

# New catheter stent using a nelaton catheter for treatment of cervical stenosis in postmenopausal women with pyometra

Koshiro Obata, Youji Mituhashi, Gen Ohmura, Youko Amano,  
Naoko Ikoma and Yoshiki Inoue

*Department of Obstetrics and Gynecology, Nara Hospital,  
Kinki University Faculty of Medicine,  
Ikoma, Nara 630-0293, Japan*

## Abstract

We developed a new catheter stent as a safe, easy and effective treatment method for cervical stenosis.

Two postmenopausal women with pyometra were treated using a new catheter stent. The cervical canal is identified with a uterine sound under ultrasound guidance. A sterilized catheter stent using a nelaton catheter is then placed in the cervical canal for 3 months because of increasing re-stenosis of uterine cervix placing the another catheter within 2 months. Resolution of pyometra was achieved in both patients immediately after catheter stent

insertion. At follow-up after removal of the tube, there was no evidence of recurrence of cervical stenosis.

The new catheter stent can be placed for a long period and removed easily without any sutures or specialized instruments. There is no need for general anesthesia during our management procedure, which is beneficial in the office setting. This temporary catheter stent is both effective and safe in the treatment of cervical stenosis.

**Key words :** cervical stenosis, pyometra, new catheter stent

## Introduction

Cervical stenosis may be a result of a congenital developmental anomaly or may be acquired secondary to mechanical obstruction of the cervical canal. Stenosis of the cervical canal after conization is a well-known complication. Mechanical obstruction of the cervix may lead to dysmenorrhea, hematometra, and pyometra. A number of treatment modes have been proposed, including dilatation of the cervical canal alone, hysteroscopic endocervical resection,<sup>1</sup> laser vaporization of the stenotic segment,<sup>2</sup> dilatation and placement of various types of stent. If all other options fail, even hysterectomy is recommended for these patients.

In this report, pyometra was treated using a

novel method. Pyometra is defined as the accumulation of pus in the uterine cavity resulting from interference with its natural drainage. This is often due to a blocked cervical canal in conditions such as cervical or endometrial carcinoma or, more frequently, postmenopausal stenosis.

We describe a treatment method that has not been previously reported. Our treatment method involves dilatation of the cervical canal under ultrasound guidance and placement of a new stent using a nelaton catheter. This method allows dilatation of the stenosed cervical canal, with consequent healing around the catheter while minimizing the risk of recurrence. This method does not alter the integrity of the cervix, in contrast to methods that involve resection of cervical tissue. We report the outcome of this

treatment method in two cases.

**Methods**

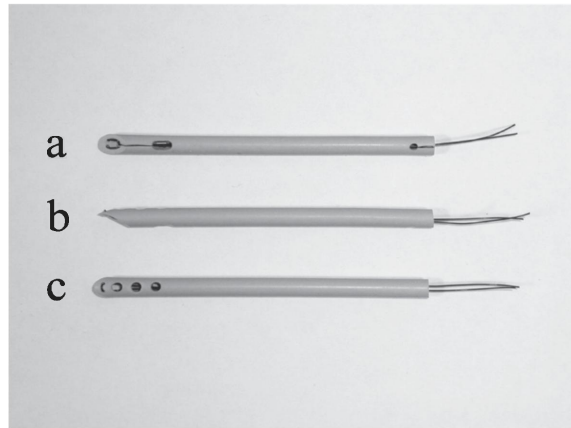
A 69-year-old woman complained of vaginal purulent discharge and was diagnosed as having cervical stenosis from an enlarged uterine cavity by pelvic ultrasound. An 89-year-old woman with bloody stool was admitted to a clinic. CT and MRI revealed ovarian tumor. Thereafter, she was referred to our institution. We diagnosed cervical stenosis from an enlarged uterine cavity by pelvic ultrasound. Each woman was offered placement of a new stent using a nelaton catheter at an outpatient visit. Both patients consented to the procedure.

The nelaton catheter is made from natural rubber and is 4 mm in outer diameter, 2 mm in inner diameter and is cut 70 mm in length. The point of the tube is cut diagonally. There are several holes at the front and rear, as shown in Figure 1. A 2.0 nylon thread tied at the tip passes through the tube. There is a slit in the bottom. The tip of the stent extends sideways by pulling the nylon (Figure 2). A knot tied in the thread is placed in the slit. The tube is placed through the cervix, into the uterine cavity and left in situ.

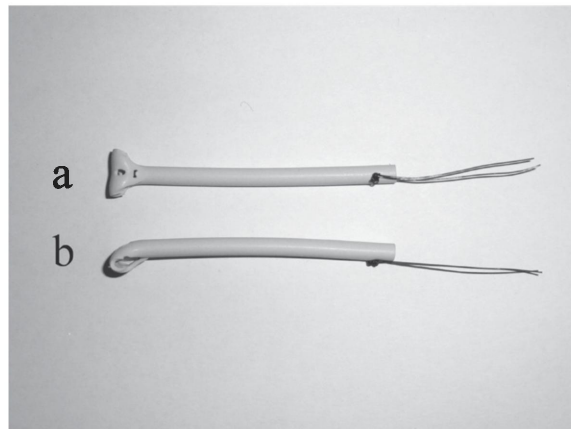
The new stent is a flexible tube that is passed through the cervical canal and into the uterine cavity (Figure 3). The length of the stent remaining inside the uterine cavity is approximately 1 cm. The opposite end of the stent should protrude 2-3 cm beyond the external cervical os. The tube provides both ongoing drainage of the uterine cavity and also prevents cervical stenosis from recurring during the healing phase. The patient is discharged home from hospital on the day of the procedure, with the tube in situ.

**Result**

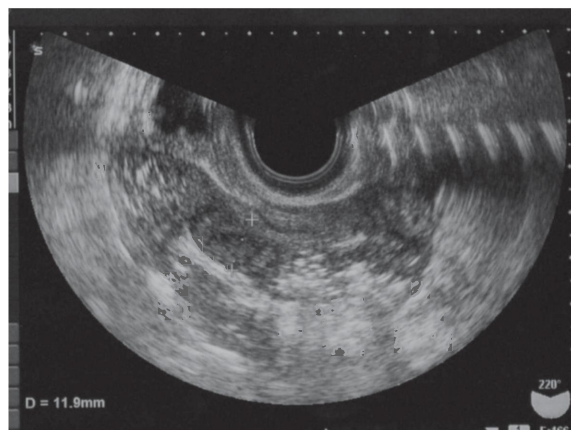
In both patients, the external cervical os was identified and a uterine sound was passed through the endocervical canal into the uterine cavity, under pelvic ultrasound guidance. The pyometra was evacuated and a new stent was inserted through the cervical canal. The procedures were performed without anesthesia. Resolution of pyometra was achieved in both patients immediately after tube insertion. There were no management-related complications, such as infections. After about 3 months, the tube was



**Fig. 1** Catheter stent using a nelaton catheter. a. front view. b. side view. c. rear view.



**Fig. 2** Catheter stent. a. front view. b. side view. By pulling the nylon thread the tip of the stent extends sideways. The knot is placed in the slit of the lower side.



**Fig. 3** Catheter stent dilates the cervical canal (ultrasound images).

removed without any complications. The tube was easily removed by releasing the knot from the slit in an outpatient room without any anes-

thesia. At follow-up, after removal of the tube, there was no evidence of recurrence of cervical stenosis.

In both patients, the initial cervical cytologic examination was negative, but endometrial aspiration cytology was inadequate because of abundant inflammatory cells. After the treatment of pyometra, endometrial cytology was negative in both patients.

### Discussion

Pyometra is a rare event in gynecology but is more common in elderly women. It is caused by impairment of the natural drainage of the cervix as a result of benign or malignant diseases. Both women were of postmenopausal age.

Cervical stenosis occurs principally when there is a stenosed cervical os, usually due to endometrial or cervical malignancy and previous cervical treatment for cervical intraepithelial neoplasia, previous dilatation of the cervix and curettage (D&C) for evacuation of products of conception or for investigation of abnormal uterine bleeding. Another less common cause of cervical stenosis/inferior uterine cavity scarring is radical trachelectomy, in which the procedure attempts to preserve fertility in women requiring surgical treatment of early cervical cancer.<sup>3</sup>

There is presently no standard method for the management of cervical stenosis. Treatment should be aimed at achieving a patent cervical canal and preventing the recurrence of stenosis without interfering with the integrity of the cervix. The simplest therapeutic measure is directed at dilating the cervical canal. Progressive cervical dilatation has had limited success due to subsequent scarring and recurrence of cervical stenosis. Previous experiences after simple dilatation only led to the development of this stent-type approach. Luesley et al.<sup>4</sup> tried to minimize stenosis of the residual cervix by using a temporary, hollow, funnel-shaped, plastic cervical support stent that was sutured into the exposed cone bed immediately after excising the cone specimen.

Alternative treatment methods for cervical stenosis have previously been described. Noyes et al. described placement of a Foley catheter after hysteroscopic endocervical resection.<sup>5</sup> Tan Y et al.<sup>6</sup> reported urinary catheter stent placement. Nasu K et al.<sup>7</sup> described placement of an IUCD tied with nylon threads. Witt BR<sup>8</sup> report-

ed placement of a latex nasopharyngeal airway. Grund et al.<sup>9</sup> used a nasopharyngeal airway tube, a coated nitinol stent.

The use of this type of stent for the treatment of cervical stenosis of the uterus has not been described previously. The benefit of our stent is that it is readily available, resistant to collapse and comfortable for the patient as there is no structure protruding outside of the vagina. In the present report, we demonstrate an easy and useful management technique with a new stent using a nelaton catheter for cervical stenosis. This catheter stent made from natural rubber was utilized as a temporary stent and allowed the uterine content to drain and maintained cervical patency. The use of this stent is novel because of its availability, flexibility, resistance to collapse and patient comfort. This stent successfully maintained cervical patency during healing of the cervical mucosa. Adequate dilatation can be achieved with fine dilators or a uterine sound only using our method. This new stent can be placed for a long period and removed easily without any sutures or specialized instruments. There is no need for general anesthesia during our management procedure, which is beneficial in the office setting.

### References

1. Wortman M, Daggett A (1996) Hysteroscopic endocervical resection. *J Am Assoc Gynecol Laparosc* 4 : 63-68
2. Luesley DM, Williams DR, Gee H, Chan KK, Jordan JA (1986) Management of postconization stenosis by laser vaporization. *Obstet Gynecol* 67 : 126-128
3. Boss EA, van Golde RJT, Beerendonk CCM, Masuger LFAG (2005) Pregnancy after radical trachelectomy: a real option?. *Gynecol Oncol* 99 (3 Suppl 1) : s152-s156
4. Luesley DM, Redman CWE, Buxton EJ, Lawton FG, Williams DR (1990) Prevention of post-cone biopsy cervical stenosis using a temporary cervical stent. *Br J Obstet Gynaecol* 97 : 334-337
5. Noyes N, Licciardi F, Grifo J, Krey L, Berkeley A (1999) In vitro fertilization outcome relative to embryo transfer difficulty: A novel approach to the forbidding cervix. *Fertil Steril* 72 : 261-265
6. Tan Y, Bennett MJ (2007) Urinary catheter stent placement for treatment of cervical stenosis. *Aust N Z J Obstet Gynaecol* 47 : 406-409
7. Nasu K, Narahara H (2010) Management of severe cervical stenosis after conization by detention of nylon threads tied up to intrauterine contraceptive device. *Arch Gynecol Obstet* 281 : 887-889
8. Witt BR (1999) Treatment of hematotrachelos after

dilatation and curettage : A case report. J Reprod Med  
44 : 68-70  
9. Grund, D, Köhler C, Krauel, H, Schneider A (2007)

A new approach to preserve fertility by using a coated  
nitinol stent in a patient with recurrent cervical  
stenosis. Fertil Steril 7 : 1212 e13-16