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**SLOW CERVICAL DILATATION IN VOLUNTARY ABORTIONS DURING THE FIRST TRIMESTER:  
COMPARISON OF THREE METHODS**

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**SLOW CERVICAL DILATATION IN VOLUNTARY ABORTIONS DURING THE FIRST TRIMESTER:  
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M. LUERTI\*, E. CASOLATI\*\*, A. AGAROSSII\*\*, AND G. MONOLO\*\*

SUMMARY

(Translator's note: The Italian summary is translated here because the English summary in the article is not an accurate translation.)

Eighty-three nulliparous candidates for voluntary abortion during the first trimester were subjected at random to the induction of cervical dilatation by means of the intramuscular administration of 500 micrograms of sulprostone, the endovaginal administration of an ovule containing 1 microgram of gemeprost, or the intracervical application of Dilapan, a synthetic dilator. The advantages and disadvantages of all three methods are discussed in terms of patient acceptance, ease of use, and degree of cervical dilatation achieved.

Introduction

Voluntary abortions during the first trimester represent a phenomenon that has become widespread in Italy since the promulgation of Act 194/78. In a significant number of such cases the patient is nulliparous: it is therefore important that the technique used for the procedure should be one that does not have a negative influence on the woman's reproductive future.

In this connection, rapid mechanical dilatation of the cervical canal with the dilators may be responsible for a lesion of the anatomical integrity of the internal uterine os; several authors (1,5) have in fact reported a higher incidence of cervicoisthmic incontinence, with consequent spontaneous abortions during the second trimester or premature deliveries, in women who have had a voluntary abortion.

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Consequently there have been some recent methodological proposals, some pharmacological and some mechanical, designed to produce “gentle”, non-traumatic, and progressive dilatation of the cervical canal. Particularly interesting among the former is sulprostone<sup>1</sup> a synthetic derivative of PGE<sub>2</sub> that has a uteroselective action, which dilates the cervix and stimulates the contractility of the myometrium, with a minimum of systemic affect and therefore minimal side effects of the kind which are typical in the case of natural PG’s, such as nausea, vomiting, abdominal pain, diarrhea, and headaches (6, 9). The drug can be administered either by the direct intracervical route in doses of 25 micrograms or, more frequently, by the intramuscular route in doses of 500 micrograms (10, 13).

Of similar interest is gemeprost (Cervidil, Serono), another synthetic analog of PGE<sub>1</sub>: this substance, available in the form of vaginal suppositories containing 1mg of active substance, has been shown to have uteroselective power, stimulating the myometrium and dilating the cervix, within two to six hours, with minimal systemic effects and with the advantage that it can be administered topically (14, 15).

Among mechanical methods, on the other hand, attention be drawn to a new synthetic dilator consisting of Hypan: Dilapan<sup>2</sup>, a hydrophilic polymer of polyacrylonitrile, contained in a suppository 4mm in diameter and 65 mm in length, having at its proximal end a ring to which is attached a string for easy removal of the suppository, The dilator, inserted into the cervical canal by a sterile technique, acts in the same way as laminaria japonica; what it does in fact is exert positive and progressive pressure on the walls of the cervical canal, by virtue of its increase in volume as a result of its absorption of the fluid contained in the canal tissue itself (16).

Its main advantage over laminaria consists essentially in its faster action: laminaria requires an application time of about 24 hours in order to obtain adequate dilatation of the cervical canal (17, 20), which causes considerable discomfort to the patient and, most important, makes it impossible to carry out the surgical procedure on the same day as the induction; Dilapan in contrast, triples or quadruples its diameter within two to four hours, without simultaneously increasing its length, and during this period of time it produces a cervical dilatation of 8-12mm (16).

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<sup>1</sup> Sulprostone (Nalador Schering): 16-phenoxy tetranor-PEG<sub>2</sub>-methylsulfonylamide.

<sup>2</sup> Dilapan is a product trademarked by Gynotech, Inc. (USA); its exclusive distributor in Italy is G. Cremascoli of Milan.

A number of clinical studies (16, 21, 22) have confirmed its effectiveness and the almost total absence of side effects which, if they occur, are generally limited to mild pain in the pelvic area. Moreover, the elasticity of the material minimizes the risk that it will break when removed (2.9% of the cases in 1,317 insertions (unpublished data).

In our experiment we wished to verify the validity of these three methods, with their relative advantages and disadvantages, in the induction of cervical dilatation for voluntary abortions during the first trimester in nulliparous patients.

### Materials and Methods

During the period from January, 1987 to May, 1988, 84 nulliparous patients admitted to Obstetric and Gynecological Clinic No. VII of the University of Milan for voluntary abortions during the first trimester were subjected at random, on the basis of tables of random numbers, to the preliminary induction of cervical dilatation on the morning of the day when the surgical procedure was to be carried out, using sulprostone, in 30 cases, Dilapan in 24 cases and gemeprost in 30 cases. Before the induction, all the patients having been informed about the purposes of the procedure, about the characteristics of the technique used, and about the advantages and possible side effects of the technique, gave their consent.

In the case of sulprostone, the technique consisted of the intramuscular administration of 500-microgram vial of the drug, in the case of gemeprost it consisted in the endovaginal application of a suppository of the preparation, while in the case of Dilapan the suppository was inserted into the cervical canal after vaginal disinfection with iodated polyvinylpyrrolidone.

The surgical procedure was carried out later the same morning, by the usual technique, after evaluation of the degree of dilatation obtained by the insertion, without any difficulty, of the Hagar dilator with the highest number. Disposable cannulae made of plastic were use in each case. The procedure was carried out under general or local anesthesia, depending on the stage of pregnancy and on the patient's wishes.

The patients were discharged the same day and were interviewed two days later to find out any possible problems that had arisen after the procedure.

## Results

The data relating to age, stage of amenorrhea, and length of time between the induction and the surgical procedure are shown in Table 1. The surgical procedure was carried out under general anesthesia in 66 cases (23 in the group treated with sulprostone, 16 in the group treated with Dilapan, and 27 in the group treated with gemeprost) and under local anesthesia in the other 18 cases (8 in the group treated with Dilapan, 7 in the group treated with sulprostone, and 3 in the group treated with gemeprost).

Table 1: Comparison of the principal characteristics of the three groups studied

	<b>Sulprostone</b>	<b>Dilapan</b>	<b>Gemeprost</b>
Age (years)	24.4+/-5.7 (17-41)	24.9+/-4.7 (14-37)	25+/-6 (18-40)
Stage of Pregnancy (weeks)	9.3+/-1.7 (6-12)	9.3+/-1.3 (7-12)	9.6+/-1.6 (7-12)
Period of time between the administration and the voluntary abortion (minutes)	171+/-43 (110-240)	150+/-44 (45-240)	171+52 (100-360)
Degree of dilatation achieved (mm)	6+/-1.2 (3.5-8)	7.8+/-1.5 (5-10)	5.7+/-1.4 (3-9)

With regard to the side effects of the three methods, the data are shown in Table 2. In the group of patients treated with Dilapan seven patients had a vagal reaction at the moment of insertion; in no case did we find difficulty or fragmentation at the time when the device was removed.

Table 2: Principal secondary effects in the three groups

	Sulprostone	Dilapan	Gemeprost
Bleeding	11	4	6
Pain in the pelvic area			
Mild	18	9	13
Moderate	1	2	6
Severe	2	0	0
Nausea	9	0	6
Vomiting	5	0	1
Diarrhea	0	0	2
Vagal reaction	1	0	0
Lipothymia	0	1	0
Other	2	0	0
None	3	10	8

None of the patients exhibited any undesirable effects two days after the surgical procedure.

### Discussion and conclusions

Our experiment, although numerically limited, enabled us to observe the advantages and disadvantages of each of the three methods.

Sulprostone can be used for induction with ease of execution and good patient acceptance (this is in fact a simple intramuscular injection), but its use is often associated with the occurrence of side effects, even though they are moderate in magnitude (predominantly pain in the pelvic area and spotting/bleeding) during the time interval between the induction and the performance of the voluntary abortion; in our group, in fact, there were only three patients who did not report disturbances after the administration of the drug.

Gemeprost has the advantage that it can also be administered in a non-hospital environment by the patient herself before admission, and that it produces fewer side effects than sulprostone.

The use of Dilapan has, at the outset, the conspicuous disadvantage that it is a preparation which requires medical intervention, and therefore it is less acceptable to the patient.

Moreover, side effects are not infrequent, chiefly of vagal origin (nausea, vomiting, lipothymia) when the device is inserted into the cervical canal: in our study such effects were found in 7 cases out of 24.

Nevertheless, Dilapan seems to produce a significantly higher degree of cervical dilatation than sulprostone and gemeprost ( $p < 0.001$ ) for the same length of time between the induction and the surgical intervention, particularly at more advanced stages of pregnancy.

However, none of the three methods seems to have any negative effects on the post-operative course in the short term.

We can therefore conclude that these three techniques constitute a valid alternative to rapid mechanical dilatation of the cervical canal: their disadvantages, relating to lack of patient acceptance and to immediate secondary effects, always moderate in magnitude, are amply compensated, in our opinion, by the possibility of carrying out the surgical procedure more rapidly, more easily, and in a manner which is less traumatizing to the anatomical integrity of the nulliparous patient's cervix.

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