Original Article

Vaginal Misoprostol

# The Use of Vaginal Misoprostol to terminate the Pregnancy in Second Trimester

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## ABSTRACT

**Objective:** To determine the effectiveness of vaginal Misoprostol for the second trimester termination of pregnancy.
**Study Design:** Prospective randomized trial.
**Place & Duration of Study:** This study was carried out in the Unit of Post Graduate Medical Institution Peshawar / Lady Reading Hospital Peshawar from 1st January till 31st December 2006.
**Materials and Methods:** A total of 100 patients were included in this study. Misoprostol 400 microgram, was administered intra-vaginally and repeated after every 4 hours up to a maximum of five doses or until the termination of pregnancy, which ever was earlier. The exclusion criteria were as allergy to prostaglandin, a previous classic caesarean section or Hysterectomy, active vaginal bleeding, severe asthma and epilepsy.
**Results:** Period of gestation ranged from 12 to 20 weeks. Indications for 2nd trimester termination of pregnancy were chromosomal or structural fetal anomalies (anencephaly) whether dead or alive, missed abortion intrauterine fetal death. Success rate at 48 hours was 90%. The median induction to termination interval was 16 hours. Few women suffered gastrointestinal side effects such as nausea (6%), vomiting (3%) and diarrhea (1%).
**Conclusion:** 400 Microgram of Vaginal Misoprostol is highly effective way of cervical ripening and termination of second trimester pregnancy.
**Key Words:** Second trimester termination, Misoprostol.



## INTRODUCTION

Misoprostol is being investigated for its role in the management of post partum hemorrhage, induction of labour, cervical ripening and termination of pregnancy. Initially this drug was approved by the US food and Drug Administration (FDA) in 1988 for oral administration for the prevention and treatment of peptic ulcer associated with the use of non-steroidal anti-flammatory drugs. Since the early 1990s however, Misoprostol has been viewed with increasing interest by obstetricians and gynecologists because of its uterotonic and cervical ripening activity [1,2]. Prostaglandin analogue is commonly used for termination of pregnancy in the second trimester, as it is cheaper and stable at room temperature. Although it can be used orally but vaginal administration was used in most studies because it has been shown to be more effective [3,4]. Misoprostol is manufactured as oral tablets of 200 micrograms scored and 100 microgram un-scored. It has stability in ambient temperature, long shelf life and low cost and rapidly absorbed via the oral route and although not formulated for parental use, can also be administered sublingually, recently and vaginally. Misoprostol is extensively absorbed and undergone rapid desertification to Misoprostol acid. The objective of this study was to assess the efficacy of 400 microgram Misoprostol intra-vaginally and its side effects.

## MATERIALS AND METHODS

This descriptive study was carried out in Gynae – A unit of Postgraduate Medical Institute / Lady Reading Hospital Peshawar from 1st January 2006 to 31st December 2006. Data was collected on prescribed Proforma regarding maternal age, parity, gestational age, maternal complications and cervical ripening and hospital stay. All the parameters analyzed for descriptive statistical data was calculated on SPSS version 10. A total of 100 women between 12-20 weeks gestation were recruited for this study. Ethical approval for the study was obtained from the hospital institutional review board. An informed written consent was obtained from all patients. All these women were admitted through Out Patient department (OPD). A medical and Gynecological history was taken and the gestational age was determined by menstrual history, pelvic examination and Ultra Sonography report. Blood was taken for measurement of hemoglobin and blood grouping, random blood sugar level a coagulation profile (PT/APTT, FDP) in case of fetal demise. Rhesus negative women were given anti-D immunoglobulin following the treatment prior to discharge from hospital. Misoprostol, 400 mg was administered intravaginal and repeated 4 hourly up to a maximum of 5 doses or until the termination of pregnancy which ever was earlier. The procedure was repeated if the patient failed to abort within 24 hours. Vital signs of the patients including temperature, pulse rate and blood pressure were monitored 4 hourly. Following abortion of the fetus, all patients received 5 units of oxytocin and 0.4mg of ergometrine maleate. The primary outcome measure in the study was the induction to abortion interval. Induction to abortion interval was defined as the duration between initiation of intervention and the

abortion of fetus. The secondary outcome measure were the success rates at 24 hours and 48 hours, the need for repeat course of medications, the need for evacuation of the uterus and adverse effects like nausea, vomiting, fever, diarrhea and shivering. Product of conception was examined and evacuation of the uterus was performed if it was incomplete. The indications for termination of pregnancy in second trimester were chromosomal or structural fetal anomalies (anencephaly), missed abortion and maternal disease. The exclusion criteria were an allergy to prostaglandins, a pervious classic caesarean section or hysterectomy, active bleeding. Severe asthma and epilepsy etc.

## RESULTS

A total of 100 women with period of gestation ranged from 12-20 weeks. Age of patients was between 20 – 40 years. Primigravidae were 20, hours. The indications for termination of pregnancy in second trimester were chromosomal or structural anomalies (anencephaly) 20% missed absorption 70% and maternal disease 10% (Table). Ten patients failed to abort after 48 hours and they subsequently aborted after receiving extra amniotic PGF2 alpha. The success rate et all 48 hours was 90%. The medium induction to abortion interval was 16 hours. Twenty women and two for retained placentae. Few women suffering gastrointestinal side effects such as nausea (6%), vomiting (3%), and diarrhea (1%) Table 2.

**Table No.1: Indications for Termination of Pregnancy**

| Indications | Percentage |
|---|---|
| Fetal Anomalies | 23 % |
| Missed Abortion | 69 % |
| Maternal Disease | 08 % |

**Table No.2: Adverse effects of Misoprostol**

| Adverse Effects | Number |
|---|---|
| Nausea | 6 |
| Vomiting | 3 |
| Diarrhea | 1 |

## DISCUSSION

Misoprostol has been studied extensively as it is cheap and stable at room temperature. In a study by Wong KS et al. Vaginal Misoprostol 400 micro gram every 3 has achieved a success rate of 90% in 48 hours. The median induction – to – abortion interval was 15.2 hours [1-4, 17]. In a study by Lurie et al. mean induction – to – abortion interval for vaginal Misoprostol was 14 hours. In a comparative study by Oi Shan Tang both vaginal and sublingual groups achieved a success rate of 90% in 48 hours. The median induction-to-abortion interval was comparable for the two routes of administration 10-12 hours. While in our study success rate was over 90% in 48 hours and median induction-to-abortion interval was 16 hours. However, significantly more women aborted in 24 hours. While in a study by Dickinson J. et al. success rate within 24 hours was 76% after administration of 400 mg vaginal Misoprostol and mean induction-to-abortion interval was 18.2 hours [15]. A similar study done by Tang OS et al. clinical efficacy of vaginal Misoprostol was also higher in 24 hours [3,8]. However it was observed that the Misoprostol tablets took a long time to dissolve in vagina and achieved a sustained and long lasting effect. Misoprostol in the dose of 400mg every 4 hourly were more effective in terms of a significantly shorter drug administration – to – abortion interval and a higher percentage of successful abortion within 48 hours. The significantly lower cost of vaginal Misoprostol has important financial implications for both the individual and the health care system, and it's of particular relevance to the developing countries. Ferguson et al. reported that the induction-to-abortion intervals correlated inversely with gestational age, whereas Ashok and Templeton suggested longer induction-to- abortion intervals at increased gestation. Our study showed no correlation between gestational age and induction-to-abortion interval [13,16]. Induction for termination of pregnancy in the second trimester includes chromosomal and structural abnormalities. In a study by Lin-lin Su, the induction for termination of pregnancy was fetal anomalies, social reasons, and maternal disease. They account 33.6%, 65.6% and 0.8% of the inductions respectively, while in our study indication for terminations of pregnancy were fetal anomalies (20%) missed abortion (70%) and maternal disease 10% [1, 2,4]. Intravaginal Misoprostol in the dose of 400mg is effective and associated with fewer side effects. Side effects of prostaglandins are mainly due to their effects on smooth muscles and are dose related. Following vaginal administration of Misoprostol, the plasma concentration remains raised for longer but the peak levels are lower after oral administration. In a study by Julia, women reported less nausea, vomiting and diarrhea with the use of vaginal Misoprostol. One limitation of vaginal Misoprostol is the need for repeated 3 hour or 4 hour dosing and the higher likelihood of fever and shivering [7]. In our study 10 patients failed to abort within 48 hours and they subsequently aborted after receiving extra amniotic PGF2 alpha. Twenty women required surgical evacuation of the uterus, eighteen for retained pieces of trophoblastic and two for retained placenta while in study by Julia evacuation was required in 10 [6]. Misoprostol has been evaluated in randomized controlled trails (RCTs) in women pre-treated with mifepristone or gemeprost. These studies that a higher dose of Misoprostol and the vaginal route of administration may be associated with higher success rate. A recent RCT of 3 regimens for vaginal Misoprostol which included both dead and live fetuses

concluded that Misoprostol 400mg every 6 hours was the preferred regimens for STPT. The interval of vaginal Misoprostol administration, 6 verses 12 hours, was examined in 2 studies with inconsistent results [6,7]. While in our study Misoprostol 400mg every 4 hourly was associated with higher successful rate and less side effects, like nausea, vomiting and diarrhea.

## CONCLUSION

Vaginal Misoprostol is safe and cost effective. It should be the intervention of choice for mid-trimester termination of pregnancy, particularly for multiparous women in the early second trimester.

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