ORIGINAL ARTICLE

Determine the Outcome of Labour Induction and Compare the Results between Misoprostol and Oxytocin in Post-Date Pregnancy

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ABSTRACT

Aim: To examine the effectiveness and safety of misoprostol and oxytocin for labor induction in post-term pregnancy.
Study Design: Cross-sectional/observational
Place and duration of study: Department of Obstetrics and Gynecology, Niazi Medical & Dental College Sargodha from 1st April 2019 to 30th September 2019.
Methods: One hundred and six pregnant women having gestational age >38 weeks were included in this study. Patient's detailed medical history including age, sex, parity was recorded after taken informed consent. Patients were equally divided into two groups. Two doses of 50ug misoprostol orally at 6 hours and 5 units of oxytocin in 500ml RL at start 10 drops up to 60 drops till effective contraction occurs. Fetal and maternal outcomes were examined.
Results: There is no significant difference in both groups regarding time duration between induction to delivery, indication of C-section, mode of deliveries and Apgar score at 1 and 5 minutes.
Conclusion: The misoprostol and oxytocin for labor induction at post dated pregnancy are effective and safe.
Keywords: Labor induction, Misoprostol, Oxytocin, Maternal outcome

INTRODUCTION

Rates of induction of labor have increased dramatically in the United Sates to nearly 40% of pregnancies according to some studies[1-3]. Induction of labor increases the risk of cesarean delivery. Nulliparity, patient's race, having an "unripe" cervix at the time of the induction, greater maternal age, body mass index, fetal weight, and length of induction are all associated with "failed inductions" that lead to a cesarean birth[4-6]. Nearly 50% of inductions occur in women with an unfavorable cervix[7]. An "unripe" cervix, typically characterized by a Bishop score of ≤6, has been associated with an increase in the cesarean delivery rate by 2- to 3-fold[8].

Several cervical ripening techniques are thought to decrease the risk of a cesarean delivery. The most commonly used drugs for this purpose are prostaglandins[9]. Misoprostol is a synthetic analogue of prostaglandin E1 with a plasma half-life of <1 hour when given vaginally. There are multiple studies that have evaluated different doses and different routes of delivery[10,12]. The dose most commonly recommended is 25 or 50µg of misoprostol vaginally. However, there are few studies that address the repeat dosing and frequency of dosing of misoprostol. Although 3 hours might be the most appropriate interval based on the half-life, it is not known how well serum level correlates with clinical effect. Also, it is unknown whether repeat doses result in a cumulative effect or whether there is a latency period between the application of the drug and biochemical changes in the cervix. One study suggested a single dose is most effective if it is given 12 hours before oxytocin is initiated[13]. Repeat dosing may extend the latent phase of labor. A longer latent phase of labor is associated with an increased rate of cesarean delivery, chorioamnionitis, endometritis, and uterine atony[14]. The early addition of oxytocin may potentiate the action of prostaglandin and decrease the latency period. Prostaglandins have a close functional interaction with oxytocin. Oxytocin leads to the release of arachidonic acid and myometrial transcription of the cyclooxygenase-2 gene, which insures continuous prostaglandin production[15]. In addition, pretreatment with prostaglandins has been shown to increase the myometrial response to oxytocin significantly[16].

The recent study was conducted aimed to examine the outcome of two different medicines for induction of labor at post dated pregnant women. This study will be helpful for providing the better health care to the pregnant women.

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MATERIALS AND METHODS

This cross sectional/observational study was conducted at Department of Obstetrics and Gynecology, Niazi Medical & Dental College Sargodha from 1st April 2019 to 30th September 2019. A total of 106 pregnant women ages of 18 to 35 years with gestational age >38 weeks were included. Patients detailed medical history including age, sex, residence and parity was recorded after taken informed consent. Patients with multiple pregnancy, prelabor rupture of membrane, diabetic patients, patients with cardiac disease, abnormal cephalic presentation and patients with antepartum hemorrhage were excluded. Patients were equally divided into two groups. Each group contains 53 patients. Group A receive two doses 50ug of misoprostol orally at 6 hourly and Group B receive 5 units

of oxytocin in 500ml, RL at start 10 drops up to 60 drops till effective contraction occurs. Indication of induction of labor was recorded. Outcomes contains time duration from induction to delivery, mode of delivery, indication of lower segment C-section, fetal outcome and Apgar score was recorded. Maternal complications were also recorded. All the statistical data was analyzed by computer statistical software SPSS 20. P-value <0.05 was considered as significant.

RESULTS

Patients gestational age was >38 weeks. In Group A, 29 (54.72%) patients were ages <25 years and 24 (45.28%) had ages ≥25 years. In Group B, 31 (58.49%) patients were ages less than 25 years while 41.51% were ages ≥25 years. Indication of induction of labor was noted as post-term pregnancy in 42(79.25%) patients in Group A and 41(77.36%) in group B, gestational hypertension in 5(9.43%) patients in Group A and 4 (7.55%) in group B, Rh negative mother in 2(3.77%) patients in misoprostol group and 3(5.67%) in oxytocin group, oligohydromnios in 3(5.67%) patients in group A while 4(7.55%) in group B and foetal indication in 1(1.87%) patient in group A and 1(1.87%) in group B (Table 1).

Table 1: Age-wise distribution and indication of labor induction

Variable	Misoprostol	Oxytocin
Age (years)		
<25	29 (54.7%)	31 (58.5%)
>25	24 (45.3%)	22 (41.5%)
Indication of Labor Induction		
Post-term pregnancy	42 (79.3%)	41 (77.4)
Gestational hypertension	5 (9.43%)	4 (7.55%)
Rh negative mother	2 (3.77%)	33 (5.67%)
Oligohydromnios	3 (5.67%)	4 (7.55%)
Foetal indication	1 (1.87%)	1(1.87%)

P value >0.05 (Not significant)

Table 2: Time duration from induction to delivery, mode of delivery and indication to LSCS

Variables	Misoprostol	Oxytocin
Time Intervals (hours)		
<12	15 (28.30%)	20 (37.74%)
12-24	23 (43.40%)	21 (39.62%)
>24	15 (28.30%)	12 (22.64%)
Delivery mode		
Normal	39 (7349%)	38 (71.70%)
C-section	14 (26.42%)	15 (28.30%)
Indication Of LSCS		
Fetal Distress	10 (18.87%)	9 (16.98%)
Failed Induction	3 (5.66%)	3 (5.66%)
Labor nonprogress	1 (1.89%)	2 (3.77%)
Other	-	1 (1.89%)

P-value >0.05 (Not significant)

As per time duration between induction to delivery we found that 15 (28.30%) patients delivered in less than 12 hours in Group A (misoprostol) while 20(37.74%) in Group B (oxytocin), 23(43.40%) patients in Group A and 21 (39.62%) in Group B were delivered in 12 to 24 hours and in above 24 hours 15(28.30%) in Group A while 12 (22.64%) in Group B were delivered. After induction 39(73.58%) patients in Group A and 38(71.70%) in Group B had vaginal delivery, 14(26.42%), 15 (28.30%) patients in Group A and B had C-section delivery mode. Indication of lower segment C-section was noted as fetal distress, failed induction, labor non-progress and other indication in 10 (18.87%) patients, 3 (5.66%), 1(1.89%) and 0 in Group A while in Group B there were 9, 3, 2 and 1 patient respectively (Table 2).

According to the fetal outcome and Apgar score we found Apgar score less than 6 at 1 minute 7 (13.21%) and 9 (16.98%) patients in Group A and Group B respectively. Apgar score <7 at 5 minutes we found 2(3.77%) and 4(7.55%) patients in Group A and B. 5(9.43%) patients were admitted to NICU in Group A while 6(11.32%) in Group B (Table 3). We found complications such as nausea, vomiting, headache and fever in 12(22.64%) in Group A while 18.87% in Group B.

Table 3: Apgar score and fetal outcome

Characteristics	Misoprostol	Oxytocin
Apgar Score at 1 min		
<6	7 (13.21%)	9 (16.98%)
>6	46 (86.79%)	44 (83.02%)
Apgar score at 5 min		
<7	2 (3.77%)	4 (7.55%)
>7	51 (96.23%)	59 (92.45%)
NICU admission		
Yes	5 (9.43%)	6 (11.32%)
No	48 (90.57%)	47 (88.68%)

P-value >0.05

DISCUSSION

Post-term pregnancies resulted more complications for the mother and baby. In the present study, we included 106 patients of primigravida with cephalic presentation and their gestational ages were > 38 weeks. Most of the agent who received misoprostol and oxytocin were ages <25 years 54.7% and 58.7% patients. Many of other studies shows similarity to our results regarding age, in these studies majority of patients were ages 15 to 30 years[16,17].

In this study, we found that indication of induction of labor such as Post-term pregnancy, RH –ve mother, oligohydromnios and foetal indications. From all of these indications of induction of labor the post-term pregnancy was the most common indication found in 79.25% in misoprostol group (Group A) and 77.36% in oxytocin treated patient. These results shows similarity to some other studies in which post-term pregnancy was the most frequent cause of induction of labor[18,19].

In present study, as per time duration between induction to delivery we found that 15(28.30%) patients delivered in less than 12 hours in Group A (misoprostol) while 20(37.74%) in Group B (oxytocin), 23(43.40%) patients in Group A and 21(39.62%) in Group B were delivered in 12 to 24 hours and in above 24 hours 15 (28.30%) in Group A while 12(22.64%) in Group B were delivered. From all these results according to the time duration most of the patients were delivered within 24 hours after induction. Many of some other studies illustrated the same results in which 55 to 75% of cases delivered within 24 hours[20,21].

In our study we found no significant difference regarding mode of delivery as our findings shows 39

(73.58%) patients in Group A and 38(71.70%) in Group B had vaginal delivery, 14(26.42%), 15(28.30%) patients in Group A and B had C-section delivery mode. Some other studies shows the similarity to our study in which no significant difference was observed regarding mode of delivery p-value >0.05[22]. In our study we found that the fetal distress was the most common indication of lower segment C-section delivery. According to the fetal outcome and Apgar score we found Apgar score less than 6 at 1 minute 7 (13.21%) and 9 (16.98%) patients in Group A and Group B respectively. Apgar score <7 at 5 minutes we found 2(3.77%) and 4(7.55%) patients in Group A and B. 5(9.43%) patients were admitted to NICU in Group A while 6(11.32%) in Group B. We found no significant difference regarding fetal outcomes and Apgar Score P-value >0.05. Many of other studies demonstrated the same findings[23,24]. We found complications such as nausea, vomiting, headache and fever in 12(22.64%) in Group A while 18.87% in Group B. A study conducted by Malati et al[25] regarding efficacy of misoprostol and oxytocin for induction of labor shows 15% and 5% complications.

CONCLUSION

Post-dated pregnancy is the main cause of induction of labor and it affected mother and baby health. From this study, we concluded that misoprostol oral and oxytocin IV was ver effective and safe treatment method of induction of labor in post-term pregnant women. There was no significant difference regarding mode of delivery, fetal and maternal outcomes.

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