



Original Research Article

Comparative study of 25 µg oral and 25 µg vaginal misoprostol administration for induction of labour at term

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ABSTRACT

Introduction: A successful induction of labour includes adequate uterine contraction after the addition of the inducing agent, and progressive dilatation of the cervix, thereby resulting in the successful vaginal delivery. Misoprostol has been found to be more superior than other conventional methods and resulting in shorter induction to delivery time.

Materials and Methods: 100 patients with 36 or more gestation period, requiring induction, were divided into 2 groups of 50 each. Group I were given 25 µg misoprostol orally and Group II were given vaginally. Dosage was repeated every 4th hourly and monitored.

Results: The major indications of labour were severe pre-eclampsia, post dated pregnancy, mild pre-eclampsia, and PROM. Majority of the women who had undergone induction of labour were primigravida. 90% of patients in the vaginal group delivered vaginally as compared to 80% of the patients in the oral group. Caesarian section was planned in the cases of fetal distress, failure to progress or failed induction of labour.

Conclusion: Women who received vaginal misoprostol experiences shorter induction delivery times, required fewer doses of misoprostol and required oxytocin augmentation less frequently than those who received oral misoprostol.

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1. Introduction

The ability to induce labour has been of interest to many societies from time memorial. For majority of the women, labour starts spontaneously and results in vaginal delivery at or near term.¹ However, due to many reasons, induction of labour becomes a necessity.

According to the National Centre for Health Sciences, in 2017, the number of women who had undergone induction for labour were 25.7%, while in 2012 it was 23%. The rates are continuing to increase due the increase in the prevalence of obesity among expectant women.^{2–5}

A successful induction of labour includes adequate uterine contraction after the addition of the inducing agent, and progressive dilatation of the cervix, thereby resulting in the successful vaginal delivery. There is no point in

bringing about the labour in preparation of caesarian section. Moreover, this should be with minimum discomfort and risk to the mother and child.⁶

The condition of the cervix is highly important for the successful vaginal delivery to take place. A “ripe” soft yielding cervix requires a lower quantum of uterine work than an unripe hard and rigid one. An unripe cervix fails to dilate well in response to myometrial contractions.⁶ Induction of labour involves ripening of the cervix with the help of a prostaglandin E2 analog such as dinoprostone, amniotomy and oxytocin given intravenously. However, now many studies have shown that misoprostol, which is a prostaglandin E1 analogue normally used for protection against gastric ulcers also causes uterine contractions.^{7–12} Misoprostol has been found to be more superior than other conventional methods and resulting in shorter induction to delivery time

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2. Materials and Methods

This study was done in the department of Obstetrics and Gynecology at Maheswara medical college from Jan- 2016 to Nov 2016. A total of 100 patients with indications of induction in the third trimester were selected for the study. The nature of the study was thoroughly explained to the patients and their relatives and informed consent was taken from all of them. The inclusion criteria which was considered was 36 weeks or more of gestation, with single fetus and absence of uterine contractions, with vertex presentation and original bishop score of less than 6. Patients with cephalopelvic disproportion, abruptio placentae, Placenta praevia, malpresentation and previous uterine incision were all excluded from the study. Those who refused informed consent also were excluded from the study, and another patient was chosen randomly to make the total number as 100.

The indications for induction of labour in these patients was presence of mild to severe pre- eclampsia, antepartum eclampsia, post dated pregnancy, intra-uterine death, PROM, oligohydramnios and polyhydramnios.

They were divided into 2 groups of 50 each. Group I were given 25 µg misoprostol orally and Group II were given vaginally. The cervical status was assessed by Bishop score prior to the induction and prior to each dose. Dosage was repeated every 4th hourly until an adequate contraction pattern set in (establishment of 3 uterine contractions in a period of 10 minutes) or until the cervical dilatation reaches 4 cms, with a maximum of 6 doses. After the induction, the patients are monitored for signs of labour and when this ensues, they are closely monitored for maternal vital signs, progress of labour and fetal heart rate which is monitored by intermittent auscultation.

The maximum amount of misoprostol that can be given to the patients is 150 µg, i.e 6 doses, in both oral and vaginal cases. In case, the labour contractions did not occur ever after 4 hours, it is considered to be a failed induction and other methods of inductions like oxytocin, cerviprime gel was done. If the membranes did not spontaneously rupture, they were ruptured when the cervix was completely effaced with a cervical dilatation of ≥ 4cm.

The number of doses of misoprostol given to the patients, the interval between the induction and the onset of the uterine contractions, induction – delivery interval, mode of delivery, maternal and neonatal complications and adverse effects of the drug like fever, diarrhea, nausea etc were carefully noted.

Tachysystole i.e more than 5 contractions per 10 minutes without any change in fetal heartbeat for 2 consecutive 10 minute period were noted. Hyperstimulation or the exaggerated uterine response if any and accompanied by fetal heart rate deceleration of tachycardia were also noted.

3. Results

The total number of patients in the study were 100, divided into Group I for oral misoprostol induction of delivery and 50 were in Group II where misoprostol was administered vaginally for the induction of labor.

Out of the indications of labour, the most common was severe pre- eclampsia with 11 cases (22%) in the oral induction while the same was only in 6 cases (12%) in the vaginal cases. 9 patients (18%) each had post dated pregnancy, mild pre-eclampsia, and premature rupture of membranes (PROM). 8 (16%) of the patients were full term 3 (6%) had antepartum eclampsia.

Among the patients who underwent induction vaginally, the most common indication was post dated pregnancy, seen in 13 (26%) of the cases, followed by full term in 10 (20%) of the cases. 7 (14%) had antepartum eclampsia (Table 1).

Majority of the women who had undergone induction of labour were primigravida, in a total of 56 out of 100 cases (56%). Out of the oral induction patients, primi was seen in 30 (60%) of them and multigravida was in 20 (40%) of them. Among the vaginally induced patients, 26 (52%) were primi and 24 (48%) were multigravidae (Figure 1).

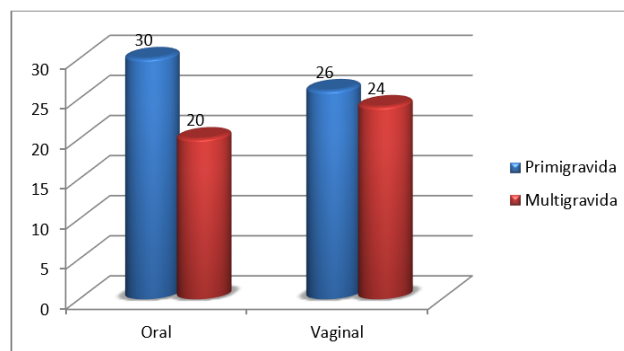


Fig. 1: Distribution of patients according to parity

Among the patients whose labor was induced orally, 12 (24%) of them required 2 doses while 11 (22%) required 4 doses. 10 (20%) required only 1 dose while 9 (18%) required 3 doses. Among the vaginal induction patients, 20 (40%) of them required 2 doses while 8 (16%) required 1, 3 and 4 doses each (Table 2).

More number of patients in the vaginal group i.e 45 (90%) of the cases delivered vaginally as compared 40 (80%) of the patients in the oral group. Caesarian section was planned in the cases of fetal distress, failure to progress or failed induction of labour. The cases of failed induction were delivered either vaginally using syntocinon or cerviprime or by LSCS (Table 3).

4. Discussion

One of the highest synthetic prostaglandin E1 analogue which is widely in use by the obstetricians in the induction

Table 1: Indications for induction of labour

Indications	Oral		Vaginal	
	No of Cases	Percentage	No of Cases	Percentage
Severe pre-eclampsia	11	22	6	12
Full term	8	16	10	20
Antepartum eclampsia	3	6	7	14
Post Dated Pregnancy	9	18	13	26
Mild pre-eclampsia	9	18	5	10
Premature rupture of Membranes	9	18	5	10
Polyhydramnios	1	2	5	10
Oligohydramnios	-	-	2	4
Total	50	100	50	100

Table 2: Response to dosage of drug

Doses required for Induction	Oral (%)	Vaginal (%)
1	10 (20%)	8 (16%)
2	12 (24%)	20 (40%)
3	9 (18%)	8 (16%)
4	11 (22%)	8 (16%)
5	1 (2%)	3 (6%)
6	7 (14%)	3 (6%)
Total	50 (100%)	50 (100%)

Table 3:

Mode of delivery	Oral (%)	Vaginal (%)
Vaginal	40 (80%)	45 (90%)
LSCS	8 (16%)	3 (6%)
Failed Induction	2 (4%)	2 (4%)

of labour is misoprostol.¹³ It is very stable and its absorption is dependent on the application and the dosage of the drug.¹⁴

In the present study, the majority of the patients who required induction of labour were those who were suffering from pre-eclampsia or those who were full term with no pains yet. Other causes were rupture of the membranes or post dated pregnancy. Importantly, the most common indication for the inductions in most of the other studies was post term pregnancy, hypertension during pregnancy, and pre rupture of membranes.^{15–17}

Most of the patients in our study were primigravida (56%), which included 60% in Group I and 52% in Group II. This difference was not significant as the patients were distributed in both the groups randomly. A study by Young et al found no significance in the parity in the two groups and for the time and the outcome of delivery.¹⁸

Among the patients who received the induction orally, 24% of them required 2 doses followed by 22% who needed 4 doses. Among the patients with vaginal induction, 40% needed only 2 doses.

Most of the patients 80% in oral induction and 90% in the vaginal induction had vaginal delivery. Caesarean delivery was comparatively more among the patients who underwent oral induction (16%) rather than those who had vaginal

induction (6%). This was correlated by a study by Handal-Orefice where the frequency of caesarean was observed among the persons with oral induction rather than vaginal induction of labour.¹⁹ A study by Komala et al found no significance difference in the time for vaginal delivery but showed a lower caesarean delivery rate among the patients with oral induction.²⁰ Similar was the cases in studies by Ezechukwu et al and Wing et al.^{21,22} In a double blind study by Handal-Orefice, 25 micrograms of misoprostol for vaginal induction and 50 micrograms for oral induction was used with similar results. They had shorter labour induction time with low caesarean rates.¹⁹ Another study by Morris et al also reported similar outcome with more than 90% of the patients delivering safely by vaginal delivery. This shows that misoprostol in both vaginal induction as well as oral induction is safe for use.

5. Conclusion

Women who received vaginal misoprostol experiences shorter induction delivery times, required fewer doses of misoprostol and required oxytocin augmentation less frequently than those who received oral misoprostol. The increased efficacy associated with the vaginal misoprostol raises the possibility of a local cervical effect with vaginal

administration.

Despite this, in comparison to the oral misoprostol, high rates of tachysystole and hyperstimulation associated with vaginal misoprostol is a cause for concern, prompting the patients to prefer the oral route of induction of labor.

6. Source of Funding

None.

7. Conflict of Interest

None.

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