International Journal of Medical Research Professionals
P-ISSN: 2454-6356; E-ISSN: 2454-6364
DOI: 10.21276/ijmrp

IJMRP

Original Research Article.

To Assess the Safety and Efficacy of Misoprostol Administered Sublingually For Induction of Labour in Patient with PROM with Poor Bishop's Score

Sushma Singh Rathore[1], Monika Parmar[2*]

[1]Senior Demonstrator, Department of Pathology, Government Medical College, Dungarpur, Rajasthan, India.
[2]Associate Professor, Department of Obstetrics & Gynaecology, Government Medical College, Dungarpur, Rajasthan, India.

ABSTRACT

Background: The management of PROM has often been a dilemma in obstetrics. Different regimens are followed in different centres all over the world for management of PROM. This study is aimed to compare the safety and efficacy of sublingually equivalent dose regimen administered vaginally for induction of labour in patient with PROM with poor Bishop's Score.

Material & Methods: A prospective randomised controlled trial done on 60 Patients of PROM admitted in labour room of Government Medical College, Dungarpur, as per inclusion and exclusion criteria. Group 1- Received 25µg misoprostol, intravaginally 4 hourly up to maximum of 3 doses, placed in posterior fornix. Group 2- Received 25 µg misoprostol, sublingually 4 hourly up to maximum of 3 doses. Foetal heart and labour progress monitoring was done. Before every dose a pervaginum examination was performed to assess the Bishop score.

Results: Our study showed that the foetal distress (foetal heart rate (FHR) abnormalities; FB<120bpm, FT >160bpm) was most common intrapartum complication in both groups (13.33% each). Mean induction delivery interval in sublingual group was 8.13±4.29 hours and in intravaginal group was 7.31±4.11hours. Majority of women in both groups delivered vaginally; 25 patients (83.33%) in intravaginal and 26 patients (86.66%) in sublingual group. 2 patients in intravaginal and 1 patient in sublingual group had atonic PPH. However no patient required blood transfusion. None had retained placenta. There was no maternal mortality.

Conclusion: We concluded that both sublingual and intravaginal route of administration of 25µg misoprostol are equally effective in achieving favourable Bishop's score, vaginal delivery rates, with comparable induction to delivery intervals without increasing the caesarean rates and the postpartum complications.

Keywords: PROM, Bishop's Score, Misoprostol, Sublingual, Intravaginal.

***Correspondence to:**

Dr. Monika Parmar,
Associate Professor,
Department of Obstetrics & Gynaecology,
Government Medical College, Dungarpur, Rajasthan, India.

Article History:

Received: 05-01-2019, **Revised:** 29-01-2019, **Accepted:** 24-02-2019

Access this article online	
Website: www.ijmrp.com	Quick Response code
DOI: 10.21276/ijmrp.2019.5.2.042	

INTRODUCTION

Premature rupture of membranes (PROM) is a syndrome characterized by rupture of foetal membranes (chorion and amnion) before the onset of labour. Membrane rupture that occurs before 37 weeks of gestation is referred to as preterm premature rupture of membranes (PPROM). Although term PROM results from the normal physiological process of progressive weakening, preterm PROM can result from an array of pathological mechanisms acting individually or in consert.[1] Most Indian studies report an incidence of PROM between 7 to 12 percent of which 60-70% occurs at term.[2] Management of PROM generally includes induction of labour, if contractions did not begin within 6-12 hours. Such interventions evolved approximately 60 years ago because of maternal and foetal complications due to chorioamnionitis Calkins (1952).[3] Several investigators have reported a significant increase in perinatal loss and maternal morbidity associated with PROM. Perinatal mortality increases three folds when mother's membranes have been ruptured for more than 24 hours. Women with term ruptured membranes whose labour were induced compared with those managed expectantly reported lower rates of chorioamnionitis, metritis and NICU admissions. This intervention was the accepted practice until challenged by Kappy and co-workers (1979)[4], who reported

excessive caesarean delivery in term pregnancies with ruptured membranes managed with labour augmentation compared with those expectantly managed. In spite of the fact that 69% women deliver within 24 hours of PROM if managed expectantly, still induction of labour is advocated to decrease the risk of sepsis and perinatal morbidity associated with a delay between membrane rupture and delivery.

The management of PROM has often been a dilemma in obstetrics. Despite a relative explosion of studies on the subject in recent obstetric literature, only a few controversies surrounding the subject have been resolved. Different regimens are followed in different centres all over the world for management of PROM. Stimulation with oxytocin is more likely successful if cervix is favourable (Bishop's Score >6). In unfavourable cervix it takes time for establishment of labour, renders patient non ambulatory and requires careful titration.

Prostaglandins have been shown to induce cervical ripening and stimulate uterine contractions and have been found to be effective in numerous clinical trials at a variety of doses and routes of administration.[5]

Prostaglandins are contraindicated in women with heart disease and bronchial asthma. The oral preparations are absorbed into the circulation and produce side effects like nausea, vomiting and diarrhoea. Thus there is a need for less costly and less temperature sensitive alternative which is safe and effective. A proposed alternative is misoprostol, a prostaglandin E_1 analogue.

Misoprostol is a methyl ester of prostaglandin E_1 additionally methylated at C-16 and is marketed for use in the prevention and treatment of peptic ulcer disease caused by prostaglandin synthetase inhibitors. It is inexpensive, easily stored at room temperature and has fewer systemic side effects.

Misoprostol is metabolized by fatty acid oxidizing systems found in organs throughout the body. Its metabolism and plasma levels are therefore unlikely to be affected markedly in renal dysfunction or hepatic impairment. This suggests that the drug can be safely administered to patients with hepatic or renal impairment without the need for dose adjustment.

Sublingual misoprostol has the advantage of a less invasive administration and lack of restriction of mobility. Since the pharmacokinetics of vaginal and sublingual misoprostol are almost similar we wish to study its efficacy, safety and tolerability compared to vaginal route considering its ease of administration. This study is aimed to compare the safety and efficacy of sublingually equivalent dose regimen administered vaginally for induction of labour in patient with PROM with poor Bishop's Score.

MATERIALS & METHODS

A prospective randomised controlled trial done on 60 Patients of PROM admitted in labour room of Government Medical College, Dungarpur, as per inclusion and exclusion criteria.

Inclusion Criteria

1. All pregnant women with spontaneous rupture of membranes confirmed by demonstrating vaginal pooling of amniotic fluid at initial p/s examination and with positive litmus paper test.
2. Gestational age at or more than 37 weeks to 40 weeks
3. Singleton pregnancy
4. Cephalic presentation
5. No regular uterine contraction (less than 6 contractions/hour)
6. No evidence of fetal distress
7. Bishop's score (less than 5)

Exclusion Criteria

1. Less than 37 completed weeks of gestation (Preterm)
2. Foetal congenital malformations
3. Intra uterine growth restriction (IUGR)
4. Symptoms and signs suggestive of chorioamnionitis with maternal temperature more than 37.5 degree C.
5. Antepartum hemorrhage
6. Medical disorder of pregnancy Hypertension/ Diabetes Mellitus/ Asthma/ Cardiac disease / ICP Etc.

All patients enrolled in the study as per inclusion and exclusion criteria; informed consent was taken and allocated according to computer generated randomization into two groups.

Group 1: Received 25µg misoprostol, intravaginally 4 hourly up to maximum of 3 doses, placed in posterior fornix.

Group 2: Received 25 µg misoprostol, sublingually 4 hourly up to maximum of 3 doses.

Foetal heart and labour progress monitoring was done. Before every dose a pervaginum examination was performed to assess the Bishop score. Prophylactic antibiotics in form of inj. Cefotaxime 1gm i/v 12hourly and inj. Metronidazole 500mg i/v 8hourly were given (as it was locally available in the hospital).

The Next Dose of Misoprostol Was With Held If:

1. Bishop score >8.
2. Adequate uterine contractions i.e. 3 per 10 minutes.
3. Cervical dilatation> 3 cm with regular uterine contractions.
4. Presence of hyper stimulation, as evident by tachysystole or hyper tonus associated with foetal tachycardia, late decelerations and beat to beat variability.

a. Tachysystole: 6 contractions in 10 min for 2 consecutive 10 min periods.

b. Hypertonus: Single uterine contraction lasting > 2 minutes

Augmentation with oxytocin was done in patients with favourable bishop score (>5) with mild uterine contraction or patients with poor bishops score (<5) even after 3 doses of misoprostol. If leaking of more than 24 hours and unfavourable cervix (bishop <5) or any evidence of foetal distress then further management was at the discretion of attending obstetrician.

RESULTS

Our study showed that the foetal distress (foetal heart rate (FHR) abnormalities; FB<120bpm, FT >160bpm) was most common intrapartum complication in both groups (13.33% each) (table 1).

Mean induction delivery interval in sublingual group was 8.13±4.29 hours and in intravaginal group was 7.31±4.11hours (table 2).

Majority of women in both groups delivered vaginally; 25 patients (83.33%) in intravaginal and 26 patients (86.66%) in sublingual group (table 3).

2 patients in intravaginal and 1 patient in sublingual group had atonic PPH. However no patient required blood transfusion. None had retained placenta. There was no maternal mortality (table 4).

Table 1: Distribution of Women According To Intrapartum Complications

Intrapartum complications	Group		p-value
	Intravaginal	Sublingual	
Fetal distress	4	4	1.00
	13.33%	13.33%	
Fetal Bradycardia(FB)	1	2	0.845
	3.00%	6.66%	
Meconium stained liquor(MSL)	2	2	1.00
	6.66 %	6.66%	
Hyper tonus	0	1	0.621
	0%	3.00%	
Tachysystole	2	1	0.438
	6.66%	3.00%	
Nil	21	20	
	70%	66.66%	
Total	30	30	

Table 2: Distribution of Women According To Induction –Delivery Interval

Induction Del Interval time	Group		p- value
	Intravaginal	Sublingual	
≤12 hrs	26	**25**	
	86.7%	83.33%	
12-24 hrs	4	5	0.768
	13.3%	16.66%	
Total	30	30	

Table-3: Distribution of Women According To Outcome Of Labour

Mode of delivery	Group		p-value
	Intravaginal	Sublingual	
Instrumental delivery	1	1	0.872
	3.33%	3.33%	
LSCS	4	3	
	13.33%	110%	
NVD	25	26	
	83.33%	86.66%	
Total	30	30	

Table-4: Distribution of Women According To Post-Partum Complications

Post-partum complication	Group		p-value
	Intravaginal	Sublingual	
Nil	28	29	0.792
	93.33%	96.66%	
PPH	2	1	
	6.66%	3.33%	
Total	30	30	

DISCUSSION

In the present study mean Bishop's score at the time of induction of labour was 2.311±1.28921 in the intravaginal group and 2.6834 ±1.29923 in the sublingual group. In the study by Bartusevicius et al[6], the mean Bishop's score in both the groups at the time of induction was 4.1 ±1.0. Hence, mean pre induction bishop score is lower in the present study. The mean number of doses in the study by Bartusevicious et al[6], was 1.5±0.5 (75µg) in the sublingual group and 1.8±0.6 (45µg) in the vaginal group. In the study by Bartusevicious et al., the dose required in the vaginal group is almost similar in our study; however the dose required in the sublingual group is almost one and a half times the present study, which could be because the dose used in their study was 50µg administered every 4 hours. In our study sublingual dose was given in multiples of 25µg every 4 hourly.

In another study by Aronsson A et al[7], the first effect observed after administration of misoprostol was an increase in uterine tonus, which occurred after a significantly shorter time following oral (7.8 min) and sublingual (10.7-11.5 min) than after vaginal (19.4 min) route. The time to maximum tonus elevation was also significantly shorter (39.5, 47.1-51.7 and 62.2 min for the three groups respectively). The increase in uterine activity measured in

Montevideo Units was significantly higher after 2 hours and thereafter for sublingual and vaginal routes. It is apparent from this study that misoprostol probably displays kinetics that may be worth looking into. So probably smaller doses at 4 hourly frequency would obviously work better.

Our study showed that the mean induction delivery interval in sublingual group was 8.13±4.29 hours and in intravaginal group was 7.31±4.11hours. Similar results found in study done by Malik HZ, Khawaja NP et al (2010)[8] observed about 92% women delivered within 12 hours of induction and 8% patient delivered within 12 -24 hours 92% women delivered vaginally and 8% patients by LSCS in which induction done with sublingual misoprostol 50µg, 2 doses 4 hours apart in patients with PROM.

Another study done by Chaudhuri S, Mitra SN et al (2011)[9] in a study in women with PROM at term were received an intravaginal 25 µg misoprostol tablet, 4-hourly with a maximum of five doses, induction-to-delivery interval was 10.75 hours, 92.3% patients delivered vaginally and 7.6% by caesarean section.

Our study showed that the majority of women in both groups delivered vaginally; 25 patients (83.33%) in intravaginal and 26 patients (86.66%) in sublingual group. In the study by Bartusevicious et al., 77% and 76% each in vaginal and sublingual groups delivered vaginally. there was higher incidence of LSCS in both groups (20% vaginal group and 17% sublingual group) with foetal distress being the most common indication of LSCS in both groups (11% vs. 10%), next common indication was NPOL in 7% in each group. patients receiving misoprostol had a significantly lower rate of caesarean deliveries because of failed induction. Accordingly this analysis provides strong support for the conclusion that misoprostol safely decreases the caesarean delivery rate among women undergoing labour induction compared with that of women receiving alternate induction regimens. In our study, two patients in vaginal group and one patient in sublingual group had atonic PPH which was controlled with oxytocin infusion and $PGF_{2\alpha}$ administration and blood transfusion was not required.

CONCLUSION

We concluded that that misoprostol is a safe, effective, well tolerated and economical method for induction of labour in patients of PROM with poor Bishop's score. Both sublingual and intravaginal route of administration of 25µg misoprostol are equally effective in achieving favourable Bishop's score, vaginal delivery rates, with comparable induction to delivery intervals without increasing the caesarean rates and the postpartum complications.

REFERENCES

1. ACOG. Practice Bulletin. PROM. Obstet Gynecol; 2007 april; 109(4).
2. Bradley et al, Phillips et al. A quick review of PROM. The internet Journal of Gynecology and Obstetrics 2002, 1(2).
3. Calkins LA. Premature spontaneous rupture of membranes. Am J Obstet Gynecol. 1952 Oct; 64(4):871-7.
4. Kappy KA, Cetrulo CL, Knuppel RA, Ingardia CJ, Sbarra AJ, Scerbo JC et al. Premature rupture of membranes: a conservative approach. Am J Obstet Gynecol 1979 Jul; 134(6):655-61.
5. Keirse MJNC. Prostaglandins in pre induction cervical ripening: meta-analysis of worldwide clinical experience. J Report Med 1993; 38 Suppl: 89-100.
6. Bartusevicius A, Barcaite E, Krikstolaitis R, Gintautas V, Nadisauskiene R. Sublingual compared with vaginal misoprostol for labour induction at term: a randomized controlled trial. Br J Obstet Gynecol 2006; 113:1431-37.
7. Aronsson A, Bygeman M, Gemzell-Danielsson K. Effects of misoprostol on uterine contractility following different routes of administration. Hum Reprod. 2004; 19(1):81-4.
8. Malik HZ, Khawaja NP, Zahid B, Rehman R. Sublingual versus oral misoprostol for induction of labour in prelabour rupture of membranes at term. J Coll Physicians Surg Pak. 2010 Apr; 20(4):242-5.
9. Chaudhuri S, Mitra SN, Banerjee PK, Biswas PK, Bhattacharyya S. Comparison of vaginal misoprostol tablets and prostaglandin E2 gel for the induction of labor in premature rupture of membranes at term: a randomized comparative trial. J Obstet. Gynaecol. Res. 2011 Nov;37(11):1564-71.

Source of Support: Nil.

Conflict of Interest: None Declared.

Cite this article as: Sushma Singh Rathore, Monika Parmar. To Assess the Safety and Efficacy of Misoprostol Administered Sublingually For Induction of Labour in Patient with PROM with Poor Bishop's Score. Int J Med Res Prof. 2019 Mar; 5(2):204-07. DOI:10.21276/ijmrp.2019.5.2.042