

# Comparison of Cervical Ripening in Oral Versus Vaginal Misoprostol Administration Before Surgical Termination of First Trimester Pregnancy

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## ABSTRACT

**Aim:** To compare the mean cervical ripening in oral versus vaginal misoprostol administration before surgical termination of first trimester pregnancy.

**Methods:** After approval from ethical committee, 150 patients, who fulfilled the inclusion and exclusion criteria, were admitted from emergency and OPD of DHQ Hospital, Gujranwala. The study was conducted over a period of six months from January to June 2016. Lottery method was used to divide the patients into two equal groups A and B. Patients in group A were given 400µg vaginal misoprostol. Misoprostol was placed in the posterior fornix of the vagina by researcher herself and patients in group B were given 400µg oral misoprostol. The post-medication cervical ripening was measured as per operational definition. All patients then underwent evacuation of retained products of conception, 3 hours after administration of tablet. Then patients were observed for 2 hours after operation for any allergy or side effects. Amoxicillin 500mg and metronidazole 500mg tablets were prescribed to be taken orally for 24 hours after procedure.

**Results:** The mean age in group-A (400µg misoprostol vaginally) and in group-B (400µg oral misoprostol) was 26.67±3.93 years and 26.08±5.15 years respectively with similar age distribution. The mean gestational age was 10.93±1.61 weeks in group-A and 10.60±1.62 weeks with no significant difference, p-value > 0.05. The mean cervical dilatation was significantly higher in group-A (6.29±0.85 mm) when compared to group-B (5±0.82 mm), p-value < 0.001.

**Conclusion:** We concluded that misoprostol is effective for cervical ripening when administered vaginally before evacuation of products of conception for the first trimester miscarriage.

**Keywords:** Termination of pregnancy, first trimester, misoprostol, route of administration

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## INTRODUCTION

Termination of first trimester (13 weeks of gestation) is required in gynecological practice due to different causes like anembryonic pregnancy, early fetal demise and fetal malformation. Around 15% of all known pregnancies miscarry during the first trimester<sup>1</sup>. Until the second half of the twentieth century, dilatation and curettage (D & C) was the most common and nearly the only method used for secure termination of early pregnancy<sup>2</sup>. There are different methods for termination like medical management, expectant management and surgical procedure<sup>1</sup>. Surgical abortion in the first trimester is a common and safe procedure and has a complication rate of less than 1%. Tapered mechanical dilators are used for cervical dilatation before the suction evacuation<sup>3</sup>.

Misoprostol is a synthetic analogue of prostaglandin E1 that is commonly used for medical termination of pregnancy. It can be given in either

oral, vaginal or sublingual routes. Vaginal misoprostol is better than oral misoprostol for early first-trimester medical abortion in early clinical trials<sup>4</sup>. Vaginal administration of misoprostol requires a shorter time period than oral misoprostol to attain complete cervical dilatation, is associated with less patient discomfort and is preferred by most women. Oral administration produces comparable dilation to vaginal administration, but it necessitates higher doses and longer time period (8 to 12 h).

Most publications report administration of 800µg of vaginal misoprostol (4 tablets of 200µg) up to three doses. The existing evidence suggests that vaginal administration of 800µg repeated at 6, 12 or 24 h intervals up to three times has 85%-90% efficacy (complete abortion). Oral misoprostol is less efficient than vaginal misoprostol but the oral route seems to be better accepted by the patients than vaginal administration<sup>2</sup>. 400mg dose of vaginal misoprostol given 3-4 hours before the surgical evacuation was better tolerated and accomplished ideal cervical dilatation with minimal side effects<sup>5,6</sup>. However, no difference between vaginal and oral administration is shown by some studies. According to these studies

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400µg of oral misoprostol produced equivalent dilatation to 400µg vaginal misoprostol at 3 hours interval with similar side effects. A randomized controlled trial showed that 400µg of oral misoprostol (8.2±2.6mm) was equivalent to 400µg of vaginal misoprostol (7.6±2.6mm) for cervical priming taken 2 to 4 h preoperatively (p-value=0.25)<sup>3,7</sup>. Misoprostol is an effective cervical priming agent when given either orally or vaginally before evacuation of conceptus in termination of first trimester miscarriage. According to this study, the researcher found the mean cervical dilatation before undergoing surgical evacuation was 6.6±1.5mm in oral misoprostol group while 7.2±0.8mm in vaginal misoprostol group<sup>8</sup>.

Most obstetricians in routine practice use oral route for termination for first trimester pregnancy. While from previous literature, it is revealed that vaginal route is an effective method and complete cervical ripening can be achieved in short time and D&C can be easily done but there is controversy in results. It will be less time consuming and cost effective with fewer side effects.

## MATERIAL AND METHODS

This randomized controlled trial was done at Department of Obstetrics & Gynaecology, DHQ Hospital Gujranwala from January to June 2016. Sample size of 150 cases (75 cases in each group) was calculated with 95% confidence level, 80% power of test and taking magnitude of mean cervical dilatation i.e. 6.6±1.5mm<sup>8</sup> in oral misoprostol group while 7.2±0.8mm<sup>8</sup> in vaginal misoprostol group in females presented before surgical termination of first trimester pregnancy. Using non-probability purposive sampling patients of age range 20-35 at gestational age between 8-13 weeks having early fetal demise, anembryonic pregnancy or fetal malformation assessed through ultrasonography with cervical os closed on pelvic examination were included. Cases were excluded if they had molar or ectopic pregnancy (diagnosed by ultrasound and by β-hCG lab test), hypersensitivity to misoprostol (diagnosed by history), presence of vaginal bleeding (diagnosed by pelvic examination), medical problem like asthma and cardiac disease (diagnosed by history). After approval from ethical committee, 150 patients presenting who fulfill the inclusion were taken. Patients were divided into two equal groups A/B by

using lottery method. Patients in group A were given 400µg misoprostol vaginal misoprostol placed in the posterior fornix of the vagina by researcher herself and patients in group B were given 400µg oral misoprostol. All patients fasted over night, and drug was administered next morning according to their recruitment group. The post-medication cervical ripening was measured as per operational definition. All patients were then underwent evacuation of contraceptive product, 3 hours after administration of tablet. Then patients were observed for 2 hours after operation for any allergy or side effects. Amoxicillin 500mg and metronidazole 500mg tablets were prescribed to take orally for 24 hours after procedure. If any patients had any severe side effects or problem, it was managed according to hospital protocol. Data was entered and analyzed through SPSS 10. Quantitative variables like age and gestational age cervical ripening was calculated as mean±S.D. Qualitative variables like parity was presented as frequency and percentage. T-test was used to compare the mean cervical ripening in both groups. P-value ≤ 0.05 was considered as significant.

## RESULTS

The mean age in group-A (400µg vaginal misoprostol) and in group-B (400µg oral misoprostol) was 26.67±3.93 years and 26.08±5.15 years respectively with similar age distribution. The mean gestational age was 10.93±1.61 weeks in group-A and 10.60±1.62 weeks with no significant difference, p-value > 0.05. The mean cervix dilatation was significantly higher in group-A (6.29±0.85 mm) when compared to group-B (5±0.82 mm), p-value < 0.001.

Table 1: Comparison of Age, gestational age and Cx dilatation

Study groups	Mean	SD	P value
<b>Age (years)</b>			
400µg vaginal misoprostol	26.67	3.93	0.436
400µg oral misoprostol	26.08	5.17	
<b>Gestational age (weeks)</b>			
400µg vaginal misoprostol	10.93	1.61	0.206
400µg oral misoprostol	10.60	1.62	
<b>CX dilatation</b>			
400µg vaginal misoprostol	6.29	0.85	<0.001
400µg oral misoprostol	5.00	0.82	

Fig. 1:

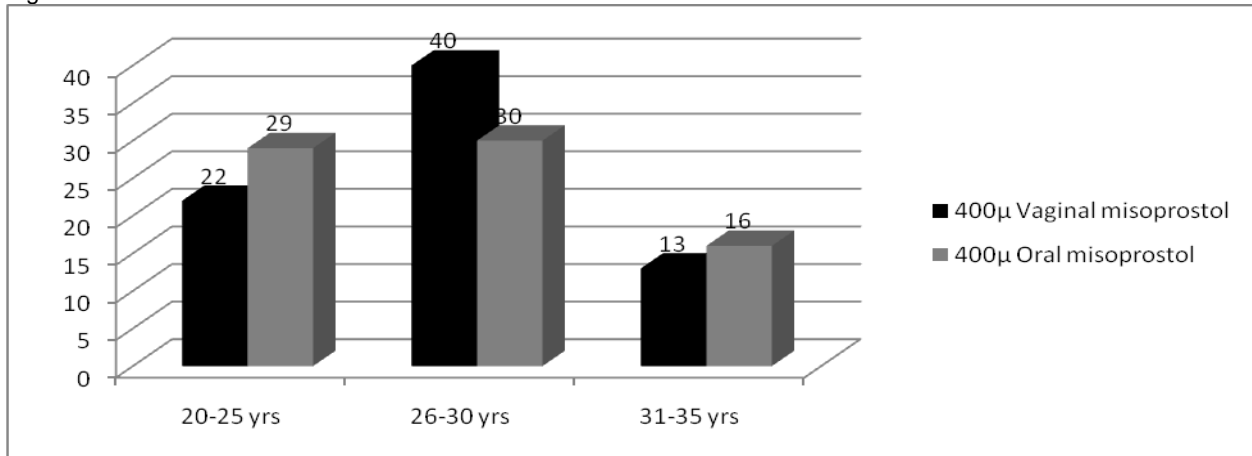


Fig. 2: Gestational age

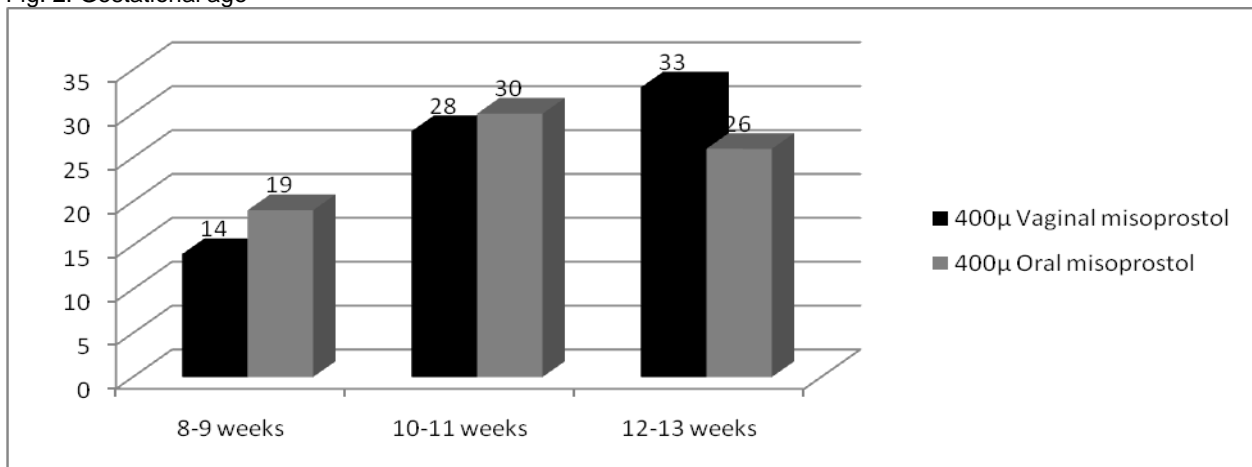


Fig. 3: Parity

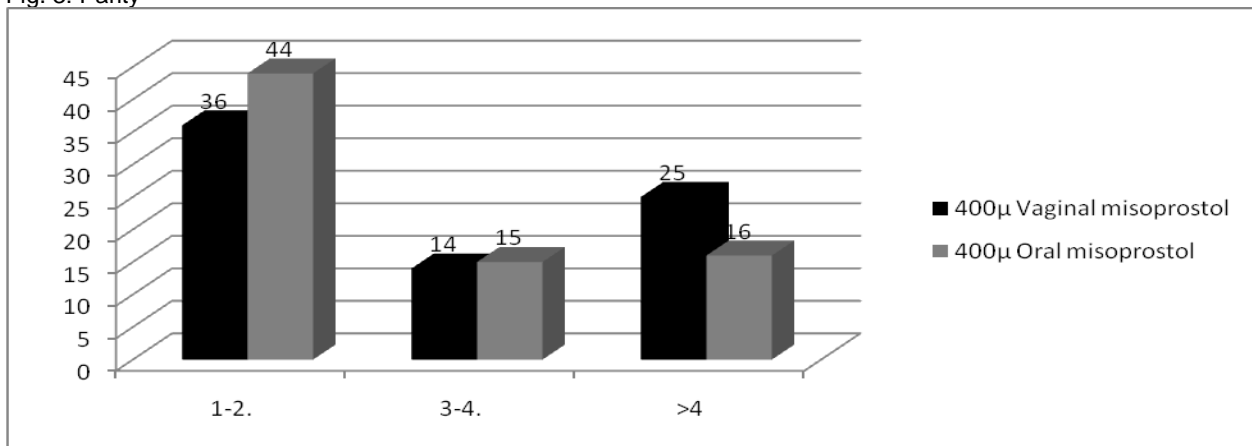
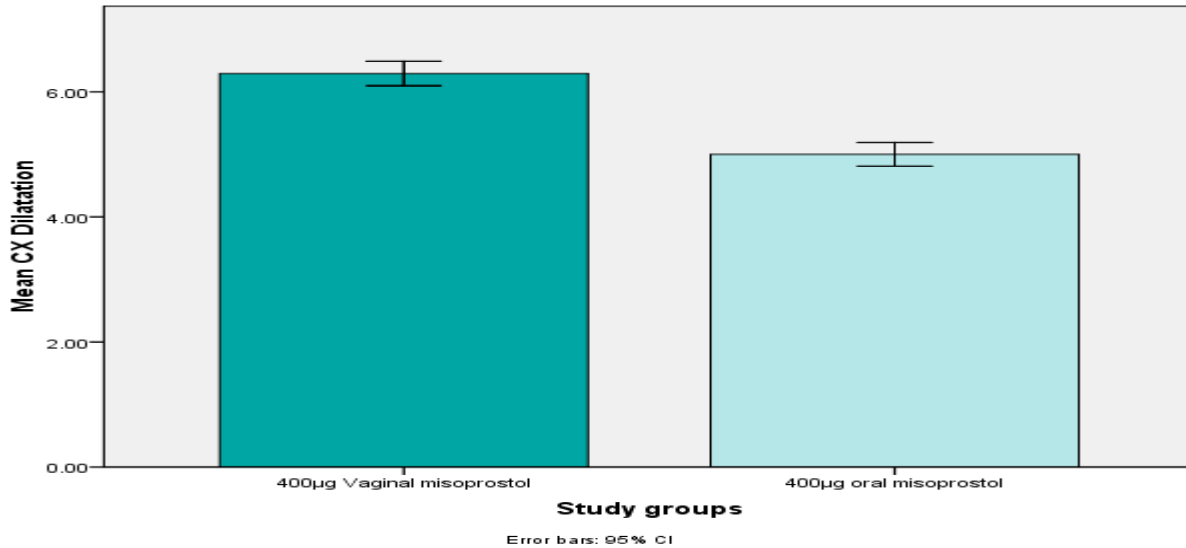


Fig.4: Study group



## DISCUSSION

An abortion that occurs before ultrasound or histological confirmation with a positive urine pregnancy test or raised serum  $\beta$ -hCG is defined as a 'biochemical loss'<sup>9</sup>. These usually occur before 6 weeks of gestation. The term clinical miscarriage is used when an intrauterine pregnancy was present confirmed by ultrasound examination or histological evidence<sup>9,10</sup>. Clinical miscarriages may be subdivided into two types: early pregnancy loss that occurs before 12 weeks gestation and late pregnancy loss that occurs after 12 weeks and up to 21 weeks gestation<sup>9</sup>. Miscarriage is the most common complication of pregnancy, occurring in 12-24% of all pregnancies<sup>11</sup>. Chromosomal abnormalities are the common cause of most of the early abortions, and the risk of miscarriage rises with advancing maternal age.<sup>11</sup> Medical management with misoprostol is a non-invasive and economical treatment option in first trimester miscarriage. However, about 30% patients have incomplete evacuation with misoprostol<sup>10,12</sup>.

Cervical dilatation is a dangerous step in suction evacuation and the advantageous effects of medical drugs over mechanical cervical dilatation are well recognized. Prostaglandins (PGs) have modernized the treatment of abortions<sup>13,14</sup>. Misoprostol (PGE1), first familiarized as a gastric ulcer protective agent, became well known for its effect on cervical ripening. It has other advantages like less cervical trauma, negligible intra operative blood loss, less requirement of general anesthetics, and it is also available in different dosages<sup>13</sup>.

Misoprostol decreases complications and morbidity when used for cervical ripening before surgical dilatation and suction evacuation in the first trimester

of pregnancy. Despite the extensive use and wide-ranging studies, the best route of administration of misoprostol before surgical abortion remains to be defined. The optimum interval of 3 hours is reported after vaginal and sublingual administration of 400 mcg misoprostol<sup>14</sup>.

The results of the study revealed that the mean cervix dilatation was significantly higher in group-A ( $6.29 \pm 0.85$  mm) when compared to group-B ( $5 \pm 0.82$  mm), p-value < 0.001. The results of the study are not in agreement with other studies showing that 400µg of oral misoprostol produced equivalent dilatation at 3 h to 400µg vaginal misoprostol with similar side effects. While in another study, the researcher found the mean cervical dilatation before undergoing surgical evacuation was  $6.6 \pm 1.5$  mm in oral misoprostol group while  $7.2 \pm 0.8$  mm in vaginal misoprostol group<sup>8</sup>. The mean cervical dilatation in patients given vaginal versus oral route of misoprostol has some difference before surgical termination of first trimester pregnancy.

None of the above significant difference in action of misoprostol has the possibility to cause great clinical improvement, except for the reduction in the number of patients complications associated with surgical cervical dilatation, namely uterine perforation that may complicate up to 2% of the first trimester surgical abortions. The mean cervix dilatation was significantly higher in group-A.

## CONCLUSION

We concluded that misoprostol is effective for cervical ripening when administered vaginally before evacuation of products of conception for the first trimester miscarriage.

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