Early termination of pregnancy by single-dose 800 μg misoprostol compared with surgical evacuation

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Objectives: To assess the efficacy, safety, and acceptability of early termination of pregnancy by vaginal administration of a single dose of misoprostol.
Setting: Healthy women seeking abortion in an institutional research environment in a tertiary-care hospital.
Design: Prospective randomized controlled clinical trial.
Participants: One hundred forty women seeking termination of pregnancy up to 49 days' gestational age were alternatively assigned to undergo medical or suction termination.
Intervention(s): Saline-soaked prostaglandin E_1 analogue, misoprostol (800 μg), was administered vaginally in group I, and group II underwent suction evacuation. Transvaginal sonography was performed on two subsequent visits to assess outcome.
Main Outcome Measure(s): Efficacy, side effects, complications, and acceptability were assessed in both groups.
Result(s): Complete abortion rate between the misoprostol and the surgical group was 94.2% versus 95.5%, respectively. Side effects were fewer in the misoprostol group and it had a higher acceptability rate.
Conclusion(s): Single dose of vaginal misoprostol alone has a success rate comparable with surgical method for termination of early pregnancy. Side effects were fewer in women who received misoprostol, and the method was well accepted. (Fertil Steril® 2009;91:28–31. ©2009 by American Society for Reproductive Medicine.)

Key Words: Early termination of pregnancy, misoprostol, suction evacuation, transvaginal sonography

Suction evacuation has been the method of choice for termination of pregnancy for many years. In the last decade, medical abortion has emerged as a realistic alternative to the surgical method for termination of early pregnancy. Studies show that compounds like antiprogesterones and prostaglandins can be safely used. The prostaglandin E_1 (PGE_1) analogue misoprostol can be administered by various routes with minimal side effects and has high efficacy rates (1–4). A Cochrane review in 2004 (5) described misoprostol in a dose of 800 μg was more effective than any other prostaglandin. Misoprostol vaginally is more effective than orally (5). Based on these studies, a comparative study was carried out in women, with periods of gestation less than 49 days, of both surgical and medical abortion methods.

The purpose of the study was to assess single-dose misoprostol efficacy for early termination of pregnancy and its side effects, complications, and acceptability compared with suction evacuation.

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MATERIALS AND METHODS

The Institutional Human Ethical Committee and the Departmental Scientific Committee approved the study protocol. The study was conducted in the Department of Obstetrics and Gynecology, Maulana Azad Medical College from March 2005 to March 2006.

Out of 148 healthy women with gestational age up to 49 days (confirmed by clinical examination and pelvic ultrasound) seeking abortion, 140 women consented to be enrolled in the study. All of the participants were counseled about the medical and surgical methods of termination and were allocated to one of the two groups alternatively. Women with even serial numbers were assigned for medical termination, designated as group I. Those with odd serial numbers were allocated to undergo surgical evacuation, designated as group II.

Women were excluded from the study if they had: 1) suspected ectopic pregnancy; 2) anemia (hemoglobin <8 g%); 3) hemolytic disorders; or 4) pelvic inflammatory disease. Women were excluded from group I if they had: 1) active bronchial asthma; or 2) inability to attend frequent follow–up visits. Written informed consent was obtained from all of the participants.

On the first visit, a detailed history and physical examination were done. Complete blood count, blood grouping, and

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urinalysis were performed. A transvaginal sonography was also done.

Group I

Four hospital visits were scheduled. At the first visit (day 1), the women were treated with a single 800 μg dose of misoprostol (Cytolog; Zydus Alidac, Ahmedabad, India) by digital insertion (four tablets of 200 μg misoprostol previously moistened with 2–3 drops of normal saline). The women remained recumbent for 30 min before discharge. At the second visit (day 2), participants returned for a transvaginal sonography (TVS) to check if the gestational sac was completely expelled. They were asked about the onset and amount of vaginal bleeding, graded as less than, equal to, or more than their regular menstrual flow (patient's self-assessment by pictorial blood loss assessment chart), pain in terms of mild, moderate, or severe, and any complaints of fever, nausea/vomiting, diarrhea, or dizziness. On the third visit (day 8), the treatment outcome was assessed. A TVS was done to confirm the completion of the procedure. Efficacy was defined as the termination of pregnancy with complete expulsion of the conceptus without the need for surgical intervention.

If the pregnancy continued or was incompletely aborted or the patient continued to bleed heavily, the procedure was defined as failed and a surgical evacuation was scheduled.

On the fourth visit, women were asked to report the nature of the subsequent menstrual period.

Group II

Evacuation was performed in an operation theater under local anesthesia. All of the women were discharged after 6 h of observation. They were prescribed antibiotics (cap doxycycline 100 mg twice daily for 5 days), and were instructed to report to the hospital in case of complaints of pain (graded as mild, moderate, or severe), fever, or prolonged/excessive vaginal bleeding, to be treated appropriately. All of the participants were followed up for 2 weeks.

Women participating in this group also were asked to report the nature of the subsequent menstrual period.

Statistical Analysis

Statistical analysis was performed using SPSS version 8 software. The χ^2 test was used to test the independence between variables. All statistical tests were two tailed, and values of $P<.05$ were considered to indicate statistical significance.

RESULTS

The clinical characteristics of the two groups, which included maternal age, gestational age, parity, previous history of abortion by surgical method, and subsequent menstruation, did not differ. Mean age (26 years) and parity (2) in both groups were the same. Mean gestational age in group I was 48 days and in group II was 47 days. In group I, 31 (44.3%) women had history of surgical abortion compared with 23 (32.8%) women in group II. Subsequent menstruation followed after the same gap of time (mean 43.5 days).

Group I

Out of 140 participants, 70 participants underwent medical termination of pregnancy. Of these 70, 69 women (98.5%) attended both of the follow-up visits. The duration of bleeding per vaginum varied from 1 day to 6 days and was well tolerated by all. All of the participants assessed the amount of bleeding as "a normal period." The onset of bleeding varied from 2 h to 8 h (average 6 h) from the administration of the drug. Complete abortion was achieved in 65 women (94.2%), which was confirmed on ultrasonography on the eighth day.

Of the remaining four, one came on the first day with heavy bleeding and two others returned on the eighth day with continuous spotting and pain. Bleeding was semiquantified by patient self-assessment [1) spotting; 2) light if less than normal menstruation; 3) normal if equal to regular menstrual flow; or 4) heavy if more than their regular menstrual flow] and a pictorial blood loss assessment chart to quantify loss (6). The fourth woman had a uniform gestational sac with persistent fetal cardiac activity on TVS. All of these cases were considered to be "failures" and underwent suction evacuation on the same day.

Abdominal pain was reported as the most frequent complaint. Mild to moderate pain was reported by 37 women (53.6%), of which 10 women (27%) took analgesics, namely, paracetamol (Crocin, 500 mg). Mild dizziness was the second most frequent complaint and was observed in 17 women (24.6%). It did not require any treatment. Diarrhea was observed in eight women (11.5%), and two required treatment (antidiarrhoeal, diphenoxylate with atropine, Lomotil 2 tabs). Antiemetic metoclopramide (tab Perinorm, 10 mg) was given to four women (5.7%) for nausea and vomiting.

Fever (maximum 100°F) was noted in two women (2.8%) for a few hours (Table 1) and no treatment was required. As per protocol, a second dose of misoprostol was not administered. All of the seven participants with <42 days' gestation had complete abortion within 24 h. During the first 24 h, complete abortion was observed only in 30 women (48.3%) with 43–49 days gestational age, whereas 28 women (45.1%) achieved complete abortion by the eighth day (Table 2).

Group II

Both follow-up visits were completed by 68 women (97.1%). Of these, successful termination of pregnancy was achieved in 65 women (95.5%). All complained of pain in spite of taking analgesics. They also complained of lack of privacy, because the procedure was carried out in the presence of the theater staff.

Complications encountered in this group were: 1) incomplete abortion in two patients, who were subjected to repeat evacuation; and 2) uterine perforation in one patient, who

TABLE 1

Side effects and complications observed in both groups.

Side effect/complication	Group I n	Group I %	Group II n	Group II %	*P* value
Pain	37	53.6	68	100	<.001
Dizziness	17	24.6	0	0	<.001
Diarrhea	8	11.5	0	0	.003
Nausea/vomiting	4	5.7	2	2.9	NS (.3402)
Fever	2	2.8	2	2.9	NS (.6847)
Vaginal bleeding	3	4.3	0	0	NS (.1250)
Uterine perforation	0	0	1	1.4	NS (.4963)
Continuation of pregnancy	1	1.4	0	0	NS (.5036)

Prasad. Early abortion by single-dose misoprostol. Fertil Steril 2009.

was kept under conservative management for 48 h; uterine cavity was found empty on TVS, and no further surgery was required. Samples obtained after repeat curettage were sent for histopathologic examination which confirmed gestational products. Blood loss in all of these cases was within normal limits.

Both Groups

Menstruation after abortion in both groups was heavier and resumed a bit later than normal (after 42–45 days). All women who participated in the study were asked to fill out feedback forms when they returned for follow-up after resuming menses. Out of 137 patients, 132 (94.3%) opted for the medical method of abortion if required in the future, irrespective of their previous experience. In group I, 31 women had previous experience of surgical abortion, of which 24 (77.4%) showed acceptability for the medical method. One gave no preference.

DISCUSSION

To establish a medical method of the termination of early pregnancy, a success rate comparable to that of vacuum aspiration and a low incidence of adverse effects are required. In the present study, a dose of 800 μg misoprostol was used vaginally for inducing medical abortion, because it has been found to be the most effective single dose used for inducing abortion (7–11). A success rate of 94.2% was observed with fewer side effects (Table 1).

In one earlier study, cases with <70 days gestation, 800 μg misoprostol was administered every 48 h, for a maximum of 3 doses and resulted in 93.6% successful terminations of pregnancy (7), whereas in another study, by Esteve Carbonell et al., patients with 36–63 days of amenorrhea received the same dose of vaginal misoprostol (800 μg), scheduled at every 24 h, and showed a success rate of 89.4% (8), which was similar to the 91.1% and 88% rates reported by Bugalho et al. and Jain et al. respectively (9, 10). Bugalho et al. conducted a study of termination of pregnancy of <6 weeks with a single dose of 800 μg vaginal misoprostol, achieving a success rate of 87.1% (11).

In the present study, the success rate of termination of early pregnancy by misoprostol (94.2%) is comparable to the results obtained by suction evacuation (95.5%; Table 2). The main advantage of medical abortion is that it allows women to avoid the risks of surgery and anesthesia. In this prospective study, we found that termination of pregnancy using vaginal misoprostol alone was 100% effective in women with

TABLE 2

Comparison of success rate in relation to gestational age in both groups.

Gestational age (days)	Group I: In 24 h[a] n	Group I: In 24 h[a] %	Group I: Up to 8 days[a] n	Group I: Up to 8 days[a] %	Group II n	Group II %	*P* value
Up to 42	7 of 7	100	0	0	6 of 8	75	
43–49	30 of 62	48.3	28 of 62	45.1	59 of 60	98.3	
Total	65 of 69 (94.2%)				65 of 68 (95.5%)		NS

[a] Misoprostol abortion interval.

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gestational age of <42 days and 93.5% effective in women with gestational age of 42–49 days. Zikopoulos et al. showed complete abortion in 96.3% of women with gestation <42 days, whereas in 42–56 days' gestation age complete abortion occurred in 86.3% of women, concluding that termination of pregnancy by misoprostol is more effective at a lower gestational age and that the success rate declines as the period of gestation increases (12). However, with the surgical method the success rate increases with the period of gestation (98.3% vs. 75%). In the present study, a high efficacy rate by medical termination might be attributable to the saline-moistened misoprostol tablets, which smears the vaginal wall better and is absorbed faster by the mucosa. However, this conclusion requires further study.

Of the 31 patients in group I who had previous experience of surgical abortion, we found a high rate (94.3%) of acceptability to the medical method compared with the surgical method of termination of pregnancy (Table 1). Disadvantages of the medical method include the inconvenience of side effects and the requirement of several follow-up visits. This was acceptable, because the method afforded greater privacy and emotional support. Expected privacy of aborting at home and emotional support rated as "very important" for 71.3% and 61%, respectively, of patients in a study by Wiebe (13). In another study, 91.3% of the women were satisfied with the method and would choose it again; women who had aborted successfully were significantly more satisfied with the method compared with women who did not ($P<.001$) (12). Participants in group II felt that the absence of privacy was the most unpleasant part of the surgical method.

CONCLUSION

After analyzing the outcome of both groups, this randomized study shows that medical method of termination of early pregnancy may be an alternative to suction evacuation, and both methods should be made available to the patient.

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