Intracervical versus vaginal misoprostol for cervical dilatation prior to operative hysteroscopy—a comparative study

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ABSTRACT

BACKGROUND

Hysteroscopic surgery requires pre-operative cervical ripening to facilitate adequate dilatation of the cervix for insertion of operative hysteroscope. This study was conducted to compare the efficacy of intracervical misoprostol with vaginal misoprostol in achieving cervical ripening before operative hysteroscopy.

METHOD

In this randomised comparative study conducted at a tertiary care teaching hospital, 56 patients needing operative hysteroscopy were divided into two groups of 28 patients, one for intracervical misoprostol and the other for vaginal misoprostol. Four hundred microgram of misoprostol was inserted on the night before and in the morning of operative hysteroscopy intracervically in group I and vaginally in group II.

RESULTS

Primary outcome measure was number of patients achieving 7 mm pre-operative dilatation of cervix. Largest Hegar dilator that could be passed into the uterine cavity past the internal optic sheath without resistance was noted in each case. Mean cervical dilatation prior to operative hysteroscopy was calculated. In addition, incidence of slipping of vulsellum and cervical laceration was also noted. Time to achieve full cervical dilatation was recorded. In 23/28 cases of group I and 5/28 in group II, size 7 Hegar dilator could be passed without effort. Mean cervical dilatation was 7.5 mm in group I and 5.7 mm in group II. Slipping of the vulsellum and cervical lacerations were seen in significantly less patients in group I. Mean time to achieve cervical dilatation to 10 mm was 43.39 seconds in group I and 103.96 seconds in group II ($P < 0.0001$).

CONCLUSION

Intracervical administration of misoprostol is an effective method of achieving cervical ripening for easy cervical dilatation up to 10 mm prior to operative hysteroscopy.

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Key Words: cervical ripening; intracervical administration; misoprostol; operative hysteroscopy

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INTRODUCTION

Hysteroscopic surgery for intra-uterine disease has become an important tool in a gynaecologist's armamentarium. Endometrial polyps, fibroid polyps, submucous fibroids, intra-uterine synechiae, foreign bodies, foetal bones, and uterine septa are some of the common indications for operative hysteroscopy. Resection of endometrium for benign functional menorrhagia is also performed frequently at some centres. Insertion of hysteroscopic resectoscope, usually size 26 charriere, requires a 9–10 mm dilatation of the cervix. Achieving this degree of dilatation of the non-gravid cervix is always tedious and sometimes impossible without prior cervical ripening. Vaginally administered misoprostol before hysteroscopic surgery makes mechanical cervical dilatation easier. A number of placebo-controlled studies have attested to the efficacy of misoprostol for this purpose.^{1–9}

We found that even though pre-operative cervical dilatation with vaginal misoprostol to 5 mm or 6 mm is usual, difficulty in achieving full dilatation up to 9–10 mm is frequently encountered. The vulsellum/tenaculum often slips when force is used to negotiate the bigger dilators, leading to cervical lacerations. The cervix in such situations requires additional holds with Allis forceps or single-toothed tenaculum for a better grip. Occasionally, dilatation to 9–10 mm fails completely and the operative hysteroscopy procedure requires to be abandoned.

With a view to take misoprostol closer to the target organ, the cervix, we used intracervical misoprostol for pre-operative cervical ripening prior to operative hysteroscopy and compared it with the conventional vaginal misoprostol.

MATERIALS AND METHOD

The study was performed at a tertiary teaching hospital. Fifty-six patients requiring hysteroscopic surgery were randomised to intracervical misoprostol group (group I) or vaginal misoprostol group (group II). Sample size was also calculated by using a binary superiority trial design (www.sealedenvelope.com). Fifty-four patients were required to have a 90% chance (significant at the 5% level) of detecting an increase in the primary outcome measure (passage of size 7 Hegar dilator without force) from 20% in group I to 60% in group II. A random number table, generated using the same programme, was used to assign patients to the two groups. In both groups, 400 µg of misoprostol was inserted on two occasions, once the night before, usually around 10 pm and once at 6 am on the day of

surgery. For intracervical placement of misoprostol, cervix was visualised using a bivalve Cusco's speculum and the misoprostol tablet was inserted in the cervical canal using a long forceps. Vaginal administration was done digitally high up in the vagina. Resident doctors performed the misoprostol placement for patients of both groups. Any pelvic pain/discomfort complained by the patients following misoprostol application was noted and treated with mefenamic acid 500mg postoperative (PO). Surgical procedure was performed within 4–6 hours of the last misoprostol administration. Once in the operation theatre, the patients were administered general anaesthesia and Hegar dilators were passed starting with size 4. Size of the largest Hegar dilator that could be passed without resistance was noted in each case. Primary outcome measure was number of patients achieving a pre-operative cervical dilatation of 7 mm. The incidence of slipping of vulsellum, cervical laceration, need to use additional holds on cervix, time taken to achieve 10 mm dilatation, and complete failure to achieve the dilatation were recorded. The data for the two groups was tabulated and analysed using appropriate statistical tests.

RESULTS

The two groups were well-matched for age, parity, menopausal status, and previous vaginal birth (Table 1). The indications for the operative hysteroscopic procedure were also comparable (Table 2). The mean dilatation achieved with intracervical misoprostol was 7.5 mm as compared to 5.7 mm in vaginal misoprostol group (Table 3). As this parameter results were normally distributed along a Gaussian curve, Student's *t*-test, a parametric test, was used and the result of the statistical analysis was highly significant ($P < 0.0001$). In 23/28 cases of group I and 3/28 in group II, size seven Hegar dilator could be passed without use of force, highly significant on Fisher's exact test. Slipping of the vulsellum occurred in 2/28 in group I vs 12/28 in group II (Table 4). Cervical lacerations were also significantly less in group I compared to group II (1/28 vs 10/28). Additional holds on cervix were not required in group I and in 6/28 cases in group II. In two cases of group II, adequate cervical dilatation for the insertion of the resectoscope could not be achieved whereas it was always possible in group I. Mean time to achieve cervical dilatation to 10 mm was 43.39 seconds in group I and 103.96 seconds in group II ($P < 0.0001$) (Table 5). Around 9/28 patients from group I and 6/28 in group II complained of lower abdominal pain following

administration of misoprostol. This could be adequately managed with oral mefenamic acid administration. About 5/28 patients from group I and 6/28 in group II had vaginal spotting/bleeding following misoprostol administration.

Table 2 Indications for operative hysteroscopy.

Indication	Group I (n=28)	Group II (n=28)
Uterine polyp	13	15
Submucous fibroid	2	4
Intra-uterine synechiae	2	1
Foetal bones	1	2
Uterine septum	3	2
TCRE	7	4

TCRE: transcervical resection of endometrium

Table 3 Pre-operative cervical dilatation.

Maximum pre-operative cervical dilatation (mm)	Group I (n=28) (%)	Group II (n=28) (%)
4	0	1 (3.57)
5	1 (3.57)	9 (32.14)
6	4 (14.28)	15 (53.57)
7	8 (28.56)	3 (10.71)
8	10 (35.71)	0
9	5 (17.85)	0
Mean cervical dilatation	7.5 mm (± 1.07)	5.7 mm (± 0.71)

Table 4 Incidence of vulsellum slipping, cervical laceration, failure to dilate.

Characteristics	Group I (n=28) (%)	Group II (n=28) (%)
Vulsellum slipping and need for additional cervical hold	2 (7.14)	13 (46.42)
Cervical laceration	1 (3.57)	10 (35.71)
Failure to dilate fully	0	2 (7.14)

Table 5 Time to achieve adequate cervical dilatation.

Time to full cervical dilatation (s)	Group I (n=28)	Group II (n=28)
<30	8	0
30–60	15	6
60–120	5	11
120–180	0	7
>180	0	4
Mean time	43.39 (± 25.3)	103.96 (± 45.3)

Table 1 Age, parity, and menopausal status distribution.

Characteristics	Group I (n=28)	Group II (n=28)
Mean age (yr)	42.6 (± 15.4)	44.1 (± 14.7)
Mean parity	2.6 (± 1.45)	2.7 (± 1.51)
No. prior vaginal birth (no.)	5	3
Menopausal (no.)	11	10

DISCUSSION

Most patients undergoing operative hysteroscopy with conventional resectoscopes require cervical dilatation prior to the operative procedure. Achieving a dilatation of 9–10 mm on a non-gravid cervix is often a traumatic and time consuming effort especially in an unprimed cervix. Slipping of the vulsellum/tenaculum, cervical lacerations, creation of false passages, and uterine perforations are frequently encountered during the cervical dilatation on the non-gravid uterus. The risk of these complications is even higher in postmenopausal and nulliparous women.

Cervical ripening involves activation of prostaglandin E2 receptors. Osmotic dilators, balloon catheters, and prostaglandin E1 analogue misoprostol have all been used to achieve activation of prostaglandin E2 receptors and the resultant cervical ripening, both in gravid and non-gravid women. The earliest reference to the use of prostaglandins for cervical ripening prior to operative hysteroscopy dates back to 1985 when intracervical sulprostone gel was used.¹⁰ Subsequently, for reasons of ease of availability and low cost, misoprostol has become the most widely used method of cervical ripening prior to hysteroscopy.

Various dose regimens and timings of administration of misoprostol being used range from 200 µg to 1,000 µg administered 4–24 hours prior to the operative procedure. Most studies have used vaginal misoprostol though some investigators have even used oral or sublingual misoprostol for this purpose.^{11,12} Some investigators have used adjuvants such as estradiol tablets or GnRH analogues to enhance the effect of misoprostol.^{13,14} Most studies have achieved a pre-operative cervical dilatation of 5.5–7.5 mm with misoprostol used orally, vaginally or sublingually. The lack of uniformity in pre-hysteroscopy cervical ripening techniques indicates that the best technique is yet to evolve.

Our experience with vaginal misoprostol for cervical ripening prior to operative hysteroscopy was similar to the reported literature. However, our results with intracervical misoprostol are extremely encouraging, which makes use of the conventional resectoscopes for intra-uterine surgery very comfortable. This is the first study, to the best of our knowledge, that uses intracervical misoprostol for easing cervical dilatation before hysteroscopic surgery. Rath et al had used intracervical sulprostone gel and had found a mean pre-operative cervical dilatation of 6.7 mm.¹⁰

Our study is an exploratory study testing the hypothesis that bringing the pharmacologic agent closer to the target organ will have a greater effect. Misoprostol placed in the cervical canal was found to achieve much more cervical dilatation as shown in the results of this study. The limitation of the study is that it was not a double blind study with the potential for physician bias. Appropriately designed studies on intracervical misoprostol may further substantiate the results of our study. Finding optimal dose and timing of intracervical misoprostol also warrants more investigations in the future.

Intellectual Contributions of Authors

Study concept: Col BK Goyal, VSM, Premansu Roy, Col BS Duggal

Drafting and manuscript revision: Lt Col PM Bhat, Col NK Das, Surg Capt KG Paul

Statistical analysis: Col BK Goyal, VSM

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