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FREQUENCY OF SUCCESSFUL VAGINAL DELIVERY AFTER INDUCTION WITH VAGINAL MISOPROSTOL IN POSTDATED PREGNANCY

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ABSTRACT

OBJECTIVE: This research aims to provide valuable insights into the efficacy of misoprostol induction in achieving vaginal delivery in post-dated pregnancies. Through a comprehensive assessment of these factors, the study seeks to contribute to the understanding of optimal induction strategies for improved birth outcomes in this specific population. **MateriAL AND METHODS:** The study was conducted at the Department of Obstetrics and Gynaecology, Hayatabad Medical Complex, Peshawar, Pakistan, over a period of six months, from September 2020 to March 2021. Total 117 pregnant individuals aged 18 to 40 years, with postdated pregnancies (gestational age ≥ 42 weeks), were enrolled in the study. Participants meeting the inclusion criteria received an intervention involving the administration of vaginal misoprostol for labor induction. Specifically, a dose of 50 µg misoprostol was administered vaginally and placed in the posterior fornix of the vagina. **RESULTS:** Total 117 patients were included. Age range of patients was 18-40 years with a mean age of 29.1±1.86 years. Mean gestational age was 42.2±0.41 weeks, parity 1.57±1.20 and number of doses 2.564±0.49 as shown in Table-1. Age group was analyzed as 86(73.5%) patients belongs to age group of 18-30 years while 31(26.5%) belongs to age group <30 years. Total 61(70.9%) & 23(74.2%) successful vaginal deliveries was performed in both 18-30 years & < 30 years age groups respectively. Conclusion: In the context of post-dated pregnancies, this study sheds light on the frequency of successful vaginal delivery following induction with vaginal misoprostol. The findings underscore the potential effectiveness of misoprostol induction, with a notable success rate of 72%.

KEYWORDS: Pregnancy, Misoprostol, Successful vaginal delivery

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INTRODUCTION

Postdated pregnancies are associated with an increased risk of adverse maternal and fetal outcomes.[1] Maternal complications include an elevated incidence of preeclampsia, gestational diabetes, and postpartum hemorrhage, which can be attributed to the placental dysfunction that occurs as the pregnancy advances beyond term. Furthermore, prolonged pregnancies are linked to a higher likelihood of fetal macrosomia, birth injuries, and stillbirths, underscoring the necessity for timely intervention to mitigate these potential risks.[2,3] Induction of labor has emerged as a key strategy to manage postdated pregnancies and reduce the risks associated with prolonged gestation. By artificially initiating uterine contractions and cervical dilation, induction of labor aims to expedite the onset of

labor and decrease the likelihood of complications.[4] Among the various methods available for labor induction, prostaglandins have gained significant attention due to their role in cervical ripening and uterine contractility.[5] Misoprostol, a synthetic prostaglandin E1 analog, has become a cornerstone in the armamentarium of obstetricians for its potent uterotonic properties. Administered via the vaginal route, misoprostol has demonstrated efficacy in cervical ripening, uterine contractions, and labor initiation.[6,7] This versatile agent has proven its worth in various clinical scenarios, including postdated pregnancies, with the potential to significantly impact the approach to labor induction and ultimately contribute to improved maternal and neonatal outcomes. However, while the effectiveness of misoprostol in labor induction is well-documented, its application in the context of postdated pregnancies merits focused investigation.[8] In light of the existing gaps in knowledge, this study aims to comprehensively evaluate the frequency of successful vaginal deliveries achieved following the induction of labor using vaginal misoprostol in postdated pregnancies. By contributing to the growing body of evidence on effective induction methods in the context of prolonged gestation, this study endeavors to inform clinical practice and guide obstetricians in making informed decisions that optimize maternal and neonatal outcomes.

MATERIAL AND METHODS

This study employed a retrospective design to investigate the frequency of successful vaginal deliveries following the induction of labor using vaginal misoprostol in postdated pregnancies. The study was conducted at the Department of Obstetrics and Gynaecology, Hayatabad Medical Complex, Peshawar, Pakistan, over a period of six months, from September 2020 to March 2021. Total 117 pregnant individuals aged 18 to 40 years, with postdated pregnancies (gestational age ≥ 42 weeks), were enrolled in the study. Participants meeting the inclusion criteria received an intervention involving the administration of vaginal misoprostol for labor induction. Specifically, a dose of 50 µg misoprostol was administered vaginally and placed in the posterior fornix of the vagina. The response to this initial dose was monitored closely. Subsequent dosing was guided by the clinical response. If uterine contractions did not commence, a maximum of three doses of misoprostol, each at 50 µg, was administered at intervals of 6 hours. Vaginal examinations were performed every 6 hours to assess cervical changes and uterine activity. If spontaneous and frequent contractions, lasting at least 40-50 seconds every 3 minutes, were observed, the administration of misoprostol was not continued, and the occurrence of vaginal delivery was documented as per the operational definition.If active labor did not commence within 24 hours after receiving the maximum three doses of misoprostol, the induction was deemed unsuccessful. In such cases, oxytocin infusion was initiated to stimulate labor. If, after four hours of oxytocin administration, no cervical changes were observed despite adequate uterine contractions, or if there was inadequate cervical change in the presence of maximal oxytocin infusion, a Caesarean section was performed due to failure of labor progress. A specially designed proforma was employed to collect relevant data. Information recorded included participant demographics (age), gestational age at presentation, parity, cervical Bishop score, details of misoprostol administration (including doses and intervals), onset of uterine contractions, mode of delivery (vaginal or Caesarean section), and neonatal outcomes. Statistical analysis was carried out using SPSS 23.0. P value of ≤0.05 was considered statistically significant.

RESULTS

Total 117 patients were included. Age range of patients was 18-40 years with a mean age of 29.1±1.86 years. Mean gestational age was 42.2±0.41 weeks, parity 1.57±1.20 and number of doses 2.564±0.49 as shown in Table-1. Age group was analyzed as 86(73.5%) patients belongs to age group of 18-30 years while 31(26.5%) belongs to age group <30 years. Total 61(70.9%) & 23(74.2%) successful vaginal deliveries was performed in both 18-30 years & < 30 years age groups respectively. Total 92(78.6%) patients had gestational age of ≤42 weeks and 25(21.4%) had >42 weeks of gestational age. Successful vaginal delivery was noted in 67(72.8%) cases of ≤42 weeks gestational age and in 17(68%) of > 42 weeks of gestational age. According to parity distribution 84(71.8%) had parity of 0-2 while 33(28.2%) had parity of >2. Success rate of vaginal birth was observed in 62(73.8%) cases who had 0-2 parity and in 22(66.7%) cases with parity of >2. In 51(43.6%) cases 1-2 doses of misoprostol was given while more than 2 doses of misoprostol was noted in 66(56.4%) cases. According to

number of doses, success rate of vaginal birth was noted in all 51(100%) cases whom received 1-2 doses, while 33(50%) success rate was observed in patients who received >2 doses. Table-2 Successful vaginal delivery was observed in 84(71.8%) patients. Figure-1

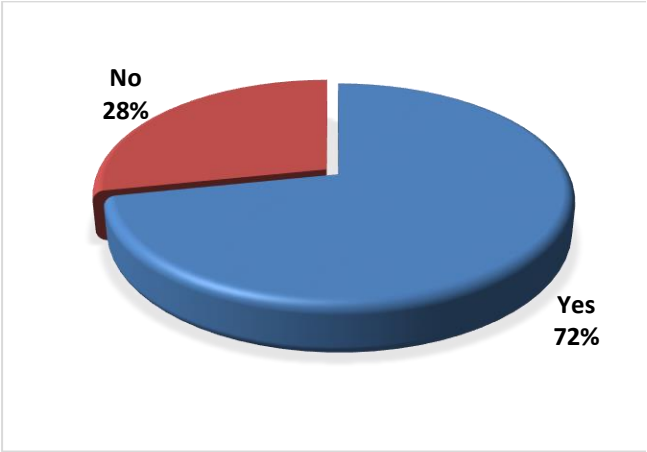
Table- I: Mean ± SD of patients demographic & other characteristics

Demographics	Mean±SD
Age (years)	29.196±1.86
Gestational age (weeks)	42.213±0.41
Parity	1.572±1.20
Number of doses	2.564±0.49

Table-2: Stratification of successful vaginal delivery with respect to age, gestational age, parity and number of doses.

	Successful	Failed	P-value
Age group			
18-30 years	61(70.9%)	25(29.1%)	0.729
>30 years	23(74.2%)	8(25.8%)	
Gestational age			
42 weeks	67(72.8%)	25(27.2%)	0.634
>42 weeks	17(68%)	8(32%)	
Parity			
0-2 parity	62(73.8%)	22(26.2%)	0.440
>2 parity	22(66.7%)	11(33.3%)	
Number of doses			
1-2 doses	51(100%)	0(0%)	0.000
>2 doses	33(50%)	33(50%)	

Figure-1: Frequency of successful vaginal delivery



DISCUSSION

The present study aimed to assess the frequency of successful vaginal delivery after induction with vaginal misoprostol in post-dated pregnancies. The findings reveal several important aspects related to the success rates of vaginal delivery based on various demographic and clinical parameters. The mean maternal age of the participants in this study was 29.1 years, reflecting a relatively mature maternal population. Maternal age has been recognized as a factor that can influence pregnancy outcomes, with advanced maternal age sometimes associated with increased risks of complications.[9,10] However, in this study, no significant correlation was observed between maternal age and the success of vaginal delivery. The success rate of vaginal delivery was similar between the age groups of 18-30 years and >30 years, with rates of 70.9% and 74.2%, respectively. This suggests that maternal age might not play a substantial role in the success of vaginal delivery after misoprostol induction.[11] Gestational age is a critical factor affecting the likelihood of successful vaginal delivery.[12,13] It is noteworthy that a significant proportion of participants (21.4%) had gestational ages exceeding 42 weeks. Despite this, the success rate of vaginal delivery was encouragingly high in both groups: 72.8% for gestational ages ≤42 weeks and 68% for gestational ages >42 weeks. These results underscore the potential effectiveness of misoprostol induction in achieving vaginal delivery, even in cases of prolonged pregnancy. Parity, defined as the number of previous deliveries a woman has had, is another vital determinant of birth outcomes.[14] In the present study, participants with parity 0-2 exhibited a success rate of vaginal delivery of 73.8%, while those with parity >2 had a slightly lower success rate of 66.7%. Although the difference in success rates based on parity was not statistically significant, the trend indicates that women with lower parity might have a slightly higher likelihood of successful vaginal delivery following misoprostol induction. The number of misoprostol doses administered was also explored as a potential factor influencing the success of vaginal delivery.[15,16] Intriguingly, in this study all participants who received 1-2 doses

of misoprostol achieved successful vaginal deliveries. In contrast, the success rate decreased to 50% for those who received more than 2 doses. This discrepancy highlights the importance of optimizing the dosing regimen to enhance the efficacy of misoprostol induction. The observed correlation between dosing and successful vaginal delivery supports the notion that careful dosage management can significantly impact delivery outcomes.[17,18] The overall success rate of vaginal delivery in this study was 71.8%, aligning with previous research that has reported similar success rates for misoprostol-induced deliveries.[19,20] These results contribute to the growing body of evidence supporting the utility of vaginal misoprostol for inducing labor in post-dated pregnancies. However, it's important to note that successful vaginal delivery is influenced by a complex interplay of factors beyond those investigated in this study, including maternal health, fetal well-being, and the presence of any complicating conditions.

Limitations: This study has certain limitations that should be acknowledged. Firstly, the relatively small sample size and single-center design may restrict the generalizability of the findings. Additionally, the retrospective data collection method raises concerns about accuracy and completeness. The study's focus on a limited set of variables, lack of a randomized control group, and inability to account for variations in clinical practices introduce potential sources of bias. Long-term outcomes and unexamined factors, such as maternal comorbidities and fetal presentation, were not considered. These limitations suggest caution in extrapolating the results to broader populations and emphasize the need for more comprehensive research designs to validate and extend these findings.

CONCLUSION: Based on our results, we confirm that misoprostol administration presents clear advantages for obstetric practice. Time interval from induction to delivery was shorter by misoprostol use. Misoprostol use was shown to be safe, with no serious maternal complications and no adverse neonatal outcomes. Multiple clinical trials support the effectiveness and safety of this cost-effective drug for labor induction.

ETHICS APPROVAL: The ERC gave ethical review approval

CONSENT TO PARTICIPATE: written and verbal consent was taken from subjects and next of kin

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CONFLICT OF INTEREST: No competing interest declared.

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