Failed hysteroscopy and further management strategies

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Introduction

Hysteroscopy has now become the gold standard investigation for the diagnosis of intrauterine disease. Clinical indications range from abnormal uterine bleeding to infertility. Improvements in digital imaging and advancing hysteroscopic design have led to a paradigm shift, enabling women to have diagnostic and operative hysteroscopies as inpatients or outpatients. However, for any hysteroscopy to be successful, the cervix has to be amenable to passage of the scope. Difficulties in entry because of cervical stenosis, lead to an increase in complications and a failure to complete the procedure.

Although complications of hysteroscopy (uterine perforation, uterine infection, damage to surrounding organs and blood vessels, cervical tears) are uncommon, one study noted that nearly half of these complications were related to difficult entry.[1] It is therefore important to gain appropriate consent for the procedure, including consent for the risk of difficult entry, even in the outpatient setting.

With regard to failure, a systematic review of over 26 000 cases found that failures in the outpatient setting (4.2% of the total) were attributed to either technical problems (cervical stenosis, anatomical factors and structural abnormalities) or patient factors (pain, vasovagal episodes or intolerance).[2] Another study of over 6000 procedures showed that, of the 1184 cases of failed hysteroscope introduction, 61.7% were due to stenosis of the internal cervical ostium and 23.3% were due to stenosis of the external os.[3]

Stenosis of the cervix is most frequent in nulliparous or postmenopausal women.[4] It is also common in women who have had previous cervical procedures; with an incidence rate of 10.2% after laser conisation and 4.3% after loop electrosurgical excision.[5] Curettage (causing Asherman's syndrome), cryotherapy, trauma to the cervix or a Manchester repair should also raise suspicion of an obscured external os or stenosed canal.

If hysteroscopy fails completely then alternative investigations and management strategies are dependent on the original indication. Magnetic resonance imaging, computed tomography and ultrasound scans of the endometrium can be useful, but cannot provide direct views or histological diagnosis. When conservative, medical and intrauterine management strategies for abnormal uterine bleeding all fail, or are inappropriate, hysterectomy is the next step. This is extreme in most cases.

Finding a way to provide optimal patient care by successfully overcoming cervical stenosis is of great importance for reducing both complications and failure rates in hysteroscopy. This article explores the various methods being used to overcome cervical stenosis, based on the current available evidence.

Pharmacological dilatation

The principle behind using the prostaglandin analogue misoprostol before hysteroscopy is based on its efficacy in dilating the cervix in pregnancy (for both medical termination of pregnancy and induction of labour).

In 2012, a meta-analysis of 25 randomised controlled trials found that premenopausal women given misoprostol had less need for cervical dilatation and significantly increased cervical width compared with those given placebo. In contrast, there was no benefit in the postmenopausal group.[4] It is important, however, to balance the risk of side effects (preoperative pelvic cramps and vaginal bleeding, nausea and diarrhoea) with the likely benefit, and also the increased risk of perforating through a pharmacologically softened cervix.

With regard to dose, 400 micrograms administered vaginally is commonly accepted when balancing benefit against adverse effects. Furthermore, the Society of Family Planning also recommends a dose of 400 micrograms misoprostol vaginally prior to first trimester surgical termination because it results in greater cervical dilatation when compared with 200 micrograms, but with fewer adverse effects than higher doses (which provide minimal further gain in dilatation).[6]

Anecdotally, these authors report successful cervical dilatation in postmenopausal women where hysteroscopy had previously failed, although the literature provides less convincing evidence. A small double-blind, placebo-controlled trial showed significant cervical dilatation in postmenopausal women, following 1000 micrograms vaginal misoprostol administered 24 hours preprocedure, when given in combination with a preceding 2-week course of vaginal estradiol (25 micrograms daily).[7]

Mechanical dilatation

When the external cervical os can be easily identified, a stenosed cervix can be progressively dilated using a series of mechanical dilators such as Hegar dilators or Sims sounds. Most theatre sets feature 3–10 mm diameter sounds, with progressive increases in diameter of 0.5 mm increments. For resistant cervices, lubricant gel can be used to coat the dilator, or an attempt to straighten the canal can be achieved by pulling gently on a vulsellum. When performing this procedure in the outpatient setting, local anaesthesia should be considered.

Smaller diameter dilators, such as 1–2 mm lacrimal duct probes, are sharper and therefore more prone to creating false passages in the cervix. These should be advanced with great care and only by an experienced hysteroscopist, preferably under ultrasound guidance. False passages further complicate entry, making it more difficult to find the correct canal when direct vision is not possible. False passages also risk uterine perforation and damage to the surrounding organs, particularly if they guide the operator away from the true angle of the cervical canal. To avoid creation of new false passages, try dilating initially with a softer Pipelle or check the canal with a 2 mm hysteroscope, changing to the larger required scope after progressive dilation.

Entry under direct vision is always safer than blind dilatation. Entry on a conscious patient is also less likely to result in perforation; they can provide instant feedback on pain.

Hygroscopic dilatation

Laminaria tents are hygroscopic rods composed of dried seaweed, although there are synthetic versions that act more quickly. When placed in the cervical os, they absorb water from the surrounding stroma and swell, dilating the cervix. Seaweed versions act over 24 hours; synthetic versions act over 4 hours.

Hygroscopic dilators are most commonly used in cervical dilation prior to embryo transfer in fertility treatment, and have also been described in aiding surgical termination of pregnancy (including prior to manual vacuum aspiration).

Hygroscopic dilators come in 3 and 4 mm diameters, and swell to 2–3 times their original diameter.[6]

Hydrodilatation

Once the external os has been dilated sufficiently to allow entry of a small hysteroscope, the remainder of a stenosed cervix can be dilated under direct vision. The pressure of normal saline expelled from the end of a mini hysteroscope slowly hydrodilates the cervical os, allowing progressive entry. When hydrodilating with a 30 degree hysteroscope, the cervical os should be held at 6 o'clock of the view in an anteverted uterus (light cable protruding vertically downward
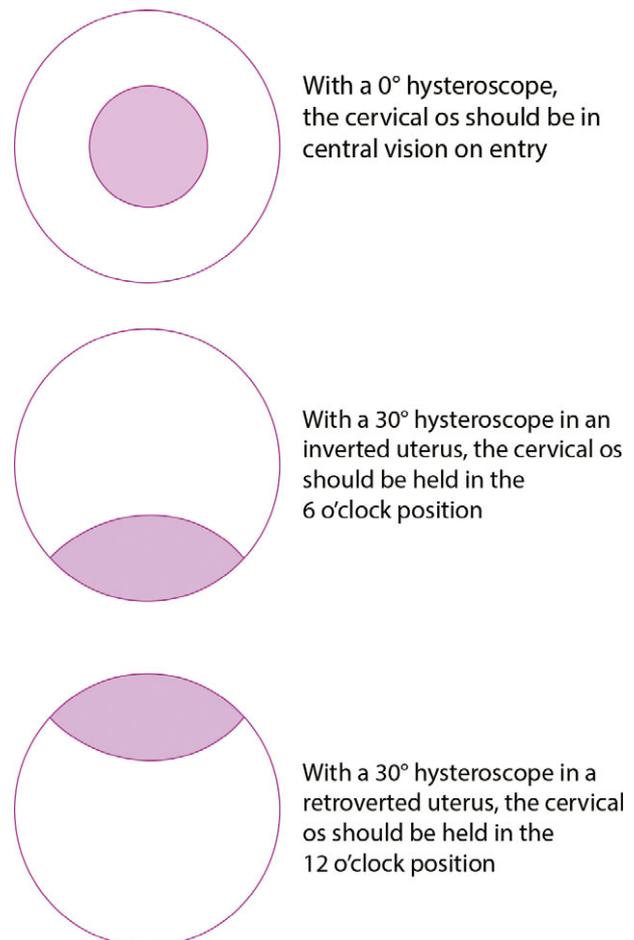

With a 0° hysteroscope, the cervical os should be in central vision on entry

With a 30° hysteroscope in an inverted uterus, the cervical os should be held in the 6 o'clock position

With a 30° hysteroscope in a retroverted uterus, the cervical os should be held in the 12 o'clock position

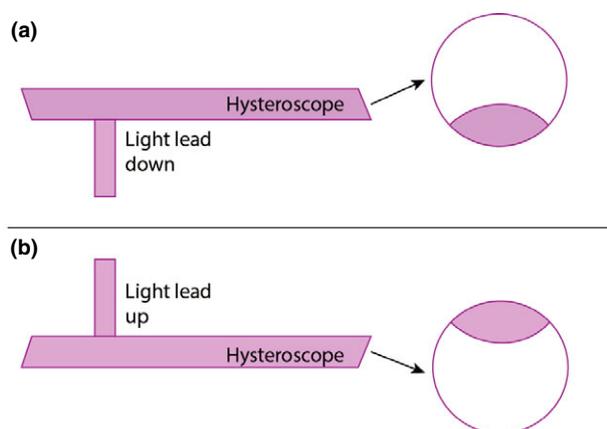**Figure 1.** Hydrodilating with 30° and 0° degree hysterocopes.

Figure 2. (a) With the light lead pointing towards the floor, the camera is angled 30° upwards to enter an anteverted uterus. (b) With the light lead pointing towards the ceiling, the camera is angled 30° downwards to enter a retroverted uterus.

from the hysteroscope), or 12 o'clock for a retroverted uterus (light cable held vertically upward). With a zero degree hysteroscope, the canal should be held in central vision (Figures 1 and 2). Hydrodilation is safer than mechanical dilation because the instrument is advanced under direct vision, and production of false passages is therefore less likely.

Ultrasound guidance

Consider using ultrasound guidance with a transabdominable probe for insertion of a uterine sound (or hysteroscope) through a difficult-to-define cervical os. To aid best ultrasound vision, the patient will need a full bladder for the procedure. Cervical dilation under ultrasound-guidance has also been shown to have lower rates of uterine perforation.[8]

Miscellaneous entry methods

With a severely stenosed cervix, or perhaps a non-visible external os, it is sometimes necessary to cut down through the cervix, using a cruciate incision, to find the cervical canal and internal os.[9] This technique is illustrated in Figure 3.

Pisal et al.[10] have described a technique to assess postmenopausal bleeding using saline infusion hysterography with careful insertion of a size 20 spinal needle through the cervical os. This only allows ultrasound assessment of the endometrial cavity, rather than endoscopic assessment, but has the additional benefit of providing endometrial washings that can then be analysed in cytology.[10]

If there is an intrauterine coil in situ, then it is simple to follow the strings in the passage.

Operating during menstruation allows the surgeon to follow the blood flow through the cervix and into the uterine

1. Make a cruciate incision over where you believe the cervical os should be

2. Continue to incise through the stroma until you identify the cervical os. This may be clearer if there is menstrual bleeding ongoing
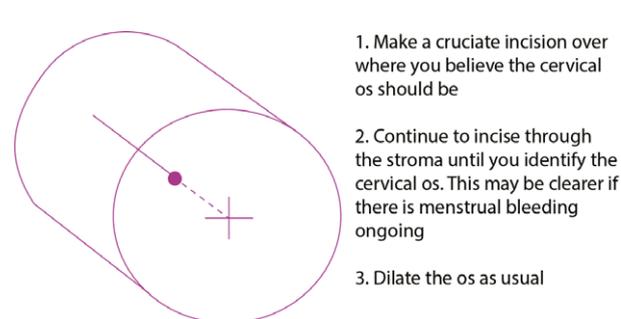
3. Dilate the os as usual

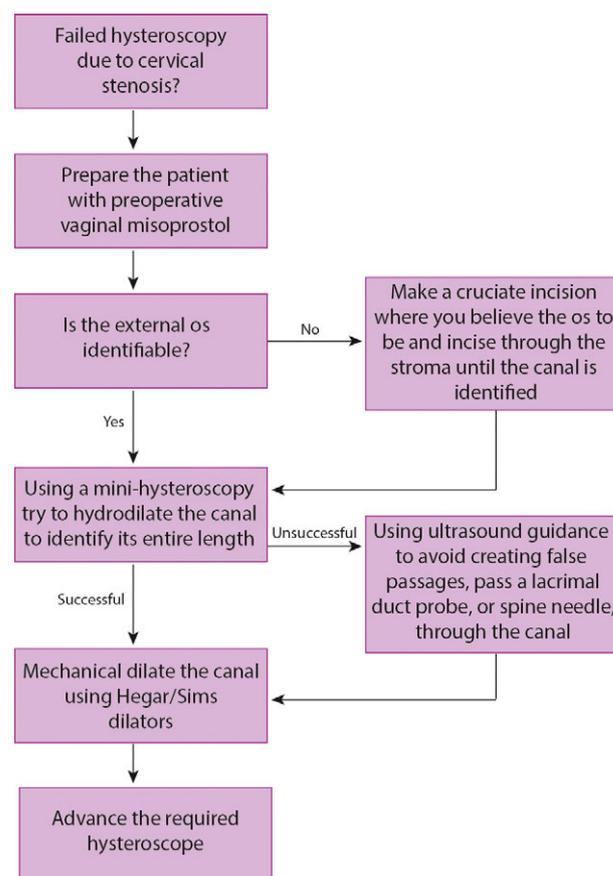Figure 3. Cruciate incision for a non-visible cervical os.

Figure 4. Approach to hysteroscopy in a patient with cervical stenosis.

cavity. The disadvantage is poor views of the cavity once inside; although this can be overcome with a gentle saline wash out or by using a continuous flow hysteroscope.

Conclusion

Cervical stenosis is a well-recognised cause of hysteroscopic failure, and can be difficult to overcome, particularly in the outpatient setting.

We have summarised the limited literature on a range of available techniques to be considered when faced with a stenosed cervix. Commonly used techniques include use of vaginal misoprostol preprocedure and using dilator instruments for mechanical dilatation. We have also described techniques used more commonly in surgical termination of pregnancy or in vitro fertilisation, including the use of ultrasound-guided dilatation, and dilatation with hygroscopic dilators. Finally, we have mentioned two techniques, using a spinal needle and cutting down through the cervical stroma, which have previously only been published on a case–discussion basis. We have produced a flowchart, summarising a suggested approach to hysteroscopy in a patient with cervical stenosis (Figure 4).

The most important learning point is in obtaining appropriate consent from the patient preprocedure. This includes risk of cervical stenosis and abandoned procedure, particularly in nulliparous women, postmenopausal women and women who have had previous cervical surgery. It also includes risk of uterine perforation, which is particularly important when trying to pass through a stenosed cervix and inadvertently creating false passages. Risk of uterine perforation can be reduced by entering under vision with guidance from ultrasound, or directly from the hysteroscope itself.

Finally, there are few studies comparing the safety and efficacy of the described techniques, and these are much needed to guide the clinician in overcoming the stenosed cervix at hysteroscopy.

Contribution of authorship

SR performed a literature search, wrote all but the introduction and misoprostol sections and edited subsequent drafts to produce the completed article.

TL wrote the introductory section and paragraph on misoprostol use.

MK devised the article, performed a literature search and edited the final drafts.

MB revised the initial draft and edited the final version.

Disclosure of interests

Nothing to disclose.

Supporting Information

Additional supporting information may be found in the online version of this article at http://wileyonlinelibrary.com/journal/tog

Video S1. No touch vaginal hysteroscopy.

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