

Comparison of the Foley catheter and dinoprostone pessary for cervical preparation before second trimester abortion

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Summary. The Foley catheter and a 3 mg dinoprostone pessary (Prostin E₂) were compared as methods for cervical preparation before second trimester dilatation and evacuation. The catheter was well tolerated and provided significantly greater change in cervical dilatation and improved cervical compliance. The Foley catheter would seem to provide a readily available and efficacious means of cervical preparation.

Dilatation and evacuation is gaining increasing acceptance as the technique of choice for termination of pregnancy in the second trimester (Grimes & Schulz 1985). Although there is a dearth of good studies examining the long-term sequelae of this procedure, there is considerable concern about the effects of acute mechanical dilatation of the cervix, and new techniques for cervical preparation are continuing to be assessed. The use of prostaglandins and their analogues, laminaria tents, balloon catheters, and Lamicel have all been investigated. In this unit both the Foley catheter and dinoprostone (Prostin E₂, Upjohn) pessaries have been utilized. We have studied the relative efficacy of these two methods in priming the cervix before second trimester pregnancy termination.

Subjects and methods

The women entered into the study were consecutive referrals from the District Pregnancy Advisory Service. All were at between 12 and 16 weeks gestation as determined by both a reliable menstrual history and pelvic examination. Any

discrepancy between these was resolved by ultrasound examination.

Ethics committee approval was obtained and each woman gave fully informed verbal consent. No exclusions were made and no refusals were encountered. Details of age, race, medical, obstetric and gynaecological history were recorded and the women were assigned to treatment with either a Foley catheter or dinoprostone pessaries on the basis of an odd or even terminal digit of their hospital number. The two treatment groups thus formed were the catheter group comprising 21 women and the pessary group comprising 23 women. The women were seen at admission, 24 h before operation. On pelvic examination a Cusco's speculum was introduced and the cervix swabbed with Savlodil solution (chlorhexidine 0.015%/cetrimide 0.15%). With the aid of a tenaculum on the anterior lip of the cervix the dilatation of the internal os was assessed with a Hegar dilator. In this study, introduction of the largest dilator was attempted first. The diameter of the dilator was then reduced in 0.5-mm steps until a dilator could be introduced without force. This method excluded any involuntary dilatation.

In the women assigned to the catheter group, a size-14 Foley catheter was inserted into the cervical canal to a depth of 3 to 4 cm. The balloon, which was thus placed beyond the internal os, was then inflated with 25 ml of water. The women in the pessary group had a 3-mg dino-

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Table 1. Characteristics of the women in the study

	Catheter group (<i>n</i> = 21)	Pessary group (<i>n</i> = 23)
Age (years)	25.1 (4.9)	22.5 (6.1)
Gestational age (weeks)	13.8 (1.2)	13.5 (1.2)
Nulliparae	9	12
Multiparae	12	11

Results are mean (SD) values.

prostone pessary placed in the posterior fornix, and were asked to remain supine for a short period afterwards. In both groups the women were allowed to move freely in the ward before operation. Immediately before premedication the Foley catheter stems were cut so deflating the balloon and allowing removal of the catheter without further vaginal examination.

In theatre, the operators (D.B.P. and P.W.R.) were thus blinded to the method of cervical preparation. After routine induction of general anaesthesia, and before the procedure, the cervical dilatation was assessed again as described above. The operator then noted the ease with which he obtained the further dilatation necessary to accomplish the evacuation. This assessment of cervical 'compliance' was described on a scale of 1 to 5 where 1 represented 'very easy' and 5 'very difficult'. Routine dilatation and evacuation was performed and complications or special features of the procedure were noted.

The large range in amniotic fluid volume between 12 and 16 weeks gestation precludes accurate estimation of the blood loss. However, any undue haemorrhage was noted by the surgeons, both of whom had considerable experience with the technique. The cervix was carefully inspected at the end of the procedure. On the next day the women were interviewed and questioned directly about any symptoms experienced before or after the procedure.

Comparison of the data used Student's *t*-test and χ^2 -test where appropriate.

Results

The catheter group included 21 women, and the pessary group included 23 women. The gestational ages, and the ages of the women were similar in the two groups ($t = -1.56$, $P = 0.13$) (Table 1). There was no significant difference in parity between the two groups ($\chi^2 = 0.10$).

Although the cervical dilatation before preparation was similar in the two groups (Table 2), at the start of the operation the increase in dilatation was significantly greater in the catheter than in the pessary group ($t = -3.2$; $P = 0.003$). Furthermore the ease with which further dilatation was accomplished, the cervical compliance, was significantly improved in the catheter compared with the pessary group ($t = -5.02$; $P = 0.001$).

Five women complained of low abdominal cramps before surgery (four in the catheter and one in the pessary group). Only one woman requested analgesia pre-operatively. She had a catheter and this was removed some hours before operation but apparently without loss of efficacy. Pyrexia occurred in one woman post-operatively where a catheter had been used but the pyrexia had been present on admission and was thought to represent an intercurrent viral illness. Postoperative recovery was otherwise uneventful in this patient and no pathogens were cultured from genital tract swabs. Tenaculum tears occurred in two women, one in each group. A bucket-handle tear occurred in one woman in the pessary group. She had had two caesarean sections for failure to progress in labour. As it proved so difficult to dilate the cervix a hysterotomy was performed.

Interviews conducted after the operation did not reveal any further complaints associated with either procedure. In particular the women in the catheter group did not consider the method unduly intrusive.

Conclusions

That the cervix is an obstacle to the emptying of the uterus is evidenced by the many methods advocated to overcome its resistance. The fre-

Table 2. Cervical characteristics before and after priming with the Foley catheter or a dinoprostone pessary

	Catheter group (<i>n</i> = 21)	Pessary group (<i>n</i> = 23)
Dilatation at admission (mm)	3.2 (1.2)	3.7 (1.9)
Dilatation in theatre (mm)	10.4 (2.1)	8.7 (2.1)
Change in dilatation (mm)	7.2 (1.9)	5.0 (2.3)*
Compliance score	4.4 (0.9)	2.8 (1.1)

Results are mean (SD) values.

* $t = -3.2$ (42 d.f.) $P = 0.003$.

** $t = -5.02$ (42 d.f.) $P = 0.001$.

quency of cervical injury after induced abortion is difficult to ascertain depending as it does on definition, time of assessment of the cervix in relation to the procedure, and difficulties in detecting tissue damage. Edstrom (1975) reported rates ranging from 0.3 to 4.9% and, more recently Heisterberg & Kringelbach (1987) found that 0.1% of 5851 women had sustained cervical injury during suction termination. Although there is no consensus view concerning the long-term sequelae of dilatation and evacuation (Savage 1982) there has been concern about consequent cervical incompetence and preterm delivery. Hulka *et al.* (1974) reported that dilatation of the cervix beyond 9 mm represented 'tearing of the internal os rather than true dilatation' and Johnstone *et al.* (1976) tentatively concluded from their retrospective study that cervixes dilated beyond 12 mm did not show the return to normal patency 6 weeks after operation seen in cervixes dilated to <10 mm. These findings are of special note because many of these women are at the beginning of their reproductive lives.

Our results show that better cervical preparation is achieved with the Foley catheter than with a 3 mg dinoprostone pessary. We must, however, be reserved in our conclusions, for ideally the pessary should be inserted some 6 to 8 h before the procedure. Clearly then there is a possibility that the cervix may have 'reconstituted' itself to some degree before operation.

In this small sample there did not appear to be any adverse reaction to the use of the catheter—a finding borne out by our continuing experience with this method. Its mode of action has been postulated to be by a direct mechanical effect or by release of prostaglandins secondary to separation of the fetal membranes (Ezimekhai & Nwabinehi 1980).

The readily available and inexpensive Foley catheter may thus offer some advantage over the prostaglandins and their analogues and Lamicel which was found to cause the greatest rate of dilatation within the first 2 h (Nicolaidis *et al.*

1983). As the mode of action of the Foley catheter may be similar to that of Lamicel; it should therefore be assessed over a shorter time period than that used in the present study. There are thus possibilities for using this method as part of a daycare procedure.

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