

Cervical dilation: A comparison of Lamichel and Dilapan

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A randomized prospective double-blind study compares the dilatation achieved with Lamichel and Dilapan synthetic dilators in the setting of second-trimester elective abortions. A total of 51 patients with estimated gestational ages of 13 to 16 weeks had either Lamichel dilators or Dilapan dilators placed approximately 20 hours before dilation and evacuation. The placement and removal were by someone other than the operator. The operator then recorded the number of the Pratt dilator at which resistance was first met. The mean for the Lamichel group was French size 38.5 ± 6.4 . The mean for the Dilapan group was French size 50.4 ± 9.6 . In the Dilapan group there were six patients for whom cervical resistance was never reached. The results indicate a significantly greater dilatation was achieved with Dilapan dilators. This correlation was also noted within the subsets of nulliparous and parous patients. (AM J OBSTET GYNECOL 1989;161:1124-6.)

Key words: Dilation and evacuation, cervical ripening, Dilapan, Lamichel

More than 1 million pregnancies are terminated annually by legal abortion in the United States. This number has increased over the 11-year period between 1972 and 1983.¹ Abortions performed in the second trimester continue to represent 10% of all abortions.

Dilation and evacuation is the procedure of choice for pregnancy termination in gestational ages 13 to 16 weeks.² However, a persistent problem with midtrimester dilation and evacuation is the need for a moderate degree of forceful cervical dilation to facilitate the removal of the larger parts of the products of conception. Such mechanical dilation of the cervix has been associated with immediate tissue damage such as cervical laceration, creation of false passages, and uterine perforation. There are also potential long-term effects from dilation and evacuation such as cervical incompetence, premature delivery, and spontaneous abortion. Various methods of ripening the cervix by the induction of gradual softening and dilation have been used in an attempt to reduce these risks.

Laminaria tents made from dried seaweed have been commonly used in this setting. When inserted into the cervical canal they swell to several times their original diameter in 6 to 12 hours. A potential risk with laminaria is that the seaweed contains spores that are resistant to the sterilization process.

Subsequently, synthetic dilators have been introduced. One such dilator is Lamichel (Cabot Medical Corp., Langhorne, Penn.). The Lamichel dilator is a

Table I. Demographic characteristics

| | Lamichel | Dilapan |
|---------------------|----------------|----------------|
| Age (yr) | 24.9 \pm 6.0 | 24.1 \pm 5.8 |
| Mean gestation (wk) | 14.6 | 14.7 |
| Race | | |
| White | 10 | 8 |
| Black | 13 | 20 |
| Parity | | |
| Nulliparous | 11 | 12 |
| Parous | 12 | 16 |

polyvinyl alcohol polymer sponge impregnated with 450 mg of magnesium sulfate. The Lamichel dilator is compressed to form a thick cylindrical tent 75 mm long and either 3 mm or 5 mm in diameter. When inserted into the endocervical canal and left in position, the Lamichel dilator absorbs and retains fluid from the surrounding tissue. In the process it swells to a maximum of 12 to 20 mm in diameter and is converted from a hard rigid tent to a soft sponge.

Dilapan (Gynotech, Inc., Lebanon, N.J.) is a hygroscopic cervical dilator made from polyacrylate-based hydrogel (Hypan). The dilators are firm rods 4 mm in diameter and 65 mm in length. Hypan hydrogel also absorbs moisture from the surrounding tissue and swells to an average of 8 to 15 mm in diameter. With swelling it shrinks in length by approximately 18%.

The seaweed laminaria has been compared to Lamichel^{3,4} and Dilapan dilators.⁵ However, no comparison has been made between Lamichel and Dilapan dilators. This study was designed to compare these two new devices.

Material and methods

A total of 51 participants were enrolled in the study from the elective abortion clinic at North Carolina Memorial Hospital from November 1986 to May 1987.

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Received for publication November 14, 1988; revised April 24, 1989; accepted May 25, 1989.

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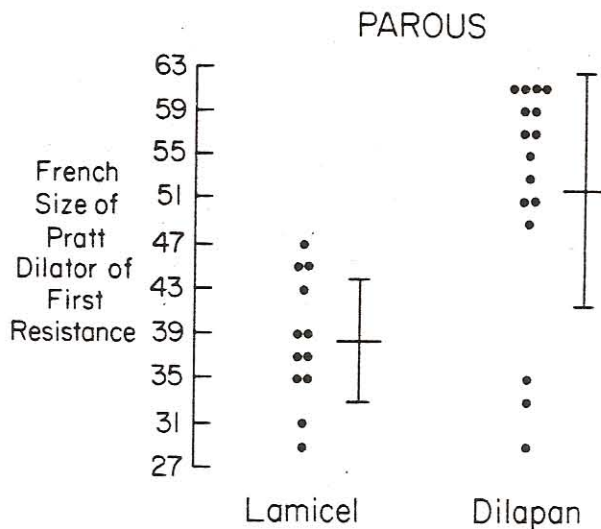


Fig. 3. French size of Pratt dilator of first resistance for each parous patient in Lamicel and Dilapan groups. Lamicel group mean is size 38.5 ± 5.6 ; Dilapan group mean is size 52.0 ± 10.5 . Difference is significant ($p \leq 0.0001$).

parous patients in the study is shown in Fig. 3. There was no significant difference between the results with regard to the nulliparous (Fig. 2) and parous (Fig. 3) participants.

No major complications resulted within the study group from the dilator placement or the dilation and evacuation. However, consideration should be given to several technical problems. On removal, two of the Lamicel dilators were noted to have been expelled outward. Both patients were parous, one at 14 weeks' gestation and one at 15 weeks' gestation. Despite the expulsion, the dilatation achieved in these two patients was at or above the mean for the parous patients.

A technical problem with the Dilapan product was that three of the dilators fractured at the time of removal. The fractured portions were removed from the os with forceps in two of these patients and with suction in the third. The dilator was visible at the os in these patients.

One technical advantage noted in Dilapan dilators by the physicians who inserted the dilators was the apparent ease of insertion. This was attributed to the Dilapan dilator's thin form and slick surface.

Comment

In review of our results we found a significant difference between the dilatation achieved by the Lamicel and Dilapan dilators. We did not find a significant difference between the dilatation achieved by nulliparous and parous patients in the individual groups. The mean dilatation for nulliparous and parous patients in the Lamicel group was exactly the same. There was a slight trend toward less resistance in the parous patients with Dilapan dilators, but this was not significantly different. The idea that there is no difference between nulliparous and parous cervixes goes against our clinical impressions. But a review of the literature reveals studies that used Pratt dilators in the first trimester of pregnancy that also failed to show a difference between parous and nulliparous patients.^{6,7} It is noted that the average gestational weeks is similar in the two groups.

This study allows us to conclude that both synthetic dilators are safe and effective. The Lamicel dilator has an advantage of not breaking. It appears to be effective even if it is expelled. The Dilapan dilator can fracture and this may occasionally cause problems with removal. However, the Dilapan dilator is easier to insert and achieves significantly greater dilatation.

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