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The use of Lamicel and oxytocin in termination of second trimester pregnancy: A preliminary report.

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The use of new synthetic cervical dilator (Lamicel) combined with oxytocin for termination of second trimester pregnancy was evaluated in 10 women at Department of Obstetrics and Gynecology, Chulalongkorn Hospital. Their ages ranged from 22 to 41 years (Mean of 31 years). Their mean parity and gestational age were 2.2 and 24.3 weeks respectively. The mean Bishop score before and after 12 hours Lamicel insertion were 0.9 and 3.2. The success rate was 90%, of which 5 cases (55.56%) were complete abortion, and 4 cases (44.44%) were incomplete abortion. The mean duration between Lamicel removal and abortion was 15 hours and 15 minutes. There was no immediate complication after Lamicel use. This study showed that Lamicel combined with oxytocin was rather effective in the termination of second trimester pregnancy without any immediate complication.

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สมชาย สุวจนกรณ์, กอบจิตต์ ลิ้มปวยอ. การใช้แลมมิเซลร่วมกับออกซีโทซิน ในการทำให้การตั้งครรภ์ในไตรมาสที่สองสิ้นสุดลง : รายงานเบื้องต้น. จุฬาลงกรณ์เวชสาร 2533 พฤษภาคม: 34(5): 361-368

รายงานเบื้องต้นการใช้ Lamigel ร่วมกับ Oxytocin ในการทำให้การตั้งครรภ์ในไตรมาสที่สองสิ้นสุดลงในผู้ตั้งครรภ์ที่มีข้อบ่งชี้ในการทำให้การตั้งครรภ์สิ้นสุด จำนวน 10 รายที่รับไว้ที่แผนกสูติศาสตร์-นรีเวชวิทยา โรงพยาบาลจุฬาลงกรณ์ ระหว่างเดือนกันยายนถึง เดือนพฤศจิกายน พ.ศ. 2530 พบว่า ผู้ตั้งครรภ์มีอายุเฉลี่ย 31 ปี จำนวนบุตรและอายุครรภ์โดยเฉลี่ยมีค่าเท่ากับ 2.2 คนและ 24.3 สัปดาห์ตามลำดับ ค่าเฉลี่ยของ Bishop score ก่อนและหลังการเหน็บ Lamigel เป็นเวลา 12 ชั่วโมง เท่ากับ 0.9 และ 3.2 อัตราการแท้งสำเร็จมีค่าเท่ากับร้อยละ 90 ในจำนวนนี้ ร้อยละ 55.56 เป็นการแท้งครบ ระยะเวลาเฉลี่ยตั้งแต่ถอด Lamigel จนถึงเวลาแท้งมีค่าเท่ากับ 15 ชั่วโมง 15 นาที จากการศึกษาไม่พบว่ามีภาวะแทรกซ้อนใด ๆ จากการใช้ Lamigel ร่วมกับ Oxytocin ในการทำให้การตั้งครรภ์ในไตรมาสที่สองสิ้นสุด และวิธีนี้เป็นวิธีที่มีประสิทธิภาพและปลอดภัย

Termination of second trimester pregnancy irrespective of whatever indications is still a major problem of obstetricians. The methods such as amniotomies of hypertonic saline, urea, or 50% glucose are rather dangerous because severe complications may develop in the patients. Oxytocin alone, in most cases, is unsuccessful for induction of second trimester abortion.

With the development of a synthetic prostaglandin, termination of second trimester pregnancy has a higher success rate, but still with some undesirable side-effects such as nausea, vomiting, diarrhea etc.,

and the cost problem that makes it not in general use, in Thailand.

Lamicel, an osmotic cervical dilator, is a polyvinyl alcohol polymer sponge, impregnated with magnesium sulfate salt 300-500 milligrams, and compressed to form a cylindrical tent of 3 or 5 millimeters in diameter and 75 millimeters long, sterilized by cobalt irradiation. When inserted into the endocervical canal, Lamicel will absorb water from the cervix, and swell to four times its original size⁽¹⁾, meanwhile making the cervix ready for dilatation. The real mechanism is still uncertain. (Fig.1)

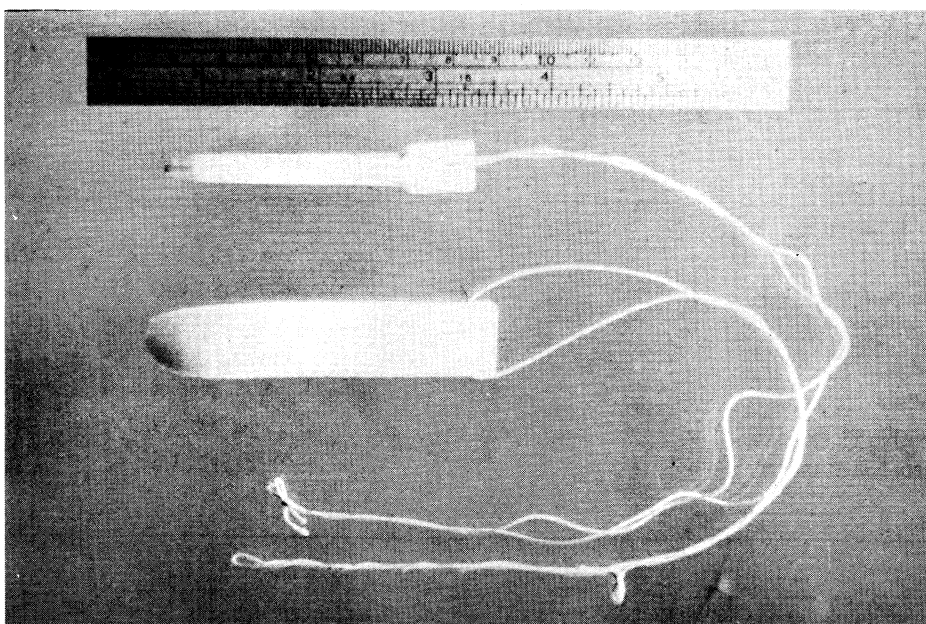


Figure 1. Lamicel pre and post water immersion.

The use of Lamicel is easy, economical and rather effective compared with other methods. Previous studies showed that Lamicel was effective in dilating the cervix prior to curettage and reducing the force used to dilate the cervix especially in primigravida, and consequently lessened cervical trauma.⁽²⁻⁴⁾ Study that used Lamicel for ripening of cervix before induction of labor revealed no difference from the use of prostaglandin E₂ gel applied to the vagina, only safer.⁽¹⁾

Patients and Methods

This study was conducted at Department of Obstetrics and Gynecology, Chulalongkorn Hospital, from September 1 to November 30, 1987. All women who had indications for termination of second trimester

pregnancy, without signs of genital tract infection were considered eligible for this study.

Lamicel used in this study was 3 millimeters in diameter and manufactured by Cabot Medical Corporation, Langhorne, PA, U.S.A.

All gravidae were admitted with complete blood count, urinary analysis, and in cases of fetal death in utero, the clotting time, bleeding time, and prothrombin time were added. After investigations, the patients were placed in lithotomy position. The cervix and vault were cleansed with chlorhexidine gluconate, then cervix was evaluated according to Bishop's score. Vaginal speculum was inserted and cervix was cleansed again with the same solution. After the anterior lip of the

cervix was grasped with Allis forceps, Lamicel was inserted into the cervical canal so that its distal tip just passed through the internal os. Lamicel was left in position for 12 hours before removal, and the condition of the cervix was evaluated again. Oxytocin 20 units in 5% dextrose in half strength normal saline 1,000 ml. was started at the rate of 100-120 milliliters/hour. If the abortion did not occur, another 20 units of oxytocin in the same solution was added; this procedure was considered to be fail if the abortion did not occur in 48 hours after Lamicel removal.

Results

There were 10 pregnant women included in this study. Table 1 shows the characters of the patients and uterine sizes at the time of termination. The indications for termination of pregnancy are shown in Table 2. Most of the indications were intrauterine fetal death and three had associated pathology or disease. One had right benign cystic teratoma, one had rheumatoid arthritis, and the last had chronic hypertension with superimposed pregnancy induced hypertension.

Table 1. Characters of patients.

	Mean \pm S.D.	Range
Age (yr.)	31 \pm 7	22-41
Body weight (kg.)	52.5 \pm 8.6	42-67.6
Height (cm.)	153.46 \pm 5.6	142-165
Parity	2.2 \pm 2.4	0-7
Gravida	4 \pm 2.5	1-8
Gestational age (wk.)	24.3 \pm 2.7	20-28
Uterine size (wk.)	21.1 \pm 3.6	16-27

Table 2. Indication for termination of pregnancy.

Indication	No. of patients	Percent
Intrauterine fetal death*	8	80
S.L.E. with renal involvement	1	10
Raped	1	10
Total	10	100

Table 3 shows gestational age and Bishop scores of pre- and post-Lamicel inserted cervix. The initial Bishop score range was 0-2 (mean of 0.9, median of 1) and the range after Lamicel removal was from 1-5 (mean of 3.2, median of 3) which was slightly more ripe.

The Duration between Lamicel removal and

abortion ranged from 7 hours to 40 hours and 30 minutes (mean of 15 hours and 15 minutes). There was one patient failing to abort within 48 hours. The patient in this case was raped and the fetus was still alive at the time of termination. Table 4 also shows the distribution of fetal weight and type of abortion.

Table 3. Bishop score: pre and post Lamicel insertion.

Patient No.	G.A. (wk.)	Pre-insertion	Post-insertion
1	28	1	4
2	22	1	3
3	24	2	5
4	28	0	3
5	22	1	3
6	25	1	3
7	20	1	3
8	24	1	4
9	27	1	3
10	27	0	1
Average	24.3	0.9	3.2

Table 4. Duration, fetal weight and type of abortion.

Patient No.	Duration (hr,min)	Fetal weight (gm.)	Type of abortion
1	15.40	940	C
2	11.55	720	C
3	17.41	650	C
4	40.30	850	I
5	11.15	300	I
6	8.40	350	C
7	10.50	900	I
8	13.42	680	C
9	7.00	450	I
10	Fail	—	F
Average	15.15	649	

Concerning amount of oxytocin used, 7 in 9 cases used only 20 units of oxytocin, while the rest used 40 units as shown in table 5. There were no serious complications

or side effects after Lamicel use except in case number 3 who had underlying disease of rheumatoid arthritis and had fever before Lamicel insertion. The laboratory investigation in this case showed no evidence of infection.

Table 5. Amount of oxytocin used and complication

Patient No.	Oxytocin (u)	Complication
1	20	—
2	40	—
3	20	Fever
4	40	—
5	20	—
6	20	—
7	20	—
8	20	—
9	20	—
10	40	Fail

Comment

Termination of second trimester pregnancy is associated with an increase in morbidity and mortality of the mother. The most successful agent used to ripen the cervix is prostaglandin⁽¹⁾, but its cost and some minor side-effects makes it not so popular in developing countries. In this trial we tried to combine the effect of Lamicel which is a synthetic cervical dilator with the oxytocin, since Lamicel is associated with less uterine activity, and the result is a promising one.

The technique of Lamicel has been developed from laminaria tent which is a kind of seaweed. When

laminaria tent contacts water, it will swell 3-4 times its original size without an increase in length. Its mechanism of action is the exertion of pressure in the endocervical canal, by the absorption of water from the cervix^(5,6) The major problem with these tents is infection. In a recent trial using natural laminaria, 60% of the patients developed endometritis⁷. Cervical trauma is another problem which may lead to cervical incompetence³. Lamicel has an advantage over laminaria tent in that it can be completely sterilized by Cobalt irradiation, and the pressure exerted in the endocervical canal is one fourteenth of the laminaria tent, and so lessens cervical trauma⁽³⁾. (Fig. 2)

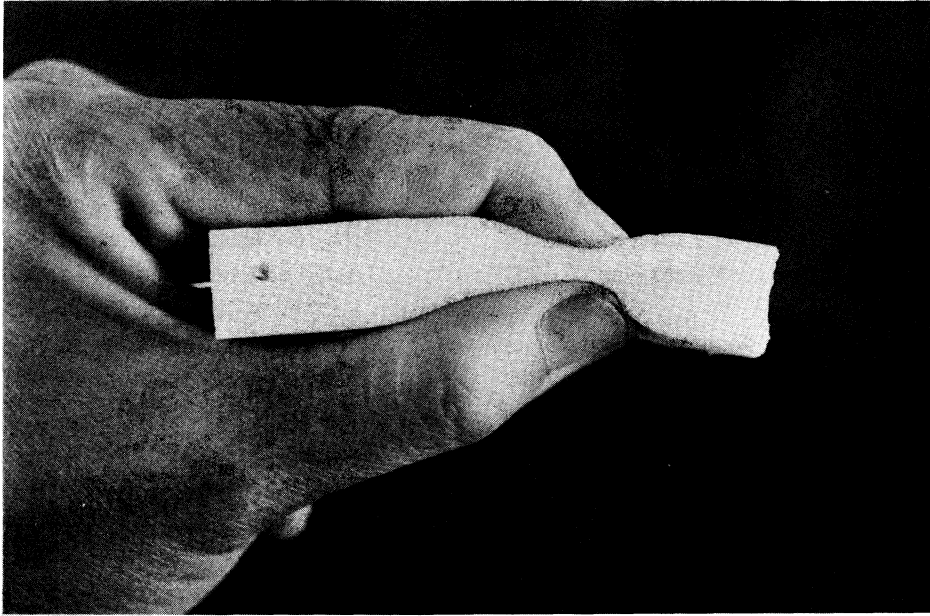


Figure 2. Shows compressibility of Lamicel after full swelling.

Lamicel in many studies are mainly used in dilating the cervix prior to curettage.^(2,8,9) Studies on the use of Lamicel for ripening the cervix are few especially in the second trimester. This study indicates that Lamicel combined with oxytocin intravenously is safe and effective for termination of second trimester pregnancy. The abortion rate with this method is 90%, compared with 87% in the study of Sakamoto et al⁽¹⁰⁾, using vaginal Prostaglandin E₁ tablet.

On considering infection, we found no patient having infection associated with Lamicel insertion, which is similar to the recent report by Johnson et al⁽¹⁾, who found very low incidence of infection after Lamical use. the type of abortion in our study was not

different from that using Prostaglandin E₂ gel reported by Yuen et al⁽¹¹⁾ with the complete abortion rate of 55.56 % and 53.33 % respectively.

It seems, therefore, that Lamicel combined with oxytocin is effective and safe in the termination of second trimester pregnancy. The rates of infection were not increased when Lamicel were used, and the total cost was rather low compared to other methods.

The mechanism of action of Lamicel is still uncertain but probably involves a direct action on the connective tissue of the cervix. Further work is suggested, to evaluate more accurately the effectiveness of Lamicel in the ripening of the cervix, since the population in our study is rather small.

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