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Extending cervicoplastic surgery: an alternative technique to overcome the limitation of office hysteroscopy

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Abstract

Our objective is to show a feasible approach to the hysteroscopic procedures when the cervical canal has a diameter smaller than the lesion. Our study is designed as a case series and illustration of the surgical hysteroscopic technique. A group of patients ($n = 37$) underwent office hysteroscopy in Regional Reference Center for Hysteroscopy Service at Palagi Hospital, Florence, Italy, to see and treat an endometrial polyp with unfavorable cervical conditions between January 2019 and December 2019. An office hysteroscopy in outpatient setting with vaginoscopic approach was performed in women with unfavorable cervical conditions. Fiber-based 3.5-mm hysteroscope, with 5F electrosurgery unit and 5F bipolar electrode, was used to perform the cervicoplasty in order to enlarge the cervical canal from internal to external os, following by the removal of the endometrial polyp with the excision of the base only without slicing. After 90 days, a follow-up hysteroscopy was performed. The procedure was performed successfully in 89.2% of patients.

The surgical technique of cervicoplastic allows to perform an operative procedure without analgesia/sedation or anesthesia or blind cervical dilation, reducing the risk of complications and costs. Furthermore, cervicoplasty allowed the removal en bloc of the endocavitary lesion in all cases. At the follow-up hysteroscopy, the cervical passage was straight and smooth, without lesions repaired in all patients. Cervicoplasty is a technique which allows to perform an ease and comfortable hysteroscopic procedure even in patients with unfavorable cervical canal. Due to the widening of the diameter of the cervical canal, intracavitary lesions are removed intact resulting in an optimal pathological evaluation.

Keywords: Cervix, Electrosurgery, Hysteroscopy, Cervical stenosis, Endometrial polyps

Background

Hysteroscopic surgery is commonly used to manage and treat different gynecological pathologies. Modern hysteroscopic technologies are available to combine the possibility to explore the uterine cavity and also treat surgically the disease (“see-and-treat-approach”).

A tortuous conformation of cervical canal, as well as stenosis or adhesions, might represent an obstacle in

outpatient gynecological procedures where an easy and comfortable access of the uterine cavity is necessary. In addition, the cervical canal is pivotal not only for the access into the endometrial cavity but also for the removal of a large intracavitary neof ormation, or for embryo transfer during in vitro fertilization [1, 2].

Cervical stenosis may be congenital or secondary to cervical trauma, infection, cancer, radiation, conization, or postmenopausal atrophy with a still undefined prevalence or incidence [3]. In a series of 31,052 office hysteroscopies, Bettocchi et al. identified cervical stenosis in 32.7% of cases, with a major prevalence in postmenopausal women

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than in reproductive age women (70.1% vs 29.9%), being the combined stenosis of both external and internal cervical os the most common form [4].

The diameter of the cervical canal and the age of patients influence the perception of pain during the procedure, affecting feasibility and acceptability of the surgical technique [5, 6]. Currently, cervical dilatation is the most used method to treat cervical stenosis by the use of Hegar uterine dilator [7] in an inpatient setting and the use of anesthesia with consequences on patient outcomes and hospital costs.

In this context, a hysteroscopic technique that allows to expand the cervical canal in an outpatient procedure might be useful in large intracavitary neof ormation.

Material and methods

The study was designed as a retrospective case series. Data were collected from a group of women ($n = 37$) undergoing hysteroscopy with unfavorable cervical conditions, namely, a lesion bigger than the cervical diameter, a previous conization, or a stenotic or tortuous cervical canal. Surgery was performed by using a fiber-based 3.5-mm hysteroscope (Versascope, Gynecare, Ethicon, Inc., Somerville, NJ, USA) in order to remove an endometrial polyp. The excision of the polyp was made at the base of the lesion so that it was removed intact. All the procedures were performed in an office setting, without analgesia/sedation or anesthesia, between January 2019 and December 2019, in the Regional Reference Center for Hysteroscopy, Palagi Hospital, Florence. The patients were followed up with a hysteroscopy after 90 days from the procedure. The study was approved by the local IRB.

Surgical technique is explained by a video reporting a successful office hysteroscopy of a 35-year-old woman, para 0 with a large polyp.

Patients

The mean age of the study population was 47.8 ± 13.62 years (range 31–77), and 13 (35.1%) patients were in the postmenopausal age. The mean body mass index was 25.6 ± 6.1 kg/m² (range 20.4–43.3). Eight (21.6%) women were nulliparous. Three patients had a previous cervical conization. The main characteristics of the patients are shown in Table 1.

Results

Technique

A vaginoscopic approach using a fiber-based 3.5-mm hysteroscope was used. A 5F Gynecare Versapoint2 electrosurgery unit and 5F bipolar electrode Versapoint Twizzle (Gynecare, Menlo Park, CA) were inserted. Localizing the internal os, a lateral cut was performed for all the length of the cervical canal until the external os

Table 1 Patient's characteristics

Characteristics		Number of patients, $n = 37$
Menopause	Yes	13 (35.1%)
	No	24 (64.9%)
BMI	< 30	28 (75.6%)
	> 30	9 (24.4%)
Parity	0 para	8 (21.6%)
	≥ 1 para	29 (78.4%)
Previous cervical surgery	Yes	3 (8.1%)
	No	34 (91.9%)

for each side. The maximum depth of lateral cutting is 2.1 mm for each side, assuming that the angle of cut is 45° with a 3-mm length of the electrode, with a possible maximum enlargement of 6 mm for each side (Video 1). The polyp was excised at the base, and with a tenaculum, we proceed to the transport through the cervical canal. Patients did not experience pain during the procedure. No abnormal bleeding occurred during the surgical procedure. After 90 days, a hysteroscopy was done to assess the cervical canal. We found an intact cervical canal with no signs of damage or injury (Fig. 1).

Case series

The procedure was successfully performed in 89.2% of the patients (33/37). The failure of the technique was in one patient with previous conization, since no external cervical os were detectable. In other three cases, the polyp needed to be sliced in order to be removed. The procedure time varied between 2 and 4 min. In all patients who performed the hysteroscopy (36/37, 97.3%), the followed up hysteroscopy showed a normal mucosal surface in the cervical canal.

Discussion

In an outpatient setting, office hysteroscopy for the removal of endocavitary neof ormations, such as polyps or small myomas, is occasionally hampered by cervical stenosis or the large dimension of the lesion. Moreover, the size of the intracavitary neof ormation is pivotal for the success and the duration of the procedure, being related to the diameter of the cervical canal [8–10]. Our surgical technique may be adopted in patients with a large diameter polyp in an office setting, providing the enlargement of the cervical canal.

Indeed, the size of endocavitary neof ormation is not the only factor that influences the feasibility of the procedure, but there are some additional elements like texture, position, form, and planting base of neof ormation that might influence the success of outpatient operative hysteroscopy; in addition, also in successful circumstances, all these factors could cause a prolonged



Fig. 1 Cervical canal after 90 days

operation time that affects patient's compliance [11, 12]. A factor that can, also, influence the feasibility of an office hysteroscopy is the hysteroscopist's experience and the instrument size which is crucial for determining the reduction of pain during an office vaginoscopic hysteroscopy, while the type of uterine distension medium is less important in the perception of pain. Smaller diameter of the instruments are associated to less pain for infertile patients with a vaginoscopic approach and the training level of the gynecologist is crucial in perceived pain especially when the indication of hysteroscopy is primary infertility [13]. The patency of the cervical canal is an important factor. If the cervical canal is wide, the instrument can be angled leading to an easier maneuver and extraction. On the other hand, when the canal is narrow, the procedure might fail or be associated with prolonged duration and increase in the pain VAS score. In an observational study on office hysteroscopic procedures, the majority of women experienced no discomfort in all pathologic conditions treated except for endometrial polyps larger than the internal cervical os, in which women experienced low or moderate pain [14]. The introduction of innovative hysteroscopic tissue removal system, such as Trueclear 5C, fragments the polyps in small-size fragments that are immediately captured to do a pathological diagnosis [11] providing adequate tissue for pathological diagnosis despite the effects of tissue fragmentation [15]. The outpatient cervicoplasty could make easier the extraction of neoformations. This

technique allows a low learning curve for new surgical operator, the transport of removed neoformations in bigger fragments or even en bloc with a reduced operative time, more comprehensive histological response due to a minor thermal damage, less patient discomfort, and increased success rate of the office operative hysteroscopy in an outpatient setting.

The present surgical technique has several strengths: the isthmic mucosa is thin, smooth, and has no large caliber arterial vessels; the bipolar electrode on the small vessels allows a safe state of coagulation avoiding important blood loss; and the neighboring organs are preserved from lateral cervical cutting. The bladder is forward, the rectum is behind the cervical canal, and the ureter is lateral, which is generally located 15 mm laterally to the isthmic margin and 10 mm above side the vaginal fornix.

Moreover, cervicoplasty reduces the trauma on the cervical channel during the extraction of the big lesions, reducing the incidence of long-term sequela on the cervical patency and myometrium strength [16–18].

Recently, a hysteroscopic technique has been published to treat a narrow cervical canal when ET or intrauterine insemination failed due to cervical factor. A similar technique was used in the past for some cases of ART [19, 20]. A resectoscopic cervical shaving in general anesthesia and after cervical dilatation was performed, followed by ET in a second time; in all four cases, ET was feasible and successful without preterm delivery.

Another study used a hysteroscopic surgery in infertile women as safe and effective treatment for cervical stenosis [21]. Our technique, conversely, is performed without sedation or anesthesia.

Finally, our technique which might help for colposcopic follow-up in patients who had undergone conization for cervical pathology and had developed a stenotic cervical is not performable. The incidences of stenosis after conization are hard to compare because definitions vary greatly and, also, it depends on the surgical technique. Hasegawa et al. reported that premenopausal and postmenopausal patients with a prior laser cone biopsy had an incidence of cervical stenosis between 8.3 and 59.1%, respectively [22]. Houlard et al. suggested to adopt other surgical options other than conization in the management of cervical pathology when patient age exceeds 40 years [23]. Some studies underline the risk of undetected cervical or endometrial neoplasms in patients with cervical stenosis after conization [24].

Conclusion

Cervicoplasty is an effective, painless, and safe hysteroscopic procedure that might help gynecologists in hysteroscopic surgeries when the intracavitary lesion exceeds the cervical canal caliber, especially in an outpatient setting. This procedure reduces discomfort of the patient, cutting down the operative time and increasing operative feasibility.

Supplementary information

Supplementary information accompanies this paper at <https://doi.org/10.1186/s10397-020-01076-1>.

Additional file 1: Video 1. Cervicoplasty (attached as e-mail as requested).

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Authors' contributions

SC, VD, and FP designed the study; SC, CC, DP, FS, and KLA collected, analyzed, and interpreted the data; SC, EC, and GG were the surgeons responsible for and provided the patient recruitment; CC, DP, and FS prepared the manuscript. All authors read and approved the final manuscript.

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Availability of data and materials

All data generated or analyzed during this study are included in this published article.

Ethics approval and consent to participate

We have received the ethics approval and the consent from the patients.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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