VAGINAL MISOPROSTOL FOR INDUCTION OF LABOUR

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ABSTRACT

Objective: To determine the safety and efficacy of vaginal misoprostol for induction of labour at term by determining the optimal dose with respect to ease of administration and induction to delivery time interval.

Study Design:

Observational study.

Place and duration of study: Gynecology/Obstetrics department Hayatabad Medical Complex, Peshawar from May 2015- April 2016.

Methodology: Women with gestational age more than 36 weeks and cephalic presentation, with an indication for induction of labour were induced. Vaginal misoprostol 50-400 μgm was given and divided doses at 6 hours interval up to maximum of 3 doses. Fetomaternal outcome and induction to delivery time interval noted.

Result: In this one year study, 127 women were enrolled. The main indication for labor induction were post date pregnancy (37.79%) and PROM (22.83%). The majority (81,1%) of women went into labour but (13.6%) have failed induction. The majority (82.52%) of mother delivered vaginallyin the first 15 hours.The mean induction to delivery interval was 12 hours. Caesarean sections were performed on 24 (18.89%) women. All the babies were delivered with good Apgar score. Maternal hyper stimulation was noted in none of women.

Conclusion: Vaginal misoprostol was found safe easy and effective agent for labour induction.

Keywords: Misoprostol, Induction of labour

INTRODUCTION

Induction of labour is extensively used all over the world in cases in which continuation of pregnancy is hazardous to the mother and / or her fetus. In 2004 and 2005, one in every five deliveries in the United Kingdom was induced1. In industrialized countries, the induction rate ranges from 10 to 25%.[2]

Induction of labour can be achieved by a variety of physical and biochemical stimuli designed for this purpose. However, approximately 20% of the women having induction of labour end up in caesarean delivery.[3, 4]

There is plethora of techniques available for induction of labour, the commonest being oxytocin and prostaglandins. Oxytocin alone, especially in unfavorable cervix, frequently leads to induction failure and subsequent caesarean delivery.[5]

In this regard, synthetic prostaglandin has been used for labour induction since very long, the wide spread use of this drug is limited because of its high cost and thermal instability leading to difficulty in storage. Moreover oxytocin is still required in many cases after initial cervical ripening with prostaglandin E2 (PGE2).[6,7]

Misoprostol is a synthetic prostaglandin E1 – analogue marketed for use in the prevention and treatment of peptic ulcer disease caused by non-steriodal anti-inflammatory drugs.[8]

Misoprostol is now increasingly and successfully being used for labour induction through vaginal as well as oral routes.[7,9,10]

Misoprostol has several potential advantages; it is stable at room temperature, relatively inexpensive and can be given via several routes (Oral, vaginal, buccal).These properties make misoprostol an ideal agent for induction of labour. In order to avoid uterine hyper-stimulation, current suggestions are in favor of oral or vaginal misoprostol given in small, frequent doses, titrated according to uterine response.[11]

This study was conducted to determine the success rate and side effects of vaginal misoprostol for induction oflabour at term by determining the optimal dose with respect to ease of administration and induction to delivery time interval.

METHODOLOGY:

After approval from the hospital ethical committee, this study was conducted in the gynecology and obstetrics department of Hayatabad Medical Complex Peshawar, Pakistan from 01-05-2015 to 30-04-2016.A total sample size of 127 patients was taken and informed written consent was obtained. Fetal wellbeing was

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confirmed before the start of induction. Patient were admitted in labor ward via OPD or Casualty.

Inclusion criteria were gestational age more than 36 weeks and cephalic presentation. However, those with contra indication to vaginal delivery like malpresentation, placenta preavia, CPD, previous caesarean section or any other uterine scar were excluded from the study. Misoprostol dose monitored according to the period of gestation, parity, Bishop's score and also depended on the indication for induction.

Failure to establishlabour in 24 hours was taken as failed induction. Women with failed induction were either offered a choice of being delivered by caesarean section or having another trial of induction with misoprostol, following a rest period of 24 hours (provided fetal and maternal condition were stable). Fetal wellbeing was confirmed by cardiotocography and Bishop's score assessed prior to every dose of misoprostol tablet. Oxytocin was used according to the ward protocol for augmentation.

Neonatal outcome was assessed at 1 and 5 minutes APGAR score, need for intubation, positive pressure ventilation and NICU admission.

RESULTS:

Total of 127 women with different indication for induction of labour were enrolled for this study and indication for induction of labor is mentioned in the table-1.Post date pregnancyand PROM were the most common indication for induction.

Women were between the age of 18 to 40 years. Majority women i.e. 48.82% women were between 37 to 40 weeks gestation, 43.31% were greater than 40 weeks of gestation and 7.87% were less than 37 weeks gestation.

According to the parity, women were divided into primigravida, multigravida and grandmultigravida. 40.94% were primigravida, 37.80% were multigravida and 21.26% women were grandmultigravida.

The dose requirement for misoprostol were monitored according to the parity. Those who wereprimigravida, the starting dose was 100 μgm and for multigravida the starting dose was 50 μgm. Majority of the patients were given up to 200 μgm of misoprostol and only few mothers required up to 400 μgm. All this is shown table.

113 women went into labour and the remaining 14 patients had failed induction. Augmentation of labour with oxytocin was done in almost 50% of cases.

One hundred & three (n=103) mothers achieved successful vaginal delivery. Vacum vaginal delivery was performed on two (n=2) women and twenty four (n=24) underwent caesarean section. Fourteen (n=14) sections were done for failed induction. Rest of the caesarean sections were performed for other indication as shown in Table – 4.

Twenty four mothers underwent emergency caesarean section. The major indication was failure to progress and fetal distress.

Total 82.52% patients delivered in first 15 hour

Table-1:

Indication for induction	No of women	%age
Postdates pregnancy	48	37.79
Hydramnion	13	10.23
PROM	29	22.83
Preeclampsia	4	3.1
Eclampsia	2	1.57
Pregnancy induce hypertension	16	12.59
IUGR	2	1.57
Obst.cholestasis	1	0.78
Fetalanomalies	3	2.36
Pregnancy with diabetes	6	4.72
Twen	1	0.78
Rh incompatability	1	0.78
IUD	1	0.78

Table 2: Period of Gestation Total number of patients =127

Period of Gestation	No. of Women	%age
Less than 37 weeks	10	7.87
37 - 40 weeks	62	48.82
More than 40 weeks	55	43.31

Table 3: Parity Distribution Total number of patients =127

Period of Gestation	No. of Women	%age
Less than 37 weeks	10	7.87
37 - 40 weeks	62	48.82
More than 40 weeks	55	43.31

Table 3: Doses regimen Total number of patients =127

Total Dose (μgm)	No. of Women	%age
50	37	29.13
100	52	40.94
200	25	19.68
300	12	9.45
400	1	0.79

and 17.48% delivered in more than 15 hours. The mean induction to delivery interval was 10-12 hours. The induction to delivery interval as shown in the table.

All the babies delivered by caesarean or vaginal delivery had a good APGAR score at 1 & 5 minutes. None of them required intubation, positive pressure ventilation or NICU admission.

DISCUSSION:

Induction of labour is one of the most used and probably the most effective intervention in modern obstetrics. Globally, labour is induced in 20 – 30% of all deliveries for a variety of reasons among which post-term pregnancy, hypertensive disorders in pregnancy, intrauterine growth restriction and elective request are the most frequent.12,13,14

The aim of induction of labour is to end the pregnancy, as continuation of the pregnancy could jeopardize the condition of the mother or her baby or both.

In fact, in the US alone, the induction rate more than doubled from 9.5% to 22.8% from 1990 to 2012.15,16

Misoprostol, a derivative of PGE1 is being widely used in pregnant women for cervical ripening and induction of labour. Originally, misoprostol was prescribed for the treatment of gastric ulcers and is still not registered for obstetrical use and as such constitutes an off label prescription. In spite of that, misoprostol has been proven to be highly effective in termination of pregnancy in the first or second trimester and has been used effectively for cervical ripening and induction of labour at term.

There is increasing evidence that misoprostol, administered either vaginally or orally, is as effective as conventional method for induction of labour at term.17

In our study we used 100 μgm misoprostol for primigravida and 50 μgm for multigravida as starting dose. Then the doses were repeated every 6 hourly up to a maximum of 3 doses. Our study result showed that 37 patients delivered with 50 μgm while 52 patients delivered with 100 μgm and the rest 38 patients were delivered with more than 100 μgm misoprostol. Our result are quite comparable to the study conducted by HofmeyerGJ and et. Al 201018 and Kallue R19. The positive outcome of our study using entirely different dosage regimen suggest that more trials need to be conducted with different dosage regimen in different setting before final decision and consensus is made on it.

Our study showed that maximum number of patients delivered in 10 -15 hours of the start of active labour which is quite satisfying and comparable with similar reports from other parts of the country19 and this shorter induction to delivery interval is also similar to the reports of Chang.20

Several studies have reported reduction in caesarean section rate following misoprostol induction at term pregnancy.21

One of the clinical success of misoprostol administered vaginally includes a decrease in caesarean delivery rate, high incidence of vaginal delivery in 24 hours of initiation and a decreased need for oxytocin.18 Present study showed slightly higher rate of caesarean section i.e. 19%. This difference may be due to indication for induction as well as small sample size, as majority of the women were induced for post-dated pregnancy, PROM and medical disorder in pregnancy necessitating on urgent delivery via Caesarean section for failed induction.

Induction to delivery interval was shorter. The incidence of vaginal delivery after two doses were higher. 50% of patients did not require augmentation. This is similar to the study done by Oliver et al.22

The major concern among the misoprostol treated patients is the occurrence of hyper-stimulation.

Higher doses and shorter dosing interval are associated with the high incidence of side effects like hyper-stimulation and hyper systole. In this study, the incidence of hyper-stimulation was negligible which shows that hyper-stimulation is related to the dose and dosage interval and careful use of oxytocin for augmentation.

Misoprostol is believed to be a better option over traditional preparation for labour induction in developing countries.

CONCLUSION:

The use of misoprostol per vaginally is quite safe and effective for induction of labour. Though the outcome is very good, misoprostol should be used with caution and frequent fetal monitoring should be done. However a comparative study is required to confirm if misoprostol can be used as a safe and effective alternative to prostaglandin E2.

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