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# "An Assessment of Induction of Labour with Misoprostol Per-vaginaly in Postdated Pregnancies"

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***Abstract***
***Introduction:*** *Induction of labour is the artificial initiation of labour before its spontaneous onset for the purpose of delivery of the foetoplacental unit using mechanical or pharmacologic methods. Considering maternal complications, it is preferred to induce labour after 40 weeks. In Bangladesh very few studies have been conducted on this issue.*
***Aim of the study:****The aim of this study was to assess the effectiveness of 25 micrograms of vaginal misoprostol for induction of labour in postdated pregnancies and to reduce the rate of Caesarean section in postdated pregnancies*
***Methods:****This was a prospective observational study which was conducted in theChowgasaUpazilla Health Complex of Jashore district of Bangladesh during the period from May 2019 to December 2019. In total 150women with uncomplicated postdated pregnancy who were admitted to labour ward of the mentioned health complex were selected as the study population. For each of the participants 25 µg of vaginal misoprostol was used for inducing labour. Gestational age, parity, Induction starting time with misoprostol, initiation of uterine contractions, induction delivery interval, caesarean section and vaginal delivery rate and other variables including tachysystole, improvement in Bishop score, foetal outcome were recorded on the checklist.*
***Result:****In this study, we found in the highest 94(62.67%) cases the gestational age was 40-41 weeks and in 56(37.33%) cases gestational age was 41-42 weeks. In analyzing the gravidity of the participants we found 22(14.67%) participants were with primi-gravida whereas 128(85.33%) participants were with multi-gravida. In this study, for the highest 100(66.67%) % cases single induction dosage were required whereas 2 dosage were required for 50(33.33%) participants. In this study the induction had been failed on 31(20.67%) and had been successful on 119(79.33%) cases. On 119(79.33%) cases normal delivery were performed whereas on 31(20.67%) cases LSCS were performed.Although we had the arrangements of Forceps/Vacuum procedure also but that wasn't in needed for any participants in this study. In this study among all the participants in only 2.67% cases (n=4) uterine tachysystole was found as the complication whereas no complication 146(97.33%). In Apgar score analysis of this study population we found the Apgar score at 1 min < 7 in 17(11.33%) cases and ≥7 in 133(88.67%) we also found of this study population we found the Apgar score at min < 7 in 7(4.67%) cases and ≥7 in 143(95.33%) .*
***Conclusion****: In this study the induction had been failed on 31(20.67%) and had been successful on 119(79.33%) cases. So the success rate of induction of labour with misoprostol per-vaginaly was satisfactory. These findings may be helpful for further studies and in the treatment arena.*
***Key words:****Induction of labour, Postdated, Misoprostol.*

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## I. Introduction

Induction of labour is the artificial initiation of labour before its spontaneous onset for the purpose of delivery of the foetoplacental unit using mechanical or pharmacologic methods. Normally, spontaneous onset of labourpains and vaginal delivery occurs between 37 and 42 weeks of pregnancy and the time of delivery iscalculated from the first day of the last menstrual period. Post-term pregnancy extends to more than 42 weeks and its prevalence is 3-12%[1].As the days go beyond the expected day of delivery, especially after 41 weeks, maternal and foetalmorbidity and mortality increase significantly[2].Maternal complications include increased rates of caesarean sections, trauma due to foetalmacrosomia, postpartum haemorrhage, and foetal complications include shoulder dystocia, oligohydramniosandmeconium aspiration.[1]to avoid these complications it is preferred to induce labour after 41 weeks. Induction of labour is an artificial initiation of labour before its spontaneous onsetforthe purpose of delivery of the foetoplacental unit using mechanical or pharmacologic methods.[3]The success of

labour induction depends on the cervical status at the time of induction. It is generally predicted that, the patients with a poor Bishop's score<3 have unacceptably higher rates of failure of induction.[4] Misoprostol is conveniently administered through the oral, sublingual, buccal, vaginal and rectal routes. It is inexpensive, easily stored at room temperature and has few systemic side effects.[5] Misoprostol may cause few side effects such as nausea, vomiting, diarrhea, fever and abdominal pain. In addition, unlike other prostaglandins, misoprostol has a selective effect on the uterus and cervix and has no effect on the bronchi and blood vessels.[6,7] Maximum plasma concentration of orally administered misoprostol is produced faster than vaginal method, so that in oral method, peak plasma concentration, occurs within 30 minutes and in the vaginal method, it takes about an hour.[8,9] But the concentration of the drug in plasma stays longer when administered vaginally, so that oral misoprostol is cleared after 2-3 hours, but vaginal misoprostol takes more than 4 hours for clearance.[6]

Oral administration of Misoprostol isnot only easier, but mother satisfaction is higher and it can be used outside the hospital.[2]Considering all these factors, this study was conducted to compare the effect of oral misoprostol with vaginal misoprostol for induction of labourin postdated pregnancies. The aim of this study was to assess the effectiveness of 25 micrograms of vaginal misoprostol for induction of labour in postdated pregnancies. Al the tasks were of this study was performed according to the aim of this study.

## II. Objectives

**a) General objective:**

- To assess the effectiveness of 25 micrograms of vaginal misoprostol for induction of labour in postdated pregnancies.

**b) Specific objectives:**

- To find out the number of doses required for induction of misoprostol.
- To reduce the rate of Caesarean section and postdated pregnancies.

## III. Methodology & Materials

This was a prospective observational study which was conducted in the ChowgasaUpazilla Health Complex of Jashore district of Bangladesh during the period from May 2019 to December 2019. In total 150 women with uncomplicated postdated pregnancy who were admitted to labour ward of the mentioned health complex were selected as the study population. For each of the participants 25 μg of vaginal misoprostol was used for inducing labour. Gestational age, parity, Induction starting time with misoprostol, initiation of uterine contractions, induction delivery interval, caesarean section and vaginal delivery rate and other variables including tachysystole, improvement in Bishop score, foetal outcome were recorded on the checklist.According to the inclusion criteria cases with gestational age more than or equal to 40 weeks (based on first trimester sonography and last menstrual period with regular menstrual cycles), single foetus, vertex presentation, Bishop score less than 4 and height more than 150 cm were included in this study. On the other hand, according to the exclusion criteria, cases with contraindications to misoprostol, placenta praevia, history of previous caesarean section or any uterine surgery, cephalopelvic disproportion, a Bishop score of 4 and above, abnormal vaginal bleeding and oligohydramnios, IUGR, pre eclampsia, or any other medical conditions were excluded from the study.Gestational age was determined based on first trimester sonography. Bishop score is determined thorough pelvic examination by Obstetrics and Gynaecology residents. Initial tests, including blood group, RH and CBC were requested. In order to ensure the foetal status non-stress test (NST) is carried out.Medications were repeated every 4 hours for 4 doses based on the patients' condition. Vaginal examination to determine Bishop score was done before repeating each dose. Maternal vital signs and FHR was recorded every 4 hours. Labour augmentation was done with amniotomy once cervix is 3 cm and more dilated. Progress of labour was monitored with a partogram from 4 cm of cervical dilatation to delivery. Augmentation with oxytocin is done if uterine action is not adequate. If the woman did not enter active phase of labour i.e., cervical dilatation <4 cm and cervical effacement of <80% even after 24 hours of induction of labour, it was considered as failed induction and pregnancy was terminated by caesarean section. Gestational age, parity, Induction starting time with misoprostol, initiation of uterine contractions, induction delivery interval, caesarean section and vaginal delivery rate and other variables including tachysystole, improvement in Bishop score, foetal outcome were recorded on the checklist.

## IV. Result

In this study, we found in the highest 94(62.67%) cases the gestational age was40-41 weeks and in 56(37.33%) casesgestational age was 41-42 weeks. In analyzing the gravidity of the participants we found 22(14.67%) participants were with primi-gravida whereas 128(85.33%) participants were with multi-gravida. In this study, for the highest 100(66.67%)cases single induction dosage were required whereas 2 dosage were required for 50(33.33%) participants. In this study the induction had been failed on 31(20.67%) and had been

successful on 119(79.33%) cases. On 119(79.33%) cases normal delivery were performed whereas on 31(20.67%) cases LSCS were performed.Although we had the arrangements of Forceps/Vacuum procedure also but that wasn't in needed for any participants in this study. In this study among all the participants in only 2.67% cases (n=4) uterine tachysystole was found as the complication whereas no complication 146(97.33%). In Apgar score analysis of this study population we found the Apgar score at 1 min< 7 in 17(11.33%) cases and ≥7 in 133(88.67%) we also found of this study population we found the Apgar score at min < 7 in 7(4.67%) cases and ≥7 in 143(95.33%) . In this study the mean Apgar score at 1 minute was found 7.51±1.023 and at 5 minutes it was 8.68±0.814.

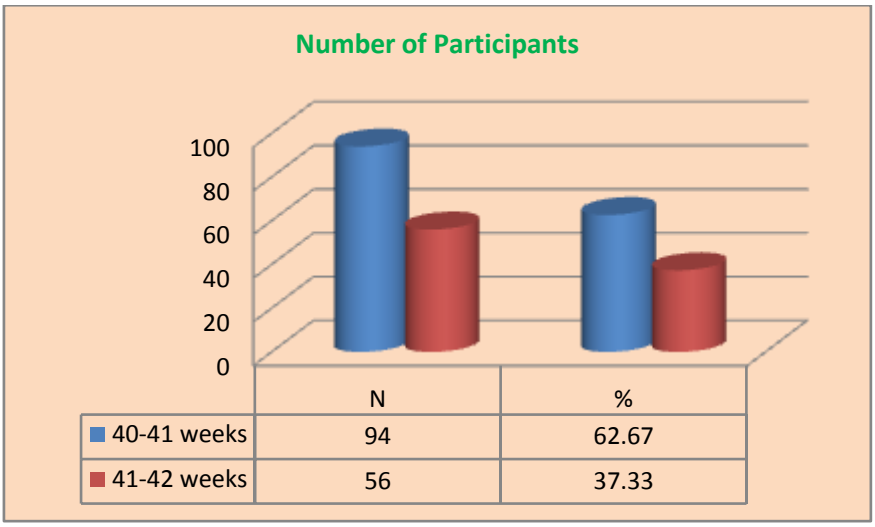


**Figure I:** Distribution according to the gestational age (N=150)

**Table II:** Distribution of cases according to Gravida (N=150)

| Gravida | n | % |
|---|---|---|
| **Primi-gravida** | 22 | 14.67 |
| **Multi-gravida** | 128 | 85.33 |

**Table III:** Distribution of cases according to the Number of doses required for induction (N=150)

| Dosage number | n | % |
|---|---|---|
| **1** | 100 | 66.67 |
| **2** | 50 | 33.33 |

**Table IV:** Distribution of cases according to failed Induction (N=150)

| Failed Induction | n | % |
|---|---|---|
| **Yes** | 31 | 20.67 |
| **No** | 119 | 79.33 |

**Table V:** Distribution of cases according to mode Of delivery (N=150)

| Delivery Mode | n | % |
|---|---|---|
| **Normal** | 119 | 79.33 |
| **Forceps/Vacuum** | 0 | 0.00 |
| **LSCS** | 31 | 20.67 |

**Table VI:** Distribution of cases according to maternal

Complications (N=150)

| Complications | n | % |
|---|---|---|
| **Uterine Tachysystole** | 4 | 2.67 |
| **Nil** | 146 | 97.33 |
| **Total** | 150 | 100 |

**Table VII:** Distribution of cases according to Apgar score at 1 and 5 minutes (N=150)

| APGAR Score | n | % |
|---|---|---|
| **At 1 min.** | | |
| **< 7** | 17 | 11.33 |
| **≥7** | 133 | 88.67 |
| **Total** | 150 | 100 |
| **At 5 min.** | | |
| **< 7** | 7 | 4.67 |
| **≥7** | 143 | 95.33 |
| **Total** | 150 | 100 |

## V. Discussion

The aim of this study was to assess the effectiveness of 25 micrograms of vaginal misoprostol for induction of labour in postdated pregnancies. In this current study, for the highest 100(66.67%) % cases single induction dosage were required whereas 2 dosage were required for 50(33.33%) participants. In a similar study conducted by[10]HafizurRahman, (2013) the mean number of doses of misoprostol required orally and vaginally for induction of labour was the same i.e. in the oral group was 2.33 ± 1.18 and in the vaginal group was 2.42 ± 1.28 with P=0.59.Another study by[11]KambhampatiKomala(2013) also found that there was no significant difference in the mean number of doses of misoprostol required orally and vaginally with P=0.11.In the present study, it was found that, 80.05% of cases required augmentation with oxytocin. This finding was consistent with the study by[12] Shi- Yann Cheng which showed, only 10.9% (11 of 101) of patients in the titrated oral misoprostol group needed oxytocin augmentation, which was a far lower percentage than the 53.8% (57 of 106) in the vaginal misoprostol group (RR 0.11, 95% CI 0.05– 0.22). In the study conducted by[10]HafizurRahman et al (2013), 30 out of 110 cases (27.27%) in the oral misoprostol group required augmentation with oxytocin and 26 out of 110 cases (23.64%) in the vaginal group required oxytocin augmentation for labour with P=0.64 which is not statistically significant.The mean induction to delivery interval in the present study was found to be 22.49 ± 5.026. In another study by[13] Khadija Bano et al, mean induction delivery interval was similar in both groups; vaginal (9.09 ± 3.4 hours) and oral (9.81± 4.43 hours p=0.33).In this study, number of cases who did not progress to active labour after 24 hours of induction was considered as failed induction. In this study the induction had been failed on 31(20.67%) and had been successful on 119(79.33%) cases. This finding was consistent with the study by HafizurRahman (2013) where 19 out of 110 cases (17.2%) in oral group and 22 out 110 cases (20%) in vaginal group were declared as failed induction with P= 0.73. In the study by KambhampatiKomala (2013), failed induction rate was more in vaginal group, which had a 6% rate as compared to oral group, which had a rate of 2%.Patients who had normal delivery were 119(79.33%) in this current study. This finding was consistent with a similar study by HafizurRahman (2013) who found no significant difference in the number of vaginal, instrumental and caesarean delivery rates between oral and vaginal misoprostol groups. In the study by KambhampatiKomala(2013), caesarean rate in oral group was 6% and in vaginal group it was 14%. Major indication for operative delivery rates in both the groups was non-reassuring CTG. The incidence of instrumental delivery was same in both the groups. In our study, only four cases developed tachysystolewhich was 4(2.67%) among all the participants. Other common adverse effects of misoprostol like nausea, vomiting, watery diarrhoea, fever were not encountered in the present study.In the study by KambhampatiKomala(2013), the rate of hyperstimulation in vaginal group was only 1%, where caesarean section was done immediately and it was nil in oral groups. Gastrointestinal side effects were reported more in oral group and incidence of hyperpyrexia was also more in oral group in this study. In Apgar score analysis of this study population we found the Apgar score at 1 min < 7 in 17(11.33%) cases and **≥7** in 133(88.67%) we also found of this study population we found the Apgar score at min < 7 in 7(4.67%) cases and **≥7** in 143(95.33%) . In this study the

mean Apgar score at 1 minute was found 7.51±1.023 and at 5 minutes it was 8.68±0.814.In the study by HafizurRahman, (2013) 8 out of 110 in oral group and 15 out of 110 in vaginal group had APGAR score less than 7 at 5 minutes indicating no significant difference between the two groups with respect to this outcome with P- value 0.19. In the study by KambhampatiKomala et al (2013), 24 cases out of 74 in vaginal group and 14 cases out of 86 in oral groups had low 5-minute APGAR scores of 6-8 with overall good neonatal outcome in both the groups.

**Limitations of the study**

This was a single centered study with a small sized sample. So the findings of this study may not reflect the exact scenario of the whole country.

## VI. Conclusion and recommendations

In this study the induction had been failed on 31(20.67%) and had been successful on 119(79.33%) cases. So the success rate of inductionoflabour with misoprostol per-vaginaly was satisfactory. These findings may be helpful for further studies and in the treatment arena. But for more specific findings we would like to recommend for conducting more studies with larger sized sample.

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