ORAL MISOPROSTOL FOR LABOUR INDUCTION OF PRIME PROBLEM RUPTURE OF MEMBRANE AT TERM

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ABSTRACT

Objective: The objective of the study was to determine efficacy of oral misoprostol for induction of labour in women with pre labour rupture of membranes at term and to monitor maternal and fetal complications.

Methodology: This is a Quasi experimental study conducted in the department of Obstetrics and Gynecology Unit A of Mardan Medical Complex Hospital, Mardan. Patients with pre labour rupture of membranes at term were given 50 µg of oral misoprostol after history, examination and fetal evaluation by reactive CTG. Maximum 6 doses at 4 hourly interval were given. Misoprostol dose stopped when contractions starts. Oxytocin augmentation was done if required at least 6 hours after misoprostol. Induction-delivery interval, need for oxytocin infusion, mode of delivery, failed induction, and maternal satisfaction were observed. Maternal complications nausea and vomiting, pyrexia, uterine hyper stimulation, postpartum hemorrhage, uterine rupture were assessed. Meconium staining of amniotic fluid, abnormal CTG tracing, low Apgar score at 5 minutes and still birth were observed measures to know about fetal complications.

Results: Mean induction-delivery interval were 14 hrs hours.40 patients 20% had caesarean section. Failed induction was noted in 2 (1%) cases. Oxytocin augmentation was required in 40(20%) cases. Maternal complications were nausea and vomiting in 30 cases (15%), pyrexia 20(10%) and hyper stimulation syndrome noted in 6 patients (3%). Fetal complications, meconium staining of amniotic fluid was present in 40 (20%) and abnormal CTG pattern in 28 (14%), while no baby had low Apgar score at 5 minutes and there was no still birth.

Conclusion: Oral misoprostol is safe and effective method of induction for induction of women with prelabour rupture of membranes at term. It is associated with good maternal and fetal out come.

Key Words: Pre labour rupture of membrane (PROM) Misoprostol, induction.

INTRODUCTION

Pre labour rupture of membranes (PROM) is defined as rupture of fetal membranes before onset of spontaneous uterine activity after 37 completed weeks of pregnancy. PROM occurs in approximately 8 percent of term pregnancies[1].

The pathophysiology of PROM is not well understood but probably includes a variety of mechanical, infective and constitutional mechanisms. The main risks of PROM include a history of PROM in previous pregnancy, genital tract infections, antepartum bleeding and smoking.[2]

Other less consistent associations might be cocaine abuse, intrauterine DES exposed women and nutritional deficiencies of ascorbic acid, copper, zinc, and iron[2]. The diagnosis can be made combination of history, sterile speculum examination and specialized testing. The predominant risk to the fetus after PROM is as ending infections. The maternal risks associated with premature rupture of membranes are uterine infection, via either chorioamnionitis or postpartum endometritis.[3] Management of PROM is still controversial and involves a balance between expectant management and intervention[4]. However a 2006 systematic review of 12 randomised or quasi randomised trials of women with term PROM shows that induction of labour with prostaglandins compared with expectant management reduces the risk of maternal sepsis and neonatal complications with out an increase in risk of caesarean sections or operative vaginal delivery[4]. Various agents are available for induction of labour, mainly prostaglandins and oxytocin. They are used in combination and according to Bishop score[5].

Prostaglandins are the agents to soften the unripe cervix independent of uterine activity. Dinoprostone is currently the only prostaglandin approved for labour induction at term but it is expensive and heat labile. An intense cold chain is to be maintained to achieve the desirable effects[6]. Owing to hot climate in Pakistan, storage problems significantly reduce its efficacy. Exclusive vaginal route also limits the use in PROM as the risk of sepsis increases as well as there is high risk of failed induction with this route Misoprostol has recently received attention for labour induction. Misoprostol is a synthetic E1 methyl analogue prostaglandin. It is cheap, stable at room temperature and effective in initiating

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uterine contractions. The ease of multiple routes of administration (oral, vaginal, sublingual and rectal) and rapid onset of action make it a better option for induction of lobour in PROM when used oraly[7].

A meta-analysis of misoprostol for induction of labour showed a shorter induction-delivery interval, a decrease in caesarean section rate for cervical dystocia and an increased rate of vaginal delivery within 24 hours. All these features make the oral misoprostol an effective and cheap alternative for labour induction specially in third world countries[8].

The advantage of oral misoprostol with particular reference to prelabour rupture of membranes is the avoidance of repeated vaginal examinations to minimize the risk of maternal and fetal sepsis and failed induction[9].

Misoprostol is not yet licensed for induction in reproductive health despite the extensive evidence of being cheap and effective compared with dinoprostone. There are no enough evidence of trails available about the safety of oral misoprostol for labour induction and more research is needed. The aim of this study was to determine the efficacy of oral misoprostol for induction of labour in women with premature rupture of membranes at term and to monitor maternal and fetal complications[10].

METHODOLOGY

The study was conducted in Gynae A unit of Mardan Medical Complex Hospital, Mardan. Pregnant patients with rupture of membranes admitted in labour ward during study period were included in study after informed consent. Inclusion criteria include pregnant women at term (≥ 37 weeks) with singleton pregnancy, cephalic presentation, rupture of membranes, reactive CTG (cardiotocography) trace, and Bishop score less than 4. Exclusion criteria included symptoms and signs suggestive of chorioamnionitis, prior uterine surgery (caesarean section, myomectomy), bad obstetrical history and contraindications to vaginal delivery like placenta previa and cephalopelvic disproportion. Detailed history particularly duration of rupture of membranes and obstetrical history were obtained. Genral physical examination performed to rule out clinical signs of chorioamnionitis. Abdominal examination for presentation, engagement of fetal head and fetal size were recorded. Sterile per speculum examination was performed to confirm the rupture of membrane. Vaginal examination under sterile condition was performed to assess the Bishop score. Routien investigations like blood group and Rh factor, random blood sugar level, urine R/E, blood CBC, HBsAg and HCV testing were performed. Fetus was assessed by CTG and biophysical profile. After all these selected patients were induced with 50 µg of oral misoprostol at 4 hourly interval. A maximum of six doses were given however misoprostol was stopped when labour was established. After establishment of uterine activity augmentation with oxytocin infusion was started at least 6 hrs after the last dose if required. Fetal monitoring was performed by observing change in the color of liquor, intermittent auscultation of fetal heart and CTG. Efficacy of misoprostol was observed by parameters like induction - delivery interval, need for oxytocin infusion, mode of delivery, failed induction and maternal satisfaction. Maternal complications like nausea and vomiting, pyrexia (>38˚C), uterine hyperstimulatio, postpartum hemorrhage and uterine rupture were recorded. Fetal complications like meconium staining abnormal CTG trace, low Apgar score at 5 minutes and still birth were also recorded.

RESULTS

Main out comes of patients are demonstrated in Table 1. Mean age of patients was 26 years and mean gestational age 39 weeks. Among 200 patients, 120 (60%) were nulliparous, 80 (40%) were multiparas. All these patients received 50 µg of oral misoprostol, maximum 6 doses 4 hours apart. Eighty (40%) required 1 dose of misoprostol, 80 (40%) 2 doses and 40 (20%) required 3 or more doses. Mean induction to delivery

Table 1: Main outcome measures

S. No.	Main outcome measures	Frequency	Percentage
1	Normal Veginal delivery	160	80%
2	Ceasarion	40	20%
3	Failed Induction	2	1%
4	Need of oxytocin	40	20%
5	Maternal satisfaction	160	80%

Table 2: Maternal complications

Maternal complication	Frequency	Percentage
Nausea & vomiting	30	15%
Pyrexia (>80°C)	20	10%
Uterine Hyperstimulation	6	3%
Postpartum Hemorrhage	0	0%
Uterine rupture	0	0%

Table 3: Fetal complications

Fetal complication	Frequency	Percentage
Meconium staining of amniotic fluid	40	20%
Abnormal CTG tracing	28	14%
Low apgar score at 5 minutes	0	0%
Still birth	0	0%

interval was 14 hours. Augmentation with oxytocin infusion was given in 40 (20 %). 75% patients were satisfied by their method of induction.

Regarding mode of delivery, 160 (80%) patients delivered vaginally and 40 (20%) underwent caesarean section. Indications for caesarean section were failed induction in 4 cases and fetal distress in 30 noted by meconium staining of liquor and abnormal CTG patterns .And secondary arrest in 6 pts. Hyperstimulation syndrome was noted in 6 (3%) cases. 18 subjects (9%) had intrapartum pyrexia (> 38˚C), while nausea and vomiting was noted in 28 (14%) patients (Table 2). No patient had postpartum hemorrhage or uterine rupture with oral misoprostol induction. Fetal / Neonatal outcome was good with no intrapartum still birth. Meconium staining of amniotic fluid was noted in 40(20%) patients. Abnormal CTG patterns during labour were recorded in 28 (14%) cases (Table 3). All babies were delivered with good Apgar score at 5 minutes. No neonate had features suggestive of meconium aspiration and no admission to NICU was recorded.

DISCUSSION

This study has been performed to determine the efficacy of oral misoprostol in patients with prelabour rupture of membranes at term. In this study active management of labour in PROM has been done using oral misoprostol for induction. Studies show that maternal and neonatal infectious morbidity is significantly reduced by induction of labour, compared with expectant management. A study conducted by Kropashsh and Haresh Doshi in 2012 also concluded that immediate labour induction in case of term PROM shortens delivery interval and maternal hospitalization stay with reduction in maternal and neonatal sepsis.[11]

Using oral misoprostol for labour induction in case of term PROM is also associated with reduction in maternal and neonatal complications associated with PROM. This is also proved by study of da Grace Krupa and Cecatti. They did induction with oral misoprostol in one group and expectant management in the other group. They concluded that immediate induction with oral misoprostol in case of term PROM shorten the latency peroid the total time between recruitment to delivery and time of maternal hospitalisation, increasing the occurrence of alteration of contractility with out any maternal and perinatal out come disadvantages. This is the same in our study however they used 50ug of oral misoprostol 6hourly but in our study we used it 4 houly.[12] A metanalysis by Lin MG and Nuthalapaty also showes oral misoprostol to be effective and safe agent for induction in PROM as in our syudy.[13] Mean induction to delivery interval was 14 hours in present study comparable to 11 hours in a comparative study conducted by Nagpal MB in Lady Hardinge hospital in New Delhi with oral misoprostol and prostaglandin E2. The study also showed similar results in terms of mode of delivery and feto maternal complications[14].

Oral misoprostol reduced the need for oxytocin in the management of women with ruptured membranes at term. In the current study, oxytocin augmentation was required in 20% cases, similar to study by Levy R where 37% inductions with misoprostol required such augmentation. Levy R also noted that misoprostol also reduces the need for oxytocin augmentation (28.1%) in cases of ruptured membranes at term[15]. In present study, 80% of patients delivered vaginally which is comparable to a study conducted in Liver pool, UK on oral /vaginal misoprostol by Bricker L. The study achieved successful vaginal delivery in 86% of patients in misoprostol group[15].

Results of present study revealed failed induction in 2% cases. However the study by Malik HZ and Khawaja NP in 2010 in Pakistan had no failed inductions may be because of the dose they used, which is 100ug[16]. But in our study we used low dose of 50ug so as to reduce complications. This variation in results may be due to the fact that there is no universally accepted definition of failed induction. In present study, those cases who had no changes in Bishop score despite 6 doses of misoprostol were considered to be of failed induction.

Hyperstimulation is an important concern with misoprostol induction. Uterine hyperstimulaton in our study was 6%. A cocrane review concluded that oral misoprostol is effective and safe when given in reduced dose of 25ug because the safety is primary concern. The evidence support oral regimen over vaginal. This is especially important in situations where the risk of ascending infection is high and lack of staff means that women cannot be intensly monitored.[17] As misoprostol was more potent as a uterine stimulant in various trials, it is difficult to be sure whether the difference is pharmacological or purely dose related. It is suggested that there is no benefit of higher doses of misoprostol but increased incidence of meconium stained liquor, fetal distress, hyperstimulation and uterine rupture.

The frequency of fetal complications including meconium staining of amniotic fluid,abnormal CTG and low Apgar scores were noted in almost 20% of patients that subsequently changed mode of delivery and maternal satisfaction rates as well. Owing to the fact that a relative high dose for induction was used as compare to other studies may explain this rise in rate of fetal complications[17]. Present study revealed no case of uterine rupture and postpartum haemorrhage which is in agreement to the results of a study conducted in Fatima Jinnah medical college[17].

In current study no case of low Apgar score at 5 minutes and no still birth was recorded. Similar observations were noted by Adeniji et al with no adverse fetal/ neonatal outcomes[18]. Present study suggests that results of induction with oral misoprostol are very good. Overall misoprostol appears to be more effective than conventional methods of cervical ripening and labour induction[18]. Uterine hyperstimulation with fetal

heart rate changes following misoprostol is a matter of concern. Monitoring during labour is important when using misoprostol for labour induction to detect uterine hyperstimulation and fetal distress and early intervention is required if such a condition arises in order to achieve a good maternal and fetal outcome.

Traditional prostaglandins are expensive and heat sensitive and syntocinone is less effective when cervix is unfavorable. Several studies have shown that induction to delivery interval is significantly shorter with misoprostol when compared to oxytocin although there is no significant difference between the two groups in the neonatal outcomes[18]. On the other hand prostaglandin E2 vaginal pessaries cost up to 1000/- rupees. A repeat insertion will costs upto 2000/- rupees. Its efficacy requires cold storage and it can only be used vaginally while a tablet of 200 µg of misoprostol costs approximately 65/- rupees. It can be broken to provide 50 µg aliquots. It is easily stored at room temperature and rapidly absorbed both orally and vaginally. Misoprostol can be used safely for labour induction with PROM at term and its cost makes it more attractive in our poor socio-economic strata.

CONCLUSION

Oral misoprostol is effective and potentially safe drug for labour induction in case of term PROM. Its use reduces maternal and fetal complications and hospital stay. Its also coast less and do not require special storage as in case of other prostaglandins.

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