DOI: 10.14260/jemds/2015/7

ORIGINAL ARTICLE

LABOUR INDUCTION WITH INTRAVAGINAL MISOPROSTOL VERSUS OXYTOCIN IN TERM PREMATURE RUPTURE OF MEMBRANES

Suhas Deshpande[1], Preeti Deshpande[2]

HOW TO CITE THIS ARTICLE:
Suhas Deshpande, Preeti Deshpande. "Labour Induction with Intravaginal Misoprostol versus Oxytocin in Term Premature Rupture of Membranes". Journal of Evolution of Medical and Dental Sciences 2015; Vol. 4, Issue 01, January 01; Page: 40-44, DOI: 10.14260/jemds/2015/7

ABSTRACT: Labour Induction with intravaginal Misoprostol versus Oxytocin in Term Premature Rupture of Membranes. **OBJECTIVES:** To compare the safety and efficacy of misoprostol with oxytocin for labour induction in women with premature rupture of membranes beyond 36 weeks gestation. **METHODS:** 65 subjects with rupture of membranes without labour were assigned to receive. vaginally administered misoprostol 50 ug, every 4 hrs. and another 65 subjects with rupture of membranes at term received intravenous oxytocin infusion and we compared the duration of labour, intrapartum complications, mode of delivery and the maternal and neonatal outcomes in the two groups. **RESULTS:** Results of the 130 subjects studied, 65 received misoprostol and 65 oxytocin infusion. The average interval, from start of induction vaginal delivery was significantly shorter (660 minutes) in the misoprostol group than the oxytocin group (1105 min). Oxytocin administration was necessary in 13 (20%) subjects receiving misoprostol. There was increased incidence of tachysystole in misorpostol group 22 (33.8%) compared to the oxytocin group 9 (13.8%) No significant difference was found in the mode of delivery neonatal and maternal outcomes in the two groups. **CONCLUSION:** Vaginal administration of misorpostol is safe and effective alternative to oxytocin infusion for labour induction in women with premature rupture of membranes at term.
KEYWORDS: Labour, induction, prom, misoprostol, prostaglandins.

INTRODUCTION: Premature rupture of membranes (PROM) beyond 36 weeks of gestation and before the onset of labour occurs in approximately 10% of pregnancies. Clinical management of this condition remains controversial. Traditionally, induction of labour is undertaken to prevent chorioamnionitis and neonatal sepsis. Labour induction with intravenous oxytocin in gravidas at term with PROM, especially those with unfavourable cervices, is associated with an increased incidence of failed induction and an increased cesarean rate. Therefore, an optimal agent would have the dual capacity of cervical ripening and labour induction.

Five published studies found that a synthetic analogue of PGE, (Misoprostol) ripens the cervix and induces labour in patients with unfavourable services.

The objective of this study is to compare the safety and efficacy of misoprostol with oxytocin for labour induction in women with term premature rupture of membranes.

MATERIALS & METHODS: From February, 2012 to July 2012 all women with spontaneous rupture of membranes beyond 36 weeks gestation at Ekopa Hospital, Karad were evaluated for selection to the study.

Patients were recruited if they satisfied the following Criteria.

1. Gestational age of 37-42 weeks.

DOI: 10.14260/jemds/2015/7

2. Singleton pregnancy.
3. Spontaneous rupture of membranes.
4. Woman not in labour on admission.
5. Normal fetus with a reactive non-stress test on admission.
6. No contra indication to labour/ vaginal delivery. Those assigned to the misoprostol group received. 50 mg intravaginally in the posterior fornix and was repeated every 4 hrs. Until adequate labour was achieved to a maximum total dose of 600 mg.

Women assigned to the oxytocin group, it was administered as an intravenous infusion 2.50 of oxytocin was added to 500 ml of Ringer lactate and started at admission, increasing by 4 drops every half an hour.

Induction with either misoprostol or oxytocin was started a minimum of 6 hrs after the spontaneous rupture of membranes in the absence of uterine contractions.

The primary outcome measure was the occurrence of vaginal delivery within 24 hrs from start of induction, defined as a successful induction.

RESULTS:

Particulars	Misoprostol (n-65)	Oxytocin (n-65)
Age	23.7	23.1
Initial Bishop score	5.7	6.1
Gestation at ROM (WK)	38.8	38.8
Percentage of Primigravidas	76%	73%

Table 1: Demographic Characteristics

(Rate is presented as mean)

Particulars	Misoprostol	Oxytocin	P<0.04)
Interval from start to delivery (min) mean	660 (380-1100)	1105 (780-1520)	S
Vaginal delivery within 12 hrs.	25 (43%)	15 (23%)	S
Vaginal delivery within 24 hrs.	55 (84.6%)	38 (58.4%)	S
Need for oxytocin (misoprostol group)	13 (20%)	-	
Maximum rate of oxytocin	3.75 mIU/min	11.25 mIU/min	S

Table 2: Labor Characteristics

S-Significant, NS-Not Significant.

Particulars	Misoprostol	Oxytocin	P>0.04)
Spontaneous Vaginal	49 (75.3%)	51 (78.46)	NS
Instrumental	7 (10.7%)	8 (12.3%)	NS
Cesarean Delivery	9 (13.8%)	8 (12.3%)	NS

Table 3: Mode of Delivery

DOI: 10.14260/jemds/2015/7

Particulars	Misoprostol	Oxytocin	P<0.04)
Fetal distress	13 (20%)	15 (23%)	NS
Postpartum Haemorrhage	7 (1.5%)	9 (13.8%)	NS
Tachysystole	22 (33.8%)	9 (6.1%)	NS
Hyperstimulation Syndrome	5 (7.6%)	4 (6.1%)	NS

Table 4: Intrapartum Complications

Particulars	Misoprostol	Oxtocin
Birth wt (kg)	2.5 kg (1.8 – 3.2 kg)	2.560 Kg (1.8 – 3.3 kg)
Apgar Score <7 1min	8 (12.3%)	7 (10.6%)
5 min	1 (1.5%)	0
Admission to NICU	7 (10.6%)	10 (13.8%)
Chorioamnionitis	2 (3.7%)	3 (4.6%)

Table 5: Neonatal & Material Out come

RESULTS: Patients in the misoprostol and oxytocin group were similar with respect to maternal age parity, initial Bishop's score and gestational age (table1) labour characteristics in the two groups are compared in the Table 2. The mean interval from start of induction to delivery was significantly shorter in the misoprostol group. A significantly lower mean maximum rate of oxytocin was administered to women in the misoprostol group 84.6%patients in the misoprostol group delivered within 24hors from start of induction where as 58.4% in the oxytocin group .There was no significant difference in the mode of delivery between the two groups. (Table 3) (Table 4) Observations regarding neonatal and maternal outcomes were also compared (Table5) and no significant difference was seen in the two groups.

DISCUSSION: The safety and efficacy of prostaglandins for cervical ripening and labour induction in patients with PROM at term have been the subject of several clinical trials. Although several randomised trials[1-7] reporting the utility of PGE1 for labour induction included patients with PROM at term numbers have been insufficient to draw conclusion regarding women with this indication for induction This study demonstrates that misoprostol significantly reduces the interval from induction of labour to delivery without increasing rates of fetal distress or cesarean delivery. And subjects in the misoprostol group less frequently required oxytocin augmentation.

A concern in the use of misoprostol for induction of labour is tachysystole 3,6 It appears that the incidence of uterine tachysystole is dose related as indicated by an incidence of 17% with the 25mg dose[8] 37% with 50mg[6] and 72% with 100mg dose. In the studies of Wing at al[6,8] Sanches Ramos & colleagues[3] Ralph.; L.K etal[9] and ours, the relatively high incidence of tachysystole did not result in low Apgar score, increase in cesarean rate or admission to the NICU. On the basis of these preliminary findings misopostol appears to be a safe and effective alternative to oxytocin infusion for labour induction in women with premature rupture of membranes at term.

We believe that studies are required to further evaluate the optional misoprostol dose, dose interval and total number of doses administered additionally, long-term neonatal follow up is needed.

Inducing labour when the cervix is ripe is not difficult but complications increase significantly when the cervix is not ripe. There is a plethora of techniques available for induction of labour. However prostaglandins remain the single most effective means of achieving cervical ripening and inducing labour.[10-14] PGE 2 is registered in many countries for labour induction. However it is expensive and sensitive to temperature changes and needs to be kept under refrigeration Oxtocin again needs cold chain maintenance and intravenous access Misoprostl (PGE1) analogue) has several potential advantages. It is stable at room temperature relatively inexpensive and can be given by several routes. (Oral, vaginal, sublingual and buckle)These properties make misprostol an ideal agent for induction of labour.

In Cochrane Database of systematic Reviews 2010. There were 25 trials with 3074 participants. Vaginal misoprostol appeared to be more effective than oxytocin for the induction of labour (10 trials averages RR for failure to achieve vaginal delivery within 24 hours 0.65, 95% (10.47-0.96) Two trials that had used less than 50ug misoprostol showed no reduction in failure to achieve vaginal delivery within 24 hours Twenty-five studies showed a reduction in caesarean section risk with the use of misoprostol (Average RR 0.76,95%GI 0.60-0.96) However, uterine hyperstimulation without fetal heart rate changes was more in women who had received misoprostol (15 trial, RR2.24,95% (11.82-2.77) The incidence of vaginal instrumental delivery was lower in the mioprostol group (13 trials, RR 0.74,95% (10.56-0.99). There were no differences between vaginal misoprostol and oxytocin in terms of prenatal or maternal adverse outcomes.

REFERENCES:

1. Gunn GC, Mishell Dr. Jr. Morhin DG, premature ruptures of fetal membranes a review Am J Dort gyn 19, 106, 469-483.
2. Kappy K A Centrulo C, Knuppel RA, Ingradia CJ, sbarra AJ, Scerbo JC etal premature rapture of membrane at term . J.Repord Med 1982, 27, 29-33.
3. Sanchez-Ramos L, Kaunitz AM, Del Valle GO, Delke I, Schroeder PA, Broiores Dk. Labour induction with PGE methye analogue misoprostol versus oxytocin A randomized trial obstal Gyn 1993, 81, 332-6.
4. Fletacher H, Mitanells, Simeon D, fredride J, Brown D Intravaginal misoprostol and cervical ripening agent por J obn gyn 1993, 100, 641-4.
5. Flletcher H mitchells, Simeon D, fredridc J porownD Intravaginal misoprostol versus dinoprostone as cervical rilpsening and labour inducing agents Obst gyn 1994, 83 244-7.
6. Wing DA, Jones MM, RahallA, Goodwin T paul Rh A comparison of misoprostol and prostagland in E2 gel for pre induction cervical ripening fand labour induction AMJ obst Gyn 1995 172 180 u-10.
7. Varaklis K Gumina R, Stubblefied PG, Randomised controlled trial of vaginal misoprostol and intracervial prostaglandin E2 gel for induction of labour at term obe gyn 1995 86 541 544.
8. Win DA, RahallA Jones MM, Goodwin TM PaulRH Misoprost of An effective agent for cervical repening and labour induction AMJ OKA Jyn 1995, 172, 1211-6.
9. Ralph L, Kramcr MD, Goorge JG, David SM Dibe M Jose L ozyfocin for induction of labour safety & efficacy obst yyn 1997 89, 387-91.

10. NCE clicical gjuidelines 70-Induction of labour-national Institute for Health and clinical excellence, july 2008. page 70.
11. WHO Global survey on Maternal and Perinatal Health Induction of labour data. Geneva, world Health Organization, 2010 (available at http:www.who. int/reproductive health /topics/best-practices/globalsurvey).
12. Hofmeyr GJ, Gulmezoglu AM, Pileggic vaginal misoprosfol for cervical ripening and induction of labour Cochrane Database of Systematic Reviews 2010, Issue 10 Art No CD 00094/, Do ?,10,1002/14651858 CD000941pub2.
13. WHO model list of essential medicines 15 list, March 2007 Geneva, World Health organisation, 2007 page 1258.
14. WHO recommendations for induction of labour, Geneva world Health organization 2011. Page 1157-1192.

AUTHORS:

1. Suhas Deshpande
2. Preeti Deshpande

PARTICULARS OF CONTRIBUTORS:

1. Associate Professor, Department of Obstetrics and Gynaecology, Institute of Medical Sciences & Research, Mayani.
2. Assistant Professor, Department of Obstetrics and Gynaecology, Institute of Medical Sciences & Research, Mayani.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Suhas Deshpande,
35/A/1, Manglwar Peth,
Karad.
E-mail: dr_dsuhas@yahoo.com

Date of Submission: 14/12/2014.
Date of Peer Review: 15/12/2014.
Date of Acceptance: 22/12/2014.
Date of Publishing: 30/12/2014.