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Medical versus surgical termination of the first trimester missed miscarriage

Alia A. Shuaib ^a, Abdelrahman Hasan Alharazi ^{b,*}

^a Sana'a University, Faculty of Medicine, Obstetrics and Gynecology Department, Sanaa, Yemen

^b Tamar University, Obstetrics and Gynecology, Sheraton Street, Sanaa, Yemen

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Abstract Using dilatation and curettage (D&C) without prior cervical ripening in the termination of the first trimester missed miscarriage may often cause a concern because of the associated complications. Our aim of this study was to compare the frequency of complications of dilatation and curettage with medical method. A prospective comparison study was carried out in Al-Thawra General Hospital Sana'a over a year (from Dec. 1st 2010 to Nov. 31st 2011). Eligible women were randomized into surgical group ($n = 55$) and medical group ($n = 52$). Misoprostol 400 μg was given for the medical group intravaginally as initial dose followed by 200 μg every 4 h vaginally. Dilatation and curettage was performed for the surgical group. All participants were invited to attend a follow-up visit one week later. The complications were recorded during the procedure, before discharge and at follow-up. The success rate of medical group was 80.7% (95%, CI: 69.97–91.43) and 100% for the surgical group. Infection had occurred in 3.8% of the medical vs. 1.8% of the surgical group ($p = 0.967$), hemorrhage was recorded in 7.7% vs. 5.4% of the medical and surgical group respectively ($p = 0.928$). Only one patient of the medical group required readmission for blood transfusion. The mean induction abortion time was 20.4 ± 8.3 h. No other major complication was observed in both groups. We concluded that dilatation and curettage is safe and acceptable in terms of more rapid evacuation and lower complication rates compared to medical method.

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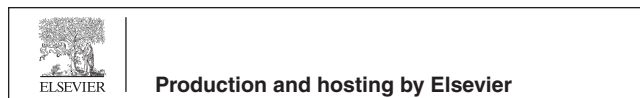
1. Introduction

Traditionally, the first trimester miscarriage, is terminated by surgical evacuation of the uterus.^{1,2} Surgical method dates

* Corresponding author.

E-mail address: yem008@yahoo.com (A.H. Alharazi).

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back to the late of the 19th century after the first sharp curettes were described.³ Although, this procedure was introduced to reduce the risk of infection and hemorrhage, it is reported to be associated with many complications including cervical trauma, perforation of the uterus and endometritis.⁴ In addition, uterine synechia, reduced fertility, tubal damage and pelvic pain have been reported as long term complications.⁴ In recent times as a result of positive experiences with prostaglandin analog (most commonly misoprostol), the medical termination of the first trimester miscarriage is accepted as a safe and effective alternative.⁵ However, this method is not without its inherent complications like the need for emergency surgical

evacuation, pain, an increase in induction abortion time, and also an increase in the analgesic requirement.^{3,5}

1.1. Aim of the study

The aim of this study was to compare the complications of surgical evacuation of the uterus with medical method in the management of the first trimester missed miscarriage.

2. Methods

This study was carried out in Al-Thawra General Hospital, Sana'a throughout a year (from Dec. 1st 2010 to Nov. 31st 2011). The diagnosis of missed miscarriage and gestational age were confirmed by trans-abdominal/vaginal ultrasonography whichever was feasible within the department. The exclusion criteria were previous uterine scar, evidence of cardiac, hepatic or renal disease, and contraindications for misoprostol use. Also any woman with bleeding in the past 24 h or severe lower abdominal pain was excluded. One hundred and seven women had met our criteria and given the consent to participate in the study. They received pre-procedure counseling with information about the success rate and side-effects of both surgical and medical methods and their preferences were noted. Fifty-five women ($n = 55$) were selected randomly to undergo surgical evacuation as dilatation and curettage (D&C) and 52 women to receive medical termination. The two groups were comparable with respect to maternal age, parity, and weeks of gestational age. Demographic data and reproductive histories were obtained.

2.1. Patients

For the first group the surgical evacuation was arranged within 3–6 h fasting after the diagnosis under general anesthesia. Women allocated to medical termination received misoprostol (cytotec, Searle) two tablets (400 µg) vaginally into the posterior fornix as an initial dose followed by one tablet (200 µg) intravaginally every 4 h until the effect was achieved or a maximum of 48 h had elapsed. Vital signs and cervical status were assessed as standard. Also women were assessed for the medication's adverse effects. Analgesia was given as needed in the form of Tramadol intramuscular injection. Induction to abortion interval was defined as the time in hours from initiation of drug until the expulsion of the products of conception (POC), and the medical success was defined as complete expulsion of the POC without the need for surgical or manual evacuation and confirmed by ultrasonography. After abortion, all women

in both groups were given antibiotics. The antibiotics used routinely are ampicillin, gentamycin and metronidazole for 3–5 days because of the high incidence of infection associated with missed miscarriage in our setting. All cases were observed in the ward for at least 6 h and then discharged with a 1-week follow-up visit schedule. Rh-anti-D immunoglobulin was given for Rh-negative women. During the follow-up visit, they were assessed for infection, bleeding or any other complications. Also they were asked about their satisfaction of the procedure they had undertaken and the choice of management in a future miscarriage. The study protocol was approved by the hospital ethics committee.

2.2. Statistical analysis

The data were analyzed using SPSS (version 13, Chicago, IL, USA). The continuous variables are presented as mean \pm SD, and proportion as appropriate. Comparisons were carried out with the use of independent *t*-test. The χ^2 or the Fisher's exact test was used for independent nominal data. Ninety-five percent confidence interval (CI) was calculated. A *p* value of <0.05 was considered significant.

3. Results

Over the study period, 107 women were diagnosed as having missed miscarriage and included in this study. The demographic data of both groups were summarized in Table 1. There were no significant differences between the two groups as regards the age, gravidity, gestational age or previous history of miscarriage ($p = 0.683$). Of the 52 women who were allocated to receive intravaginal misoprostol, more than three quarters ($n = 42\%$, 80.7%, 95% CI = 69.97–91.43) achieved a successful complete expulsion of the products of conception. Of these, 11 women (21.15%) were nulliparas and 31 women (59.6%) were multiparas. The difference between them was statistically insignificant ($p = 0.249$). Ten cases (10/52) required surgical evacuation. The indication for surgical intervention was incomplete abortion. The mean induction to abortion interval was 20.4 ± 8.3 h. After 12 h of induction the complete abortion was achieved in 21.1% of women and after 24 h in 57.7% of cases. Parenteral analgesia was used in 71.1% of women during the course of medical management. There were no significant differences between the two groups as regards infection and bleeding ($p > 0.05$). Misoprostol side effects in terms of vomiting, pyrexia and diarrhea were observed in 13.4%. In surgical group, post abortion vomiting was detected in 20% of cases and anesthesia related transient hallucination was present in 12.7%. The clinical findings are summarized in Table 2.

4. Discussion

Our study shows that the medical management of the first trimester missed miscarriage using intravaginally misoprostol was a highly effective modality. The success rate of 80.7% reported in our study is in line with the previous study.¹ The success rates of medical evacuation vary from 25% up to 97% for oral, sublingual or vaginal misoprostol in different studies.⁶ These variations between studies probably reflect the different misoprostol regimens used, routes of administration, and the

Table 1 Characteristics of the women.

	Surgical ($n = 55$)	Medical ($n = 52$)	<i>p</i> value
Age (years)	27.7 \pm 5.7	28.9 \pm 5.6	NS
Primigravida	12 (21.8)	15 (28.8)	NS
Multigravida	43 (78.1)	37 (71.7)	NS
<i>Gestational age (weeks)</i>			
7–8	11 (20)	13 (25)	
9–10	21 (38.1)	18 (34.6)	
11–12	23 (41.8)	21 (40.3)	
Previous abortion	17 (30.9)	19 (36.5)	NS

Table 2 Clinical findings.

	Surgical (<i>n</i> = 55)	Medical (<i>n</i> = 52)	95% CI	<i>p</i> value
Misoprostol doses	–	5.11 ± 2		
Induction-abortion time (h)	–	20.4 ± 8.3		
Need for evacuation	–	10 (19.3)		
Analgesia need	–	37 (71.15)		
Infection	1 (1.8)	2 (3.8)	(1.14–10.14)	NS
Bleeding, total	3 (5.4)	4 (7.7)	(8.96–13.56)	NS
Spotting	3 (5.4)	3 (5.8)		
Severe	–	1 (1.9)		
Blood transfusion	–	1 (1.9)		
Cervical trauma	–	–		
Misoprostol side-effects	–	7 (13.4)		
Anesthesia side-effects	18 (32.7)	–		
Readmission after discharge	–	1 (1.9)		
Women's preference	29 (52.7)	41 (78.8)	(6.98–42.2)	0.08
Women's satisfaction	51 (92.7)	38 (73)	(3.94–35.4)	0.01

CI = Confidence interval; NS = Non-significant.

definitions of success rate.⁶ In our study we used misoprostol alone because it is reported that the addition of mifepristone offers no advantage compared with misoprostol as initial treatment.⁷ Also it is reported that repeated intravaginal doses have higher success rates than single oral route.¹ In addition, the vaginal administration of misoprostol appears to have lower rates of medication side effects.⁸

The present study revealed that in surgical evacuation group only one woman (1.8%) had post abortion infection and no cases had cervical laceration, perforation or required blood transfusion. In contrast, one patient (1.9%) of the medical group had severe bleeding and required blood transfusion. These favorable outcomes document the safety of the surgical method, which in part is related to the presence of experienced physicians as previous studies reported.⁹ However, surgical evacuation offers many advantages compared to medical management. It is a quick procedure being accomplished in less than 30 min and performed under controlled timing. The patients commonly return home within a few hours post evacuation and to the work within the next few days.¹⁰ Also, the controlled timing of the surgical procedure can be of benefit to women with specific medical disorders.¹⁰ It is reported that the overall incidence of major complications in surgical evacuation is less than 3%.¹¹

We found that the infection rate associated with medical group was higher than that of surgical group. This finding disagreed with the other study that showed medical termination may have a lower infection risk as compared to surgical evacuation.¹² It is possible that the small sample size of our study and the chance of selection bias might present. Pain during the course of medical evacuation was observed in 71.1% of our series and adequately controlled by analgesia. Misoprostol related side effects such as nausea, vomiting, and diarrhea are well known and presented in 13.4% of our cases. However, abundant data support the practice of medical management for early pregnancy failure to avoid the risk of infection, trauma, and anesthesia related to surgical evacuation.⁵ The disadvantage of this method is the prolonged induction abortion intervals which indicate an average of two additional days of vaginal bleeding and pain. The other disadvantage is the need for unplanned surgical intervention for unresponsive women.

In the literature there is growing evidence as regards the safety and efficacy of at home self-administration of misoprostol.^{13,14} However, using of misoprostol in rural settings of the poor countries including Yemen where the facilities are unavailable for immediate surgical intervention once excessive bleeding occurred could be a concern. Furthermore, in these settings the diagnosis of ectopic or molar pregnancy might be missed and therefore increased the complication rates.

Our study demonstrated that 78.8% of patients recommended medical termination vs. 52.7% for surgical evacuation. Several studies have found that most women will choose the medical option when it exists because it is non-invasive, safe and assures more privacy and autonomy.^{15,16} We found that the patient's satisfaction following medical abortion was lower than the success rate reported (38/42). The possible reasons were prolonged period before complete expulsion of the abortion and experienced pain during the course of management.

The strong point in our study is that we compared the medical method of termination with unprimed cervix using sharp curette (D&C) rather than suction curettage which poses even less complications. However, the information derived from this study will be useful for physicians who may choose the medical option solely to avoid the complications of surgical method and also for the abortion providers to exercise training of the procedure so as to offer the patients such option safely.

The weakness of this study should be emphasized. First, the long-term complications such as uterine synechia and fertility related problems were not assessed because a prospective long-term follow-up was impossible for patients who had come from different areas in the country and further research in this area is needed. Second, similarly we could not study the cost issue because our hospital is not a private and offers most services with a low-fee.

5. Conclusion

With appropriate procedure training, surgical evacuation of the uterus for the first trimester missed abortion is being associated with low rate of complications, shorter evacuation time, and therefore a shorter length of hospital stay. The procedure

seems more suitable for a woman who does not wish to undergo labor discomfort too early.

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