Termination of 99 Dead Fetuses by Condom-Balloon Technique

Thawatchai Tansatit MD,
Theera Tongsong MD,
Somsak Chaovisitsaree MD.

Department of Obstetrics and Gynaecology,
Faculty of Medicine, Chiang Mai University,
Chiang Mai 50002, Thailand

Abstract: *A total of 99 cases of dead fetus in utero in the second trimester of pregnancies, justified with indication for termination were prospectively recruited into a non-randomized clinical trial by using the condom-ballon technique with subsequent augmentation by oxytocin infusion. The patients were from 17-46 years of age with a mean of 27.19 years and duration of gestational age ranged from 13-32 weeks with a mean of 22.92 weeks. The success rate for expulsion within 24 and 48 hours was 78.8% and 94.95% respectively. The average of induction-expulsion (IE) time was 16 hours 36 minutes and not significantly different between primiparity and multiparity. The morbidity in this study was minimal.*

The results of this study indicate that the condom-balloon technique offers an appropriate modality management for dead fetus in utero because of high efficacy, minimal complications and inexpensive techinque. Further investigations to compare it with other technique should be undertaken. (Thai J Obstet Gynaecol 1992;4: 7-13.)

Key words: termination of pregnancy, condom-balloon technique, dead fetus in utero (DFU)

Dead fetus in utero (DFU) is a common problem in obstetric practice, especially in the second trimester, since subsequent various complications can occur[1,2], i.e. psychic problems, infections, consumptive coagulopathy and problems of fertility in the future. Most of these problems result from prolonged retention of fetus in utero and these problems can be reduced by early termination of pregnancy.

Various techniques of termination of DFU in the second trimester have different disadvantages[1-4]. Expectancy may be appropriate, but not too prolonged, because 80% will have spontaneous labour in two weeks after death[3]. The patient is usually anxious and desires to have a quick delivery. Technique of dilatation and curettage has definite risks of bleeding, uterine perforation, cervical tear, and incomplete abortion[4]. Hypertonic solution

technique may be complicated by hyperosmolar crisis, heart failure, septic shock, peritonitis, water intoxication, consumptive coagulopathy, and myometrium necrosis[1-3]. Prostaglandins is widely used now due to their high efficacy and acceptable side effects[5]. However, it may not be appropriate for routine use, since it is rather expensive.

The preliminary report of condom-ballooning technique, a simple new technique, indicates that it has high efficacy, minimal complications and is much cheaper[6]. At Maharaj Nakorn Chiang Mai Hospital, this technique is now routinely used for termination of pregnancy in second trimester. This study aimed to evaluate the efficacy of termination of DFU and its complications.

Materials and Methods

All of the patients were prospectively recruited from April 1984 to August 1991. The subjects were selected from patients with DFU during 12-32 weeks of gestation, without labour pain and with no contraindication for condom-balloon technique which included cervicitis, chorioamnionitis, rupture of membranes, undiagnosed fever, and leakage of amniotic fluid. The same technique were performed in all patients, and only by the authors.

Preparation of condom-balloon

The condom-balloon consists of 1) rubber urethral catheter #14-16, 2) condom, 3) silk # 3/0, and 4) catheter guide. The condom and catheter were sterilized with cidex solution for 15 minutes. The condom-balloon can be easily prepared by tying the sterile condom to a sterile catheter tip with 2 knots of silk to make a balloon at the tip of catheter. We defined the length from the tip of the condom to the knot 3.5 inches, and the length of catheter inserted in condom is 2 inches. The excessive portion of condom was excised. The preparation is illustrated in Figure 1.

Technique of insertion of condom-balloon

After grasping the anterior lip of the cervix by tenaculum, the empty condom-balloon was gradually inserted through the cervical os by using uterine forceps until the knot was slightly above the internal os. Usually, it can be easily inserted. If a catheter guide is used, it must not be inserted beyond the internal os. Then the balloon was inflated with normal saline. The amount of normal saline employed depends on uterine size, i.e. 50-100 ml, 100-150 ml, 150-200 ml, 200-250 ml, and 250-300 ml for 12-16, 16-19, 20-23, 24-27, and 28-32 weeks size respectively. After inflation of the balloon, the catheter was tied with silk, folded and hidden in the vagina.

Care after balloon insertion

Bed rest or normal activity

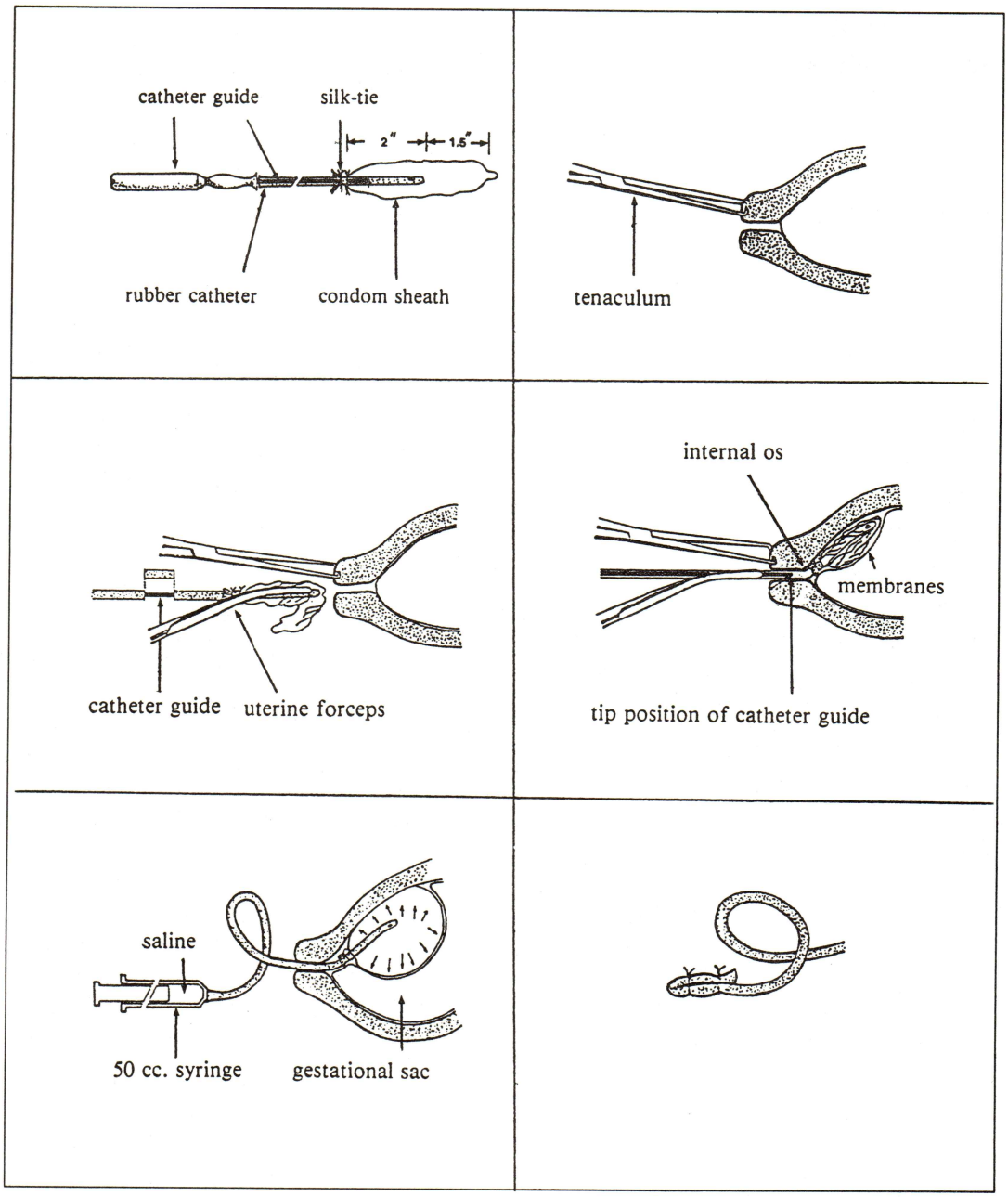

Fig. 1 Condom-balloon technique

was permitted. The patient was observed until spontaneous contraction was established, and then oxytocin was augmented to adjust for appropriate contraction. The balloon will be expulsed after cervical dilatation and must not be inserted back. The patient was attended until complete abortion. All steps and clinical changes were recorded for subsequent evaluation.

Results

Of 99 patients recruited, the average age was 27.19 ± 5.6 years, ranged 17-46 years, 50 were primiparae and 49 were multiparae. Distribution of patients' age and parities are shown in Tables 1 and 2. Average gestational age was 22.92 ± 5.0 weeks, ranged 13-32 weeks. Average uterine size was 21.51 ± 4.9 weeks, range 12-32 weeks. Distribution of gestational age and uterine size are shown in Tables 3 and 4 respectively.

Success rate for abortion (Table 5) within 24 and 48 hours occured in 78 (78.8%) and 94 (95.0%) cases, respectively. 5 patients (5.05%) failed to start contraction and aborted in the first 48 hours, one of them subsequently aborted in 72 hours and the four others were successfully terminated by sulprostone 48 hours after balloon insertion. Average induction-

Table 1 Distribution of age

Age	No. of patients	Percent
15-19	6	6.1
20-24	28	28.2
25-29	33	33.4
30-34	20	21.2
≥ 35	12	12.1
Total	99	100.0

Table 2 Distribution of parity

Parity	No. of patients	Percent
0	50	50.5
1	34	34.3
2	5	5.1
3	7	7.1
4	3	3.0
Total	99	100.0

Table 3 Distribution of gestatioal age

GA. (Weeks)	No. of patients	Percent
12-15	7	7.1
16-19	25	25.2
20-23	15	15.2
24-27	31	31.3
28-32	21	21.2
Total	99	100.0

Table 4 Distribution of uterine size

Size (Weeks)	No. of patients	Percent
12-15	9	9.1
16-19	27	27.3
20-23	24	24.2
24-27	24	24.2
28-32	15	15.2
Total	99	100.0

labour time (IL) was 9 hours and 23 minutes. (562.92 minutes) and average of induction-expulsion time (IE) was 16 hours and 36 minutes (996.15 minutes).

Table 5 Number of patients for each induction-expulsion (IE) time period

Parity	IE < 24 hours	IE < 48 hours	IE > 48 hours	Total
0	37	46	4	50
1	32	34	0	34
2	4	5	1	6
3	4	6	0	6
4	1	3	0	3
Total	78	94	5	99

Average IL time between primiparae (9 hours 32 minutes) and multiparae (9 hours 14 minutes) was not significantly different ($p > 0.05$).

Average IE time between primiparae (16 hours 24 minutes) and multiparae (16 hours 48 minutes) was also not significantly different ($p > 0.05$). Of 94 patients whose terminations were successful with condom-balloon, 9 (9.6%) required further curettage due to incomplete expulsion. 29 of 94 (31%) aborted with intact membranes.

Significant complications were found in 5 patients, blood loss of more than 500 ml (associated with curettage) in 1 patient, febrile morbidity (>38.0° C) during retaining balloon in uterine cavity in 2 patients, and febrile morbidity after expulsion in 2 patients, however, there was no other evidence of infections among them. No serious complications occurred during the study.

15 (16%) of the patients had a minimal amount or almost no blood loss, 66 (70.2%) had a small amount of blood loss (<150 ml), 12 (12.8%) had moderate blood loss (150-500 ml) and only 1 had blood loss of more than 500 ml.

Table 6 shows the outcome of therapy.

Table 6 Outcome of therapy among 99 patients

Excellent (IE time < 24 hr, no curettage, no complication)	64.6 %
Good (IE time < 24 hr, curettage and/or minimal complications)	22.2 %
Fair (IE time) 24 hr but < 48 hr, or moderate complications)	8.1 %
Unsatisfactory (IE time > 48 hr, or serious complications)	5.1 %

Discussion

Condom-balloon technique has been used as a conventional method of second trimester termination at Maharaj Nakorn Chiang Mai Hospital for 15 years. From this study, the success rate of termination by this technique within 24 and 48 hours was 78.8 and 95.0% respectively and no serious complications occured during the study. These results indicate that this technique has high efficacy, minimal complications, no systemic reaction, and a small number of imcomplete expulsions. Although this technique has a theoretical risk of infection from intrauterine retention of the balloon, this problem is only minimal. This may be due to the fact that patients with potential risk of infections were excluded from this study.

The mechanism of induction of abortion by condom-balloon is not clear, but the authors believe that mechanical separtation of membranes and decidua by condom-balloon initiates local prostaglandins because mechanical stimulation of this area results in endogenous prostaglandins production[7]. Separation of membranes and decidua may directly induce biochemical change in both tissues which contain a large amount of arachidonic acid and precursor of prostaglandins[1]. Uterine contractions induced by condom-balloon are similar to those of natural labour[1]. No significant systemic effect and no problem of overstimulation or tetanic contraction were observed.

The balloon did not separate placenta at all, always pushed in the direction of the decidua vera rather than the placental area when the actual procedure was visualized by sonography. Form our extensive experience, no placental abruption occured in any of the patients. However, patients with bleeding per vaginam should be sonographically exammined to rule out possible co-existing placenta previa which contraindicates the use of this technique.

Two interesting observations in condom-balloon technique are 1) most conceptive products are completely expulsed, only a few patients required further curettage due to incomplete expulsion, additionally, many patients delivered with intact membranes and 2) only a small amount of blood loss, possibly due to vasoconstriction from local prostaglandins.

In conclusion, this study demonstrates that the condom-balloon technique is highly effective for termination of DFU in the second trimester with minimal complications. In addition, this technique is much less expensive and should be appropriate for developing countries.

Acknowledgement

The authors wish to thank Associate Professor Kamjad Swadio, the Chairman of our Department, for his encouragement.

References

1. Cunningham FG, MacDonald PC, Gant

NF. Gant NF. Williams Obstetrics. 18th ed. Norwalk : Appleton & Lange, 1989:502-6.
2. Laughrin HJ, Kirschbaum TH. Intrauterine fetal death. In : Iffy L, Kaminetzky HA, eds. Principles and Practice of Obstetrics and Perinatology. New York : Wiley Medical Publication, 1981:1135-40.
3. Zlatnik FJ. Management of fetal death. Clin Obstet Gynecol 1986;29:220-9.
4. Osathanondh R. Pregnancy termination. (Therapeutic induced abortion). In : Ryan KJ, Berkowitz R, Barbieri RL, eds. Kistner's Gynecology Principle and Practice. 5th ed. Chicago : Year Book Medical Pubilshers, 1990:503-19.
5. Karim SMM. Prostaglandins in Obstetrics and Gynecology. In : International Sulprostone symposium. Vienna, November 1987:10-3.
6. Tansatit T, Tongsong T. Termination of dead fetus in tuero by condom ballooning technic. In : Proceeding of the 5th Fertility Research Investigators' meeting. Chonburi, Thailand. September. 1985:159-72.
7. Yokosawa K, Kanayama N, Terao T. Mechanical stretching increases prostaglandin E_2 in cultured human amnion cells. Abstracts of XIIIth Asian and Oceanic Congress of Obstetrics and Gynaecology. Bangkok: Ruenkaew Press, 1991:234.