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COMPARATIVE STUDY OF ORAL AND VAGINAL MISOPROSTOL TABLETS FOR INDUCTION OF LABOUR IN TERM PREGNANCIES

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ABSTRACT

Objectives: To compare the efficacy of oral Vs vaginal misoprostol tablets for the induction of labor in term pregnancies. **Methods:** In the present study a total of 201 women at term pregnancy with indication for induction of labour, admitted in AN- Ward and ELR in the Department of Obstetrics and Gynaecology, Gauhati Medical College and Hospital over a period of one year were included in the study. **Results:** The mean age for both the groups 23±3 years. Mean gestational age was 39weeks 4days for oral group and 39weeks 3days for the vaginal group. Hypertensive disorders of pregnancy (35.82%) constituted the largest group of indication for induction of labour followed by postdatism (26.37%). There was significant difference in the 2 groups when indication for which induction was given was considered.. 84% of women in oral group and 66.34% of women in vaginal group delivered vaginally. The mean induction to delivery time in oral group was 14±6 hours and in the vaginal group was 17±6hours with a p value of 0.013 which was statistically significant. The mean number of doses in both groups was similar (3 with a SD of 1) with a p value of 0.467. There was significant difference in the incidence of caesarean sections between the two groups (4% in oral and 21.78% in vaginal group). The incidence of failed induction was 4% in oral and 21.78% in vaginal group which was statistically significant. Failed induction (54.54%) constituted the most common indication for LSCS (16.67% in oral and 62.9% in vaginal group) followed by foetal distress (32.12%) (83.33%in oral and 32.32% in vaginal group). **Conclusion:** It was concluded that oral route of administration of misoprostol was equally as efficacious as vaginal route.

KEYWORDS :

INTRODUCTION

Induction of labor (IOL) is defined as the artificial initiation of uterine contractions leading to gradual dilatation and effacement of the cervix, in the presence or absence of ruptured membranes. The process of labor if has to be initiated using iatrogenic means, it should solely be for the purpose of maternal and/or fetal benefit. The most appropriate timing for labor induction is the point at which the maternal or perinatal benefits are greater if pregnancy is interrupted than if the pregnancy is continued. The aim of successful induction is to achieve vaginal delivery when continuation of pregnancy presents a threat to the life or well-being of the mother or the fetus. The World Health Organization (WHO) mandates that induction is to be performed with clear medical indications and when expected benefits outweigh the potential harm. The fetus should be delivered in a good condition, in an acceptable time frame and with minimum maternal discomfort or side effects.

Prostaglandins are one of the most preferred methods for cervical ripening, including the agents dinoprostone and misoprostol. Misoprostol is a prostaglandin E1 analogue. Its proven efficacy of uterine contractility and cervical ripening has led to the drug currently being used for medical termination of pregnancy, management of incomplete and spontaneous abortions, induction of labor, augmentation of labor and treatment of postpartum hemorrhage (PPH). The World Health Organization (WHO) has included misoprostol in its list of essential medicine on several indications including labor induction. The usual dose is 25 mcg orally or vaginally, which is to be repeated every 4-6 hours until adequate uterine contractions are achieved. Misoprostol can be administered through several routes: vaginal, rectal, buccal, oral or sublingual. Peak plasma concentration of misoprostol active metabolite is reached 30 minutes after oral administration and declines rapidly after 120 minutes with low levels remaining thereafter whereas peak plasma concentration of misoprostol is reached 70–80 minutes after vaginal administration of misoprostol with detectable drug levels after 6 hours. In view of the above, the present comparative study is undertaken to explore more information regarding the usage and to evaluate the safety and efficacy of oral and vaginal routes of administration of misoprostol for induction of labor at term pregnancies.

Objectives:

- To compare induction-delivery intervals by oral and vaginal routes of misoprostol administration.
- Number of Doses required for delivery.
- Number of failed induction and mode of delivery.

MATERIALS AND METHODS

In the present prospective comparative study, a total of 201 women at term pregnancy with indication for induction of labor, admitted in AN-ward and ELR in the Department of Obstetrics and Gynaecology, Gauhati Medical College and Hospital over a period of one year were included. The study protocol was approved by the Ethical Committee of Srimanta Sankardeva University of Health Sciences Guwahati, Assam.

Inclusion Criteria

1. Live singleton pregnancy of gestational age in between 37-42 weeks .
2. Cephalic presentation.
3 Postdated pregnancy .
4 Premature rupture of membranes
6. Bishop score <6.

Exclusion Criteria

1. Previous uterine scar.
2. CPD
3. Placenta Previa
4. Multiparity(parity>2)
5. Multiple gestation.
6. Contraindication to prostaglandins like asthma.
7. Preterm premature rupture of membranes.

8. History of glaucoma and epilepsy.
9. Cervical dilatation>3cm
10. Uterine contractions>3/10min
11. Malpresentation

Indications For Induction In Our Study Were:

Hypertensive disorders of pregnancy
Post-dated pregnancy
Rh negative pregnancy
Gestational diabetes mellitus
PROM

METHOD OF DATA COLLECTION

A clinical examination was done for each women with an indication for induction of labor. Details such as age, height, weight, parity, gestational age, CTG, liquor adequacy were noted. Per abdominal examination was done to confirm the lie, presentation, gestational age and amount of liquor. After confirming a reactive cardiotocogram for 20 minutes, vaginal examination was done and those women with a Bishop's Score of 1-5 were included in the study. Informed consent was taken, and they were randomized to receive either 25 mcg of oral or vaginal misoprostol. Oral group included patients receiving Tab misoprostol 25 mcg orally every 4 hours till a maximum of 5 doses; Vaginal group included patients receiving Tab misoprostol 25 mcg vaginally every 4 hours till a maximum of 5 doses.

The dose was withheld in presence of active labor, ≥3contractions over 10 minutes or a cervical dilation of ≥ 4cms. From the time of induction of labor to delivery, the patients were closely monitored for signs and progress of labor, uterine contractions and FHR was monitored by intermittent auscultations. Artificial rupture of membrane was done at the onset of active stage of labor. In case of failure of induction the patient was considered for LSCS. The adverse effects like tachysystole, hypertonus and uterine hyperstimulation were noted.

RESULTS AND DISCUSSION:

In our study, total number of patients assigned for the study were 201, which were divided into two groups (100 for oral and 101 for vaginal). Hypertensive disorders of pregnancy (35.82%) constituted the largest group of indication for induction of labor followed by postdatism(26.37%), PROM(24.88%), others(Rh negative, GDM, Polyhydramnios) (12.94%). BISHOP'S SCORING was done on admission which was not statistically significant in two groups with P=0.1984.

Table 1: Number Of Doses Required

Total Dose	Oral		Vaginal		Total		p-value
Age	N	%	N	%	N	%	
1	15	15.00%	8	7.92%	23	11.44%	0.0972
2	31	31.00%	28	27.72%	59	29.35%	
3	27	27.00%	21	20.79%	48	23.88%	
4	15	15.00%	17	16.83%	32	15.92%	
5	12	12.00%	27	26.73%	39	19.40%	
Grand Total	100	100.00%	101	100.00%	201	100.00%	

Maximum number of doses =5

Table 1 shows 15%,31%,27%,15%,12% of oral group and 7.92%,27.72%,20.79%,16.83%,26.73% of vaginal group required 1,2,3,4,5 doses respectively. P value 0.0972 which was not statistically significant. Mean number of doses in both groups = 3±1

Table 2: Induction To Delivery Interval

Values	Oral	Vaginal	Grand Total	p-value
Mean of I-D INTERVAL(hours)	14±6	17±7	16±7	0.013

Table 2 shows the mean induction-delivery interval in both groups. In oral group 14±6 hours while in vaginal group 17±7 hours. P value = 0.013 which is statistically significant showing that induction-delivery interval was significantly shorter in the oral group.

Table 3: Table Showing Failed Induction

	Oral		Vaginal		Total		p-value
failed induction	N	%	N	N	%	N	
No	96	96.00%	79	78.22%	175	87.06%	0.0001
Yes	4	4.00%	22	21.78%	26	12.94%	
Grand Total	100	100.00%	101	100.00%	201	100.00%	

Table 3 shows that out of the 201 cases, 26cases (12.94%) had failed induction (4%in oral,21.7% in vaginal group) with a p value of 0.0001 which was statistically significant showing that failed induction was significantly more in the vaginal group as compared to the oral group.

Table 4: Mode Of Delivery

	Oral		Vaginal		Total		p-value
MOD	N	%	N	N	%	N	
INSTRUMENTAL	10	10.00%	7	6.93%	17	8.46%	0.0003
LSCS	6	6.00%	27	26.73%	33	16.42%	
NORMAL	84	84.00%	67	66.34%	151	75.12%	
Grand Total	100	100.00%	101	100.00%	201	100.00%	

Table 4 shows that 151 cases (75.12%) had normal vaginal delivery. 10%,6%,84% in oral and 6.93%,26.73%,66.34% in vaginal group had instrumental, LSCS, NVD respectively. P value = 0.0003 which was statistically significant shows that more women (26.7%) in the vaginal group had undergone caesarean section while in the oral group only 6% had to undergo the same. The 2 cases that had instrumental delivery were prepared for LSCS but while awaiting the same, they entered into the second stage of labor and delivered vaginally following instrumentation. P value 0.001 which was statistically significant.

Table 5: Indication Of LSCS

	Oral		Vaginal		Total		P-Value
INDICATION OF LSCS	N	%	N	%	N	%	
DTA		0.00%	1	3.70%	1	3.03%	0.0125
Failed induction	1	16.67%	7	62.9%	18	54.54%	
Fetal bradycardia	3	50.00%	1	3.70%	4	12.12%	
MSL	2	33.33%	8	29.62%	10	30.30%	
Total	6	100.00%	27	100.00%	33	100.00%	

Table 5 shows that of the 201 cases, 33 cases had undergone LSCS (6 in oral, 27 in vaginal group). Failed induction (54.54%) constituted the most common indication for LSCS (16.67% in oral group and 62.9% in vaginal group) followed by fetal distress (32.12%) (83.33% in oral and 32.32% in vaginal). That is most common indication for LSCS in the oral group was fetal distress while in the vaginal group it was induction failure. The total number of cases of failed induction were 26, out of which 24 cases had undergone LSCS but actual number of cases undergoing LSCS for the same indication was 17 while the rest of the cases had accompanying fetal distress (7 cases). P value = 0.0125 which was statistically significant.

The distribution of various forms of maternal side effects i.e, fever, nausea/vomiting, hyperstimulation were 2%, 4%,0.99% in oral group and 5.94%,13,86%,6.97% in vaginal group respectively. P VALUE =0.1176 which was not statistically significant. However in oral group, 10% women had side effects while in vaginal group side effects were seen in 17.41% women. P value = 0.0485 which was statistically significant.

In a study conducted by Bartusevicius et al(2006), the mean

induction to delivery interval was 14.7± 4 hours in oral group, while it was 16.7± 3.9 hours in vaginal group. In a study conducted by Elay Caliskan et al(2003), the mean delivery to induction interval was 11.8±7hours in oral group while it was 12.46 ±6.3 hours. Hofmeyr et al (2001) found that induction to delivery interval was significantly shorter in the vaginal compared with the oral group (14.6h v/s 22.5h). In the present study, mean I-D interval in oral group 14± 6 hours and 17 ± 7 hours in vaginal group. P value = 0.013 which is statistically significant showing that induction-delivery interval was significantly shorter in the oral group. Thus, the present study was consistent with that of Bartusevicius et al and E Caliskan et al.

In a study by DA Wing et al(2000) fewer subjects who received the oral preparation (34/110, 30.9%) delivered vaginally within 24 hours of initiation of induction, in comparison with those who received the vaginal preparation (52/110, 47.3%) (P = .01). That is failed induction was more in oral group as compared to the vaginal group. In a study by Saricali et al(2005) there were two failed inductions in the oral (4%) and one failed induction (2.5%) in the vaginal group after a total of six doses of misoprostol (p = 0.58). Prameela et al (2018) in their study found that both groups had equal number of failed inductions. In a study by K Komala et al(2013), failed induction rate was more in vaginal group, which had a 6% rate as compared to oral group, which had a rate of 2%. In the present study, of the 201 cases, 26cases (12.94%) had failed induction (4% in oral group and 21.7% in vaginal group) with a p value of 0.0001 which was statistically significant showing that failed induction was significantly more in the vaginal group as compared to the oral group which was consistent with the study of K. Komala et al.

In a study by Shetty et al (2001) they found that more women who were given vaginal misoprostol delivered by normal vaginal delivery within 24 hours of the induction compared with those using oral misoprostol (73.8% versus 45.7%). In a study conducted by K Komala et al (2013), they found oral misoprostol resulted in more number of vaginal deliveries as compared to vaginal misoprostol. (94% as compared to 86%). In the present study, of the 201 cases, 151 cases (75.12%) had normal vaginal delivery. In oral group 84% had spontaneous vaginal delivery, 10% had instrumental delivery and 6% had LSCS. In vaginal group, 66.34% had normal vaginal delivery, 6.93 % had instrumental delivery and 26.73% had undergone LSCS. P value =0.003 was statistically significant which showed that rate of caesarean section was significantly higher in the vaginal group as seen in the study by Komala et al.

CONCLUSION

Oral and vaginal route of administration of misoprostol are equally effective for induction of labour. Number of doses of misoprostol used in both oral and vaginal route of administration was similar, no statistically significant difference between both groups. Mean induction to delivery interval was significantly shorter in the oral group as compared to the vaginal group. Incidence of failed induction was found to be more in the vaginal group. Caesarean section rate was found to be higher in the vaginal group as compared to the oral group. Thus it can be concluded that oral route of administration of misoprostol was equally as efficacious as vaginal route.

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