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# Oral versus rectal route of misoprostol administration: a randomized controlled trial

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## ABSTRACT

**Objective:** to compare between the efficacy of oral versus rectal misoprostol in the treatment of incomplete abortion.
**Design:** prospective controlled trial. Patients were allocated to intervention using alternate sequence
**Setting:** Al-Hussein Hospital, Al-Azhar University
**Materials and methods:** one hundred women with retained products of conception were divided into two groups: G1: fifty women received misoprostol 200 µg misoprostol/4 hs rectally and G2; fifty women received it orally. Follow up and side effects were recorded
**Results:** There was no significant difference between both groups regarding their background characteristics, response to misoprostol, need to do D&C or side effects. the dose of 200ug misoprostol every 4 hours (orally and rectally) for a maximum of 3 doses was not only effective in complete evacuation but also had low incidence of side-effects especially vomiting diarrhea and bleeding
**Conclusion:** misoprostol whether by oral or rectal route seems to be an effective as a non invasive method for evacuation of the uterus in women with retained products of conception.
**Keywords:** Misoprostol, incomplete abortion

Misoprostol is a synthetic prostaglandin $E_1$ analogue, which is cheap effective and does not require special storage conditions, these features may be beneficial in regions with limited resource for health care. (1).

Spontaneous abortion is a common obstetric problem, occurring approximately in 14 –19% of all clinically recognized pregnancies (2). The use of misoprostol in women with retained products of conception reduces the potential risks that may be associated with general anesthesia and surgical evacuation (3, 4).

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It is still unclear to determine the optimal dose and route of administration of misoprostol that can give the highest complete abortion rate and least side effects (5). Misoprostol is offered in our hospital via the oral route, based on published trials demonstrating the efficacy and simplicity of this method (6, 7). The purpose of this study was to compare between the efficacies of oral versus rectal misoprostol in the treatment of incomplete abortion.

## MATERIALS AND METHODS

One hundred pregnant women were recruited from Obstetrics and Gynecology department, Al-Hussein University Hospital. All women had first

**Table 1.** Comparison between patients' Characteristics in rectal group and oral group

| | Oral | Rectal | P value | Significance |
|---|---|---|---|---|
| Maternal age (Y) | 24.8 ± 5.5 | 25.4 ± 5.7 | 0.341 | N.S |
| Weight (Kg) | 66.9 ± 12.2 | 66.9 ± 12.5 | 0.701 | N.S |
| Parity | 3.9 ± 2.2 | 3.7 ± 2.1 | 0.451 | N.S |
| Gestational age (wks) | 8.5 ± 1.7 | 7.5 ± 0.6 | 0.617 | N.S |
| The initial uterine size (preg.wks) | 7.6 ± 0.5 | 8.2 ± 1.5 | 0.423 | N.S |

trimester incomplete abortion diagnosed clinically by history, examination, positive pregnancy test, and trans-vaginal sonar showing retained products of conceptions.

Women were divided into two groups: The 1st group (I): included 50 patients treated with 200 ug misoprostol/4 hs rectally. The 2nd group (II): included 50 women treated with 200 ug/4 hs orally. Allocation to either group was done based on alternate sequence.

The misoprostol-treated groups were selected according to the following criteria: Hemodynamically stable (pulse <100 bpm, Bl.p >90/60 mmHg, No history of bronchial asthma, No known allergy to PGs, mild vaginal bleeding).

An informed consent was obtained from al cases. During treatment all patients were observed carefully for Amount of blood loss by the number of vaginal napkin used and Hb% for all patients before treatment.

After 24 hours of misoprostol intake proper examination was done to all cases to evaluate the result of misoprostol use. if there is no vaginal bleeding, and uterus is empty by trans-vaginal U/S the patient then discharged and followed-up after one week.

Drug-related data were recorded as follows: Number of misoprostol tablets used till complete evacuation has occurred; Duration of time till complete evacuation has occurred and Side-effects of misoprostol.

All data were analyzed statistically using Chi-square test to determine if statistically significant difference is present between the patients and the incidence of complications. Mann-Whitney U test was used to determine whether there was any statistically significant difference in parity and gravidity between the groups. The level of significance was <0.05.

## RESULTS

There was no statistically significant difference in the background characteristics between the two groups (Table 1). In rectal group, complete evacuation with no need for D & C occurred in 33 patients (66%) and 17 patients (34%) failed and D & C was done to evacuate the contents completely. The failed cases were due to: Two cases showed an attack of severe vaginal bleeding after about 1-3 hours misoprostol intake.

**Table 2.** Factors affecting misoprostol response in rectal and oral groups

| | Rectal group | | Oral group | |
|---|---|---|---|---|
| | Failed cases with incomplete evacuation | Succeeded cases with complete evacuation | Failed cases with incomplete evacuation | Succeeded cases with complete evacuation |
| Maternal age (Y) | 24.5 ± 5.4 | 24.3 ± 5.5 | 24.7 ± 5.2 | 24.4 ± 5.3 |
| Weight (Kg) | 66.5 ± 12.1 | 66.4 ± 12.2 | 66.3 ± 12.2 | 66.4 ± 12.1 |
| Parity | 3.8 ± 2.1 | 3.7 ± 1.9 | 3.7 ± 2.3 | 3.6 ± 2.2 |
| Gestational age (wks) | 9.5 ± 2.1 | 7.1 ± 1.6* | 9.7 ± 2.4 | 7.1 ± 1.8* |
| Uterine size (preg.wks) | 9.4 ± 1.8 | 7.2 ± 0.6* | 9.6 ± 1.7 | 7.2 ± 0.7* |

**Table 3.** Comparison between the rate of complications in rectal group and oral group.

| Complication | rectal No = 50 | oral No = 50 | P-value | Sign |
|---|---|---|---|---|
| Nausea | 24 (48%) | 28(56%) | 0.300 | N.S |
| Vomiting | 7 (14%) | 9 (18%) | 0.585 | N.S |
| Diarrhea | 3 (6%) | 4 (8%) | 0.695 | N.S |
| Breast Tenderness | 7 (14%) | 6 (12%) | 0.766 | N.S |
| Abdominal Colic | 43 (86%) | 42 (84%) | 0.779 | N.S |
| Fatigue | 9 (18%) | 11 (22%) | 0.617 | N.S |
| Headache | 10 (20%) | 12 (24%) | 0.629 | N.S |
| Sever bleeding | 2 (4%) | 3 (6%) | 0.674 | N.S |

This bleeding caused marked hypotension, so an urgent D & C was done to stop the bleeding. 14 patients showed remnants of conception after 24 hours of treatment that was diagnosed by vaginal sonar and clinically by unchanged uterine size and persistent vaginal bleeding, so D & C was done to evacuate the contents completely. One patient refused to complete the treatment so D & C was done.

In the oral group, the number of cases with complete evacuation by misoprostol was 31 patients (62%) with failure of about 19 cases (38%). These were: 3 cases showed an attack of severe vaginal bleeding after 2 – 4 tablets misoprostol intake. The bleeding caused hypotension and urgent D & C was done to stop the bleeding. 16 patients showed remnants of conception after 24 hours of the treatment, so D and C also was done to evacuate the remnants completely.

It was found that after one tablet (200 ug) only 2 patients in rectal group and one patient in oral group showed complete evacuation. After 2 tablets 9 patients in rectal group and 7 patients in oral group showed complete evacuation. After 3 tablets 22 patients in rectal group and 22 in oral group showed complete evacuation.

The factors affecting misoprostol response in rectal and oral groups are shown in table (2). The side effects developing during intake of misoprostol orally and rectally are shown in table (3).

## DISCUSSION

In many parts of the world there is a strong preference among gynecologists to rely on surgical evacuation for the management of incomplete abortion. Why so many specialists have adopted surgery as the standard procedure seems determined by custom and rooted in history rather than being an evidence-based choice.

The present study showed that the use of misoprostol was associated with success rate up to 66% in the rectal group compared to 62% in the oral group. This matches well with the result of other investigators (8) who used misoprostol 200 ug/4hs rectally for a maximum 4 doses in treatment of incomplete abortion and the success rate was 60%. Also the success rate in our study was similar to (9) in which oral misoprostol was used in a dose of 400 ug every 4 hours up to a total dose of 1200 ug with a success rate of 65 – 75%.

It also found that the dose of 200ug misoprostol every 4 hours (orally and rectally) for a maximum of 3 doses was not only effective in complete evacuation but also had low incidence of side-effects especially vomiting diarrhea and bleeding.

Gestational age and the initial uterine size were the most important factors as most cases with gestational age and initial uterine size lesser than 10 weeks showed complete evacuation with a high success rate but the maternal, body weight and parity were not important. Other investigators found that, the gestational age and the initial uterine size also were the most important factors in evacuation of the uterus in case of spontaneous abortion (10).

As regards the side effects developing during misoprostol intake compared with the side effects of the surgical treatment it was found that the complication of highest rate was nausea as it occurred in 46% in oral group and 42% in rectal group as compared to only 6% with D&C. Vomiting was a complication in 14% in rectal group and in 18% oral group and in only 4% in D&C. Diarrhea occurred in 6% in rectal group and 8% in oral group. Vomiting and diarrhea were mild and deserved no treatment. The abdominal colic occurred in a high percentage of the rectal group (86%) and the oral group (84%) but with D&C it was 14%.

On the other hand in (Chung et al, 2001) study using oral misoprostol in the treatment of incomplete abortion, the side effects were nausea (68%), vomiting (34%), diarrhea (72%), abdominal colic (85%).

There was no statistical significant difference between rectal and oral group as regard the number of tablets of misoprostol needed for complete evacuation. Other investigators used misoprostol orally and rectally in treatment of incomplete abortion (11). They found that, the number of misoprostol tablets needed for complete evacuation by rectal route was significantly lesser than oral route as 77% of patients showed complete evacuation after 3 tablets with rectal group versus 63% in oral group. In this study the difference in the number of misoprostol tablets needed for complete evacuation in oral and rectal groups was not clear as the study was done on small number of patients so the study must be repeated on large number of patients to show the difference.

According to the present study, the rectal route of misoprostol was equally effective like the oral route with no significant difference in side effects. So, we may conclude that misoprostol whether by oral or rectal route seems to be an effective as a non invasive method for evacuation of the uterus in women with retained products of conception. Further studies are needed to study the effect of higher doses of misoprostol to avoid the need of surgical evacuation.

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