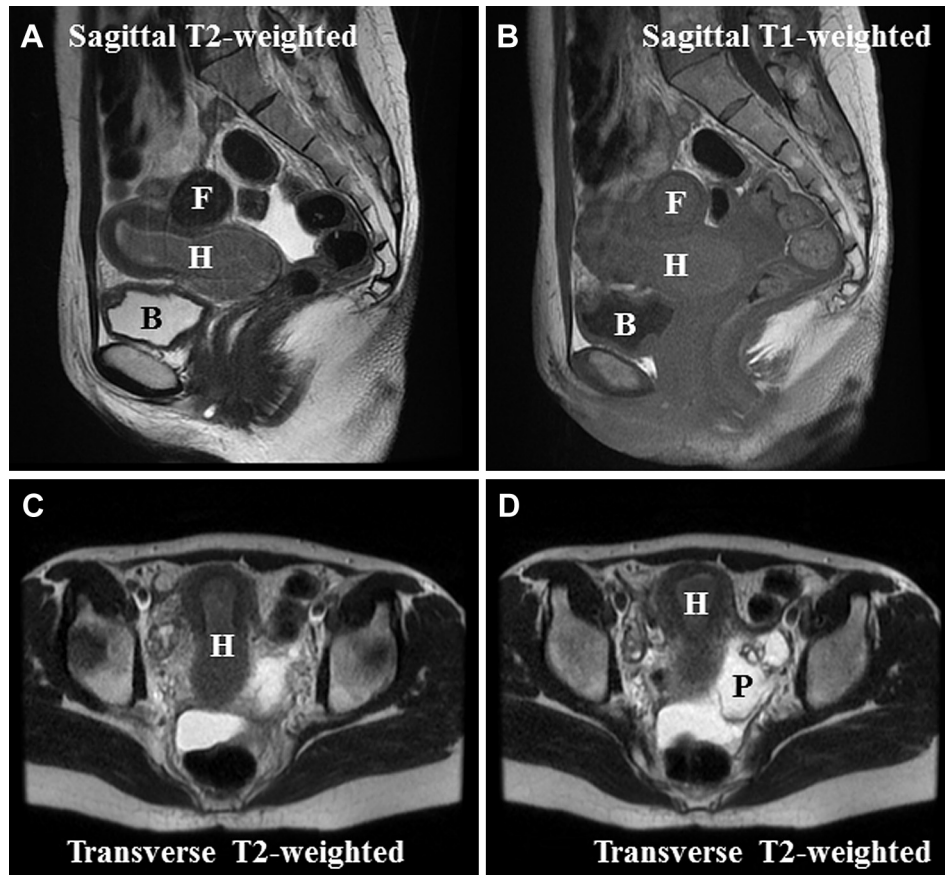


Fig. 2. Findings of preoperative magnetic resonance imaging. (A–C) Magnetic resonance imaging clearly reveals a hematometra. Fluid collection in the uterine cavity demonstrated iso to mild high signal intensity on T2-weighted imaging and iso signal intensity on T1-weighted imaging. These findings are compatible with hyperacute hemorrhage. (D) Magnetic resonance imaging reveals the presence of a septate pseudocyst containing serous fluids in the pelvis probably caused by repeated inflammation because of retrograde menstrual blood. B = bladder; F = fibroid; H = hematometra; P = pseudocyst.

(Lamicel, Medtronic Xomed Inc. Jacksonville, FL, USA) to prevent future reobstruction of her cervix. She has been free of relapse for 6 months.

Discussion

Cervical stenosis is considered one of the most significant late complications of conization.¹ This condition is associated with many clinical concerns such as dysmenorrhea, amenorrhea, infertility, dystocia during labor, and the difficulty of follow-up of CIN after conization.^{2,6} The incidence of this condition is wide ranging (1.3–5.2% after electrosurgical conization and 0–25% after laser conization) because the definition of the condition varies greatly from study to study.² Moreover, its frequency depended on the method used to perform conization.⁷ Using the Shimodaira-Taniguchi conization method, the incidence of cervical stenosis is 3.3% and that of complete cervical stenosis is 0.7%.⁸ According to a prospective study by Houlard et al⁹ investigating a total of 375 patients treated by laser conization, they concluded that the patient's age was the only significant independent predictor of cervical stenosis identified by a multivariate analysis using logistic regression. Similarly, Penna et al⁶ concluded that the incidence of cervical stenosis after laser conization was significantly higher in the postmenopausal patients in their retrospective study investigating a total of 1218 patients. They also revealed a very interesting research outcome that hormone replacement therapy use following conization was associated

with a low risk of stenotic complications.⁶ These results suggest an association between the increasing risk of cervical stenosis after conization and an estrogen-deficient state. As proof of this, some authors previously reported a case of complete cervical stenosis following conization during lactation amenorrhea.^{3,4,10} Both postmenopausal women and breast-feeding women are at high risk for this condition.

For patients with cervical stenosis with serious complicating symptoms, some type of treatment is necessary. If the patient desires future fertility, reconstructive surgery including both a recanalization and a dilatation of the cervical canal is chosen. In our case, we wondered when we should perform surgery because there are no reports concerning suitable timing for surgery for this condition, and few reports describe appropriate surgical procedures for reconstructive surgery. After much discussion, we decided to perform the surgery in the presence of hematometra during the patient's menstrual period because of several procedural advantages. During surgery, we could easily identify the past external os because of the outward bulging of the vaginal wall associated with retained menstrual blood in the dilated cervix. Furthermore, we could exactly incise the vaginal wall and reach into the cervical canal because of thinning of the vaginal wall associated with the patient's ballooning cervix. Finally, we could adequately dilate the cervical canal without cervical lacerations because of spontaneous dilatation of the cervical canal. Unlike in previous literature, we present some specific and understandable pictures regarding surgical repair procedures of

complete cervical stenosis after conization. This case report will certainly be a useful reference for clinicians who encounter a patient with this condition. To prevent recurrence, various methods such as temporary placement of some type of stent and hormone replacement therapy have been reported.^{3,4,6} However, there is no established procedure until now and further clinical investigation is needed.

In conclusion, we experienced an extremely rare case of complete cervical stenosis after conization was performed during lactation amenorrhea. In our case, magnetic resonance imaging demonstrated the presence of a pseudocyst containing serous fluids in the pelvis probably caused by repeated inflammations because of large amounts of retrograde menstrual blood over the previous 6 months. (Fig. 2D) It is well known that the prevalence of endometriosis is significantly higher in women with congenital outflow obstruction and subtle compromise of antegrade menstruation associated with a uterine septum or cervical stenosis.¹¹ Because women with an estrogen-deficient state have an established high risk for cervical stenosis after conization, it is important to inform them about the possibility of occurrence of this surgical complication and the typical symptoms associated with this condition. To reduce the incidence of long-term complications following conization, a progressive improvement of both surgical technique and postsurgical care is essential.

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