Original Research Article

Maternal and fetal outcome in vaginal misoprostol induced patient

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Abstract

Aim: To study the effect of low dose vaginal misoprostol (25 µg) in induction of labour, To study the maternal and fetal outcome. **Design:** Retrospective case control study at Kamla Raja Hospital, GRMC, Gwalior from 01 Jan. 2018 to 31 Aug. 2019. **Methods:** Total of 200 Primi gravida women were randomized into 2 groups. Women induced with misoprostol 25 µg for cervical ripening labour induction and control group with no induction and watch for spontaneous progress of labour. BISHOP's prelabour scoring system was used to assess whether the cervix was favourable for induction of labour or not. Every 4th hour per vaginal examination was done to note the progress of labour in terms of dilatation, effacement and descent of the presenting part. **Results:** The conclusion of the study, in present study, majority of the cases in the age group 18-24 years of age, case group mostly had unfavorable cervix and Bishop Score ≤ 6. There was a significant difference seen in induction to start of active labour in both groups ($p < 0.05$). The maximum number of patients who go in active labour with in 6 hours more in case group i.e. improvement bishop score after induction, while in 6-12 hrs interval for induction to start of labour is more in control group (as there bishop score was higher at the admission) ($X2 = 26.56$ p value = 0.000008). Induction to delivery interval was statistically significant found in both group. Most of the patients delivered within 24 hours of induction in the both groups. Case group with in 6-12 hrs. interval 72 cases (who had poor bishop score and got improve after induction), control group < 6 hrs. 68 cases (there bishop score was higher at the admission) ($X2 = 72.19$ p value = 0.000001). **Conclusion:** Misoprostol is an effective priming and labour inducing agent. Though incidence of meconium stained liquor is higher in misoprostol induced labour among women with unfavourable cervix thereby increasing the rate of cesarean delivery for meconium stain liquor and increasing maternal as well as fetal morbidity and mortality.

Keywords: Induction of labour, Bishop Score, Misoprostol, Cervical ripening.

Introduction

Induction of labour is defined as the process of artificially stimulating the uterus to start labour[1,2]. It is usually performed by administering oxytocin or prostaglandins to the pregnant woman or by manually rupturing the amniotic membranes. Over the past several decades, the incidence of labour induction for shortening the duration of pregnancy has continued to rise.

In developed countries, the proportion of infants delivered at term following induction of labour can be as high as one in four deliveries[3,5].

Over the years, various professional societies have recommended the use of induction of labour in circumstances in which the risks of waiting for the onset of spontaneous labour are judged by clinicians to be greater than the risks associated with shortening the duration of pregnancy by induction. These circumstances generally include gestational age of 41 completed weeks or more prelabour rupture of amniotic membranes, hypertensive disorders, maternal medical complications, fetal death, fetal growth restriction, chorioamnionitis, multiple pregnancy, vaginal bleeding and other complications[6].

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Although currently available guidelines do not recommend this, induction of labour is increasingly being used at the request of pregnant women to shorten the duration of pregnancy or to time the birth of the baby according to the convenience of the mother and/or health-care workers.[7]

During induction of labour, the woman has restricted mobility and the procedure itself can cause discomfort to her[8]. To avoid potential risks associated with the procedure, the woman and her baby need to be monitored closely. This can strain the limited health-care resources in under-resourced settings[9]. In addition, the intervention affects the natural process of pregnancy and labour and may be associated with increased risks of complications, especially bleeding, caesarean section, uterine hyperstimulation and rupture and other adverse outcomes.[10,11]

Uses

- Induction of labor
- Management of elective medical and surgical abortion
- Miscarriage
- Postpartum hemorrhage
- Prevention and treatment of peptic ulcer disease •

Advantages

- Inexpensive.
- No refrigeration
- Easily store at room temprature

- No parenteral administration
- Few systemic side effect
- Rapidly absorbed orally and vaginally

Material and Methods

From 1 January 2018 to 31st August 2019, total of 200 Primi gravida women were randomized into 2 groups. Women induced with misoprostol 25 µg for cervical ripening labour induction and control group with no induction and watch for spontaneous progress of labour. BISHOP's prelabour scoring system was used to assess whether the cervix was favourable for induction of labour or not.

Every 4th hour per vaginal examination was done to note the progress of labour in terms of dilatation, effacement and descent of the presenting part. The dose was repeated every 4 hourly at about 3-4 cm of cervical dilatation if the membrane have not ruptured ARM was done and colour of liquor noted.

Depending on the MSL women were subjected to cesarean section. If there is fetal distress of tachysystole or hyperstimulation next of dose of misoprostol is deferred.

Out of 100 cases, group 1 – some of the cases were taken for cesarean section for fetal distress, MSL, hyperstimulation, NPOL and failed induction. The clinical trial comparing vaginal mesoprostol use for 3rd trimister cervical ripening and labour induction with or without induction of labour or patient delivered spontaneously.

Type of Study: Retrospective Case control study

- **Inclusion criteria:**

Postdated pregnancy,
PROM in greater than 37 weeks
PIH
IUGR
Oligohydramnios
Colour doppler studies should be normal in such cases.

- **Exclusion criteria:**

Previous uterine scar
Previous cesarean section
Unexplained maternal pyrexia
Previous traumatic and difficult delivery
Previous uterine rupture
Abnormal fetal presentation, placenta previa
Vasa previa
Cord presentation
Unexplained uterine bleeding.

Results

The above table shows that 56 cases (56%) in case group & 52 cases(52%) in control group were of 18-24 years age group.38 cases (38%) in case group & 40 cases(40%) in control group of age group 25-29 years.

6 cases (6%) in case group & 8 cases (8%) in control group were in 30-36 years.

Majority of the 94 cases (94%) of case group & 92cases (92%) of control group were in 18-29 years of age group.

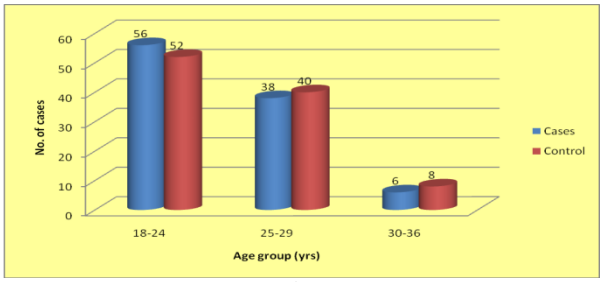

Fig 01: Distribution of cases according to age

Table 1: Distribution of cases according to booked/unbooked

Status	Cases		Control	
	No.	%	No.	%
Booked	35	35	40	40
Unbooked	65	65	60	60
Total	100	100	100	100

The above table shows that out of 100 cases , 35 cases(35%) in case group & out of 100 cases in control group 40 cases(40%) are booked cases . 65 cases are unbooked in case group & 60 cases in control group are unbooked. Majority of the cases were unbooked.

Table 2: Distribution of cases according to education

Education	Cases		Control	
	No.	%	No.	%
Illiterate	8	8	13	13
Primary and middle	63	63	42	42
High school and intermediate	24	24	21	21
Graduate	5	5	8	8
Total	100	100	100	100

The above table shows that out of 100 cases, 8 cases (8%) in case group, 13 cases(13%) in control group, were illiterate.
63 cases(63%) in case group & 42 cases (42 %) in control group were educated upto primary and middle school.
24 cases(24%) in case group & 21 cases in control group were educated upto high school and intermediate .
5 cases (5%) in case group and 8 cases (8%) in control group were educated upto graduation.

Table 3: Distribution of patients according to socioeconomic status

Socioeconomic status	Cases		Control	
	No.	%	No.	%
Upper class	13	13	15	15
Middle class	40	40	45	45

Lower class	47	47	40	40
Total	100	100	100	100

The above mentioned table showed that out of 100 cases, 13 cases (13%) and 15 cases (15%) in control group belong to upper class status.
40 cases (40%) in case group and 45 cases (45%) in control group belongs to middle class , while 47 cases (47%) in case group and 40 cases (40%) case in control group belongs to lower class .
There is no statistically significant difference in socioeconomic status in the two group.

Table 4: Distribution of cases according to pre induction Bishop Score

Bishop Score on admission	Cases		Control	
	No.	%	No.	%
1	52	52	33	33
2	32	32	38	38
3	13	13	21	21
4	2	2	5	5
5	1	1	3	3
Total	100	100	100	100

In case group out of 100 cases,52 cases(52%) had score of 1, 32 cases (32%) had score of 2, 13 cases (13%) had score of 3, 2 cases(2%) had 4 score and 1 case (1%) had bishop score of 5.
In control group out of 100 cases , 33 cases (33%) had score of 1, 38 cases (38%) had score of 2 , 21 cases (21%) had score of 3 , while 5 cases (5%) had score of 4 , and 3 cases (3%) had score of 1.
Majority of cases in case group 97 (97%) had bishops score of ≤ 3 while 92 cases (92%) in control group had bishop score ≤ 3 in unfavorable bishops score.

Table 5: Distribution of patients according to induction to begnning of active labour interval

Time	**Cases**		**Control**	
	No.	**%**	**No.**	**%**
< 6 hr	62	62	29	29
6-12 hr	25	25	60	60
13-24 hr	12	12	10	10
25-48 hr	1	1	1	1
Total	100	100	100	100

Above table shows distribution of cases on the basis of interval from induction to active labour i.e. favourable Bishop's Score.
Patientsgoes in active labour within 6 hours of induction, 62 cases (62%) in case group, 29 cases (29%) in control group.
With in 6 to 12 hours in 25 cases (25%) in case group and 60 cases (60%) in control group.
Within 13-24 hours in 12 cases (12%) in case group and10 cases (10%) in control group.
So, maximum number of patients go in active labour with in 12 hours of induction, out of 100 cases, 87 cases (87%) in case group and out of 100 cases, 89(89%) in control group.

Table 6: Duration of labour

Group	**N**	**Mean**	**Std. deviation**	**t**
Cases	100	4.8100	2.16816	8.2150
Controls	100	8.4600	3.87799	p<0.001vhs

Duration of labour is found to be more in control with mean value 8.46 and in control it was 4.81. The difference is found to be statistically significant (p value< 0.001)

Table 7: Distribution of cases according to induction to delivery interval

Time	Cases		Control	
	No.	%	No.	%
< 6 hr	10	10	68	68
6-12 hr	72	72	22	22
13-24 hr	17	17	9	9
25-48 hr	1	1	1	1
Total	100	100	100	100

The table shows percentage of patients and induction to delivery interval within 24 hours and after 24 hours in the both groups.
For instance 10%, 72%, and 17 % of the patients in the case group have respective delivery interval of within 6 hours,6-12 hours, &12-24 hours, which are against the percentage figures of 68%,22%and 9 % for control groups with respective delivery interval.
The variation in the percentage between the groups are found to be significant statistically.

Table 8: Distribution of cases according to mode of delivery

Mode of delivery	Cases		Control	
	No.	%	No.	%
FTND	81	81	91	91
LSCS	19	19	9	9

Total	100	100	100	100

The above mentioned table shows that among 100 cases in case group 19cases(19%) underwent lower segment cesarean section, 81cases (81%) delivered vaginally. In the present study, among 100 cases in control group 9cases (9%) underwent lscs, 91cases (91%) delivered vaginally, 0 cases underwent instrumental delivery.The variation in the percentage between the groups are found to be significant statistically.

Table 9: Distribution of cases according to NICU admission

NICU admission	Cases		Control	
	No.	%	No.	%
Yes	39	39	35	35
No	61	61	65	65
Total	100	100	100	100

The above table shows that more numbers of new born require NICU admission in cases group.

Table 10: Distribution of cases according to neonatal Apgar Score

Apgar Score at 5 min	Cases		Control	
	No.	%	No.	%
< 7	35	35	30	30
> 7	65	65	70	70
Total	100	100	100	100

Neonatal Apgar score at 5 min was <7 in 35 cases(35%) in cases group and in 30 cases (30%) in control cases.
Neonatal Apgar score at 5 min was >7 in 65 cases(65%) while 70 cases(70%) in control cases.

Table 11: Distribution of cases according to maternal complication

Complication	Cases		Control	
	No.	%	No.	%
PPH	20	20	18	18
Cervical tear	10	10	14	14
Perineal tear(episiotomy extension)	8	8	9	9
No complication	62	62	59	59
Total	100	100	100	100

The above mentioned table shows that slightly more complications were seen in cases group. The difference is not statistically significant.

Table 12: Distribution of cases according to perinatal morbidity

Perinatal morbidity	Cases		Control	
	No.	%	No.	%
Birth asphyxia	7	7	3	3
MSL	17	17	12	12
RDS	10	10	10	10
MAS	4	4	0	0
Other	2	2	0	0
No complication	60	60	75	75
Total	100	100	100	100

The above mentioned table shows fetal complications in cases group and control group.
Birth asphyxia was found in 7% cases in cases group while 3 % in control group.
MSL (meconium stained liquor) was found in 17% cases group and 12 % in control group.
RDS and MAS was 10 % and 4 % in cases group while 10 % and 0 % in control group respectively. So majority of complications seen in cases group.

Discussion

Recent literature available has shown that oral misoprostol, as compared to vaginal misoprostol, is associated with lesser side effects such as hyperstimulation, hypertonicity, tachysystole but is associated with similar neonatal outcomes[12,13]. In our study the incidence of hyperstimulation was significantly higher (p=0.025) in vaginal group as compared to oral group (18 % vs 4%). This result was comparable to that observed in various other studies. Study reported the incidence of hyperstimulation to be 0% in oral group compared with 11.3% in vaginal group[14,15]. Uterine tachysystole in our study was less commonly seen in oral group (10%) as compared to vaginal group (24%) which is similar to that reported by How et al (10% versus 32%)[16].

Although the number of women having fetal distress and hyperstimulation was more in vaginal group in our study as compared to oral group but there were no differences in neonatal outcomes as well as APGAR score at 1 and 5 min and NICU admission rates which is similar to the results seen in other studies[17&18].

Conclusion

The present study shows that mesoprostol is effective in improving bishops score, but it depends on pre – induction bishops score.

Although the vaginal delivered patients were more in control group. The lscs rate is increased in induction group cases. IOL is associated with a significantly increased risk of cesarean delivery in nulliparous women.

This may reduce the primary Cesarean delivery among Nulliparous women. Patient should be counseled prior to IOL for augmented induction, cost, risk of additional procedures, evidence based protocols must be available at regional level for cervical ripening and for induction.

The present study shows that maternal morbidity in the form emergency LSCS, postpartum hemorrhage, cervical and perineal tear increases as the gestational age increased and perinatal outcome in the form of birth asphyxia, RDS, MSL, MAS are more frequently seen in induction group as compared to control group.

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