Original Research Article

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# Comparison of Oral Misoprostol and Oxytocin for Labour Induction in Prelabour Rupture of Membranes at Term

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**Absctract**

*Introduction:* Prelabour rupture of membrane complicates pregnancy affecting delivery route and course of labour. This study aims at comparison of oral misoprostol and oxytocin infusion for labour induction in term PROM. *Objective:* To compare efficacy and safety of oral misoprostol with oxytocin infusion for induction of labour in term PROM. *Methods:* The study is retrospective study carried on 100 pregnant women admitted in department of OBGY, ACPM medical College, Dhule from June 2015-June 2017. The women were assigned randomly to anyone of 2 equal groups. Group A received 25 micrograms of misoprostol every 4 hrs for maximum of 4 doses. Group B received oxytocin infusion primigravida 2 IU diluted in IV fluid and multigravida with 2.5 IU diluted in IV fluid with maximum dose of 5 IU in primigravida and 2.5 IU in multigravida. The primary outcome was induction delivery interval. The secondary outcomes were mode of delivery, maternal and neonatal outcomes. *Results:* The study showed that mean induction delivery interval was significantly lower (5.6hrs) in misoprostol group as compared to oxytocin group (7.2hrs). In misoprostol administered group 78% patients delivered by vaginal route while in oxytocin group it was 70% whereas 22% required Caesarean Section in misoprostol group while it was 30% in oxytocin group. Incidence of hypertonus was higher (22%) in misoprostol group as compared to oxytocin group (10%). *Conclusion:* In our study, the time intervals from induction to delivery were significantly shorter in misoprostol group than oxytocin group. Meconium stained liquor was seen more in women induced with misoprostol group than oxytocin. Intravenous oxytocin is still an effective option.

**Keywords:** Induction of Labour; Misoprostol, Oxytocin; Premature Rupture of Membranes.

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## Introduction

Prelabour rupture of membrane is defined as spontaneous rupture of membrane anytime beyond 28th weeks of pregnancy but before the onset of labour [1,2]. It is called preterm prelabour rupture of membraneIf it occurs before 37th weeks. When membranes rupture beyond 37 weeks but before onset of labour it is called Term prelabour rupture of membrane. Prelabour rupture of membrane complicates pregnancy affecting delivery route and course of labour [3]. Prelabour rupture of membrane occurs most commonly at term. PROM can be diagnosed by:

- History of amniotic fluid leaking per vagina
- Sterile speculum examination
- Nitrazine test
- Fern test
- Amnisure [5].

Chorioamnionitis, PPH, endometritis, abruptio placenta and neonatal complications like early neonatal sepsis, pneumonia are associated problems with PROM. Maternal and fetal infection is major complication [5]. There are different methods of management depending on condition of cervix. It might be conservative management

or immediate induction of labour or delayed induction with mechanical methods, vaginal or oral prostaglandins (PG) or oxytocin [6]. Oxytocin and prostaglandins are routinely used pharmacological agents for induction of labour [6]. Oxytocin is the most tested agent for labour induction. It is produced endogenously chiefly in hypothalamus and released from the posterior pituitary gland. Oxytocin use depends on cervical bishop score. With good bishop score there is probability of successful induction. Oral misoprostol, prostaglandin E1 analogue is more effective in women with poor cervical score and augmentation also [8].

*Advantages of oral misoprostol*

- Easy administration, inexpensive
- Stable at room temperature
- It does not restrict mobility in early labour
- Avoidance of IV induction agent

With Oral misoprostol route repeated per vaginal examinations are avoided and as obviously rate of infection decreases significantly, it becomes easy for patient also [9].

*Aim*

To compare oral misoprostol and oxytocin for labour induction in premature rupture of membrane at term.

*Objectives*

To study the outcome of labour in term premature rupture of membranes.

## Material and Methods

*Source of Data:* 100 pregnant women of term premature rupture of membranes admitted in labour room were studied after considering inclusion and exclusion criteria.

*Study Design:* Retrospective study

*Study Period:* over a period of one year from June 2017 to June 2018

*Study Place:* Department of Obstetrics and Gynaecology at JMF'S ACPM Medical college Dhule

*Sample Size:* 100

Informed and written consent from all women who were included in study taken before starting the study.

Women were eligible if they presented with PROM diagnosed by sterile speculum examination, revealing passage of amniotic fluid. PV examination done to assess presentation, position, station and assessment of BISHOP'S SCORE. Obstetrics USG performed to determine foetal cardiac activity, gestational age, lie, presentation and AFI.

*Inclusion Criteria*

- Singleton live foetus
- At and above 37 weeks of gestation
- Primigravida and multigravida
- Cephalic presentation
- Patient presenting with leaking per vaginum
- No evidence of active labour
- Normal foetal heart rate pattern

*Exclusion Criteria*

- Previous uterine scar
- Chorioamnionitis
- Malpresentation
- H/o vaginal bleeding
- Contraindications for prostaglandins like Bronchial asthma, Cardiac disorders
- Placenta previa
- Any indication that contraindicated vaginal delivery
- Major foetal anomalies

*Methods:*

- The women were assigned randomly to one of the two equal groups (Group A or Group B)
- Group A: 25 microgram of oral misoprostol administered every 4 hourly for maximum 4 doses.
- Group B: For primigravida 2 IU Oxytocin administered diluted in IV fluid and for multipara 2.5 IU Oxytocin diluted in IV fluid till patient gets good contractions, maximum dose will be in primigravida 5 IU and in multigravida 2.5 IU.
- Women were admitted to labour room, monitoring done.
- The duration of per vaginum leaking was noted.
- Women examined for vital signs per abdominal and examined per vaginal.
- Intrapartum monitoring includes FHS, contractions per minute.Per vaginal examination for dilatation of cervix, effacement of cervix, station.
- We discontinued the process whenever any foetal or maternal complications
- observedand caesarean section was performed.

- If modified BISHOPS SCORE was < 5 or no uterine contractions was achieved 4 hrs after the last dose the misoprostol induction considered failed.
- If there is no active phase of labour within 12 hrs after starting oxytocin group induction was considered failed.
- If hyperstimulation of uterus was diagnosed oxytocin infusion immediately stopped.We started iv fluids and nasal oxygen supplementation. Patient was placedin left lateral position.
- If hyperstimulation not getting corrected and fetal heart did not improve. We did emergency caesarean section.

*Primary Study Outcome*

- Induction to delivery interval

*Secondary Outcome*

- Mode of delivery
- Abnormal uterine activity
  - ⇨ Tachysystole
  - ⇨ Uterine hypertonus
  - ⇨ Uterine hyperstimulation
- Adverse effects and complications:
  - ⇨ Nausea, vomiting
  - ⇨ Pyrexia (temp ≥ $38.5^0$ C)
  - ⇨ Meconium stained liquor
  - ⇨ PPH
- Secondary neonatal outcome:
  - ⇨ Apgar score at 1min and 5 mins
  - ⇨ Birth weight of neonate
  - ⇨ NICU admission
  - ⇨ Neonatal sepsis
  - ⇨ Neonatal morbidity

## Result

The study showed that mean induction delivery interval was 5.6 hrs in misoprostol given group whereas it was 7.2 hrs in oxytocin given group. Maximum patients were from 20 to 24 years age group in misoprostol administered group whereas oxytocin administered group had maximum patients in age group 25-29 years (Table 1).

In misoprostol administered group, 35 patients were primigravida and in oxytocin administered group, 30 patients were primigravida (Table 2). Maximum patients delivered at 6-9 hrs time interval in both groups. (23 patients in misoprostol group and 20 in oxytocin administered group) (Table 3). 78% patients delivered vaginally whereas 22% underwent caesarean section in misoprostol administered group while 70% and 30% patients delivered vaginally and caesarean section in oxytocin administered group (Table 4). Uterine hypertonus was more common with misoprostol administered group that is 22% as compared to 10% in oxytocin administered group. GI disturbances were second most common complications in misoprostol administered group. 5 patients had fever in misoprostol administered group whereas 1 patient had fever in oxytocin administered group (Table 5). Number of NICU admissions were more (10 in misoprostol administered group vs 6 in oxytocin administered group) because of more number of cases of fetal distress in misoprostol administered group as compared to oxytocin administered group (Table 6).

**Table 1:** Analysis of term PROM cases according to maternal age

| Maternal Age | Misoprostol Administerd Group (No of Cases) | Oxytocin Administerd Group (No Of Cases) |
|---|---|---|
| <20 YEARS | 4 | 3 |
| 20-24 YEARS | 22 | 20 |
| 25-29 YEARS | 20 | 24 |
| 30-35 YEARS | 3 | 2 |
| >35 YEARS | 1 | 1 |

**Table 2:** Analysis of term PROM cases according to obstetric score (parity)

| Parity | Misoprostol administerd group (no of cases) | Oxytocin administerd group (no of cases) |
|---|---|---|
| Primigravida | 35 | 30 |
| Multigravida | 15 | 20 |

**Table 3:** Analysis of term PROM according to induction to delivery time

| Induction to delivery time | Misoprostol administerd group (no of cases) | Oxytocin administerd group (no of cases) |
|---|---|---|
| < 4hrs | 6 | 2 |
| 4-6hrs | 18 | 8 |
| 6-9hrs | 23 | 20 |
| >9hrs | 3 | 20 |

**Table 4:** Analysis of term PROM according to mode of delivery

| Mode of delivery | Misoprostol administerd group (no of cases) | Oxytocin administerd group (no of cases) |
|---|---|---|
| Vaginal delivery | 39 | 35 |
| Cesarean section | 11 | 15 |

**Table 5:** Analysis of term PROM according to maternal complications

| Maternal complications | Misoprostol administerd group (no of cases) | Oxytocin administerd group (no of cases) |
|---|---|---|
| Gastrointestinal symptoms | 9 | 4 |
| Uterine hyppertonus | 11 | 5 |
| Atonic pph | 6 | 5 |
| Fever | 5 | 1 |
| Chills | 2 | 0 |

**Table 6:** Analysis of term PROM according to fetal complications

| | | Misoprostol administerd group (no of cases) | Oxytocin administerd Group (no of cases) |
|---|---|---|---|
| Apgar at 1 min | < 7 | 4 | 2 |
| | >7 | 46 | 48 |
| Apgar at 5 mins | < 7 | 2 | 1 |
| | > 7 | 48 | 49 |
| Nicu admissions | - | 10 | 6 |
| Sepsis | - | 1 | 2 |
| Meconium staining | - | 6 | 4 |

## Discussion

Well planned timing and method for induction of labour in cases of PROM improves outcome for both mother and neonate with avoidance of NICU admission and expenditure. The study showed that mean induction delivery interval was significantly lower (5.6 hrs) in misoprostol group as compared to(7.2 hrs) in oxytocin group. $p > 0.001$ ($p = 0.034$), hence the difference is significant. Women receiving misoprostol had more chances of delivering vaginally within 9 hrs which were 94% as compared to 60% in oxytocin group. 78% women in misoprostol group delivered vaginally compared to 70% in oxytocin group.22% women in misoprostol group underwent caesarean section compared to 30% in oxytocin group which were statistically not significant. Another study conducted by A Nigam et al also found similar results.

In their study, they found that induction-delivery interval was shorter with misoprostol 7.7 hrs against 14.3 hrs with oxytocin but rates of vaginal deliveries, caesarean section,neonatal outcome variables were similar. hence misoprostol is effective in induction of PROM at term.

## Conclusion

In our study, the time interval from induction to delivery was significantly shorter in misoprostol groupas compared to oxytocin group.Meconium stained liquor was seen more in women induced with misoprostol group than oxytocin group. Hence misoprostol is more effective for induction of labour.So we conclude that judicious use and proper selection of patient can definitely give good result with misoprostol induction in term PROM patients. Intravenous oxytocin is another effective option with better maternal and foetal outcome.

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