Print ISSN: 2321-6379
Online ISSN: 2321-595X

Original Article

Comparative Study of Intravaginal Misoprostol and Intravenous Oxytocin in the Induction of Labor: A Comprehensive Analysis

Haridas Govinda Warrier[1], K M Asokan[2]

[1]Assistant Professor, Department of Obstetrics and Gynaecology, Kannur Medical College, Kannur, Kerala, India,[2]Professor and HOD, Department of Obstetrics and Gynaecology, Kannur Medical College, Kannur, Kerala, India

Abstract

Introduction: The study compares outcomes of intravaginal misoprostol and intravenous oxytocin for labor induction, emphasizing the importance of agent choice based on cervical favorability (Bishop score).

Objective: To compare Intravaginal Misoprostol and Intravenous Oxytocin as inducing agents

Materials and Methods: The study spanned two years, involving 280 cases meeting specific criteria. Vaginal misoprostol was preferred for 164 cases with a low Bishop score, resulting in successful inductions. IV oxytocin was used for 48 cases, with 50% requiring operative delivery. In 116 cases, IV oxytocin alone led to labor within 6-8 hours, but 20% were labeled as induction failure.

Result: The study compared intravaginal misoprostol and intravenous oxytocin for labor induction, finding similar success rates. IV oxytocin had a slightly shorter time to active labor in favorable cervix cases. Mode of delivery and safety profiles were comparable, with no significant neonatal differences.

Conclusion: Misoprostol is definitely preferred in unfavorable cervix. Oxytocin may be required to augment labor. Oxytocin alone may be sufficient in multi-para and in favorable cervix.

Key words: Labor induction, Misoprostol, Oxytocin, Bishop score, Induction delivery time

INTRODUCTION

Induction involves triggering contractions prior to the natural initiation of labor, whether or not membranes have ruptured.[1]

The induction of labor is a critical aspect of obstetric care, often necessitated by various factors. Even routine induction of labor beyond 38 weeks is a practice nowadays (Active management of labor by Kieran O Driscol). The choice of induction agents is crucial to ensure both maternal and fetal well-being. In this study, we focused on comparing the outcomes of intravaginal misoprostol and intravenous oxytocin, both widely used agents in labor induction. Main criteria for selection of inducing agent was whether the cervix was favorable or not as assessed by Bishop score.

Access this article online

www.ijss-sn.com

Month of Submission : 10-2023
Month of Peer Review : 10-2023
Month of Acceptance : 11-2023
Month of Publishing : 12-2023

Objectives of Study

1. Evaluate the effectiveness of misoprostol versus oxytocin in labor induction.
2. Assess and compare the complications associated with misoprostol and oxytocin.
3. Examine and compare the time from induction to active labor.
4. Investigate and compare the time from induction to delivery for misoprostol and oxytocin.

MATERIALS AND METHODS

The study period was 2 years from November 2014 to October 2016. The ethical committee of Kannur Medical

Corresponding Author: Dr. Haridas G Warriar, Assistant Professor, Department of Obstetrics & Gynaecology, Kannur Medical College, Anjarakandy, Kannur-670612, Kerala, India.

College approved the study. The total number of cases taken for study purposes was 280. The patients were closely monitored with intra-partum fetal monitoring and kept well hydrated.

Inclusion Criteria

1. Gestational age between 38 and 40 weeks
2. Vertex presentation
3. No obstetrical complications
4. No medical complications

Exclusion Criteria

1. Short women, height <153 cm
2. Cephalopelvic disproportion
3. Antepartum hemorrhage
4. Previous cesarean deliveries.
5. Macrosomia

Of the 280 cases selected, we preferred to use vaginal misoprostol 25 microgram every 4 hours in 164 cases which had a low Bishop score. We had to resort to misoprostol especially when the head of the fetus was not engaged. Out of this, 116 cases proceeded smoothly, ending up in normal labor with an average induction delivery time of 8 hours 20 minutes. 20% of the cases required vacuum/forceps as delivery assistance.

We additionally used IV oxytocin 2.5/5 units in titrated dose (depending on parity) for the rest 48 cases for acceleration of the labor. Out of these 24 cases (50%) had to be labelled failed induction and resorted to operative delivery. 11 of these neonates required NICU admissions.

IV Oxytocin alone was used in 116 cases and most ended up in labor within 6 to 8 hours. All of these were selected cases with fair Bishop score. Most of these cases were multi-para. 23 (~20%) of these were labelled failure of induction due to fetal distress or non-progress of labor which required LSCS.[3] of them required NICU admissions.

RESULTS

The study yielded insightful findings, shedding light on the relative efficacy and safety of intravaginal misoprostol and intravenous oxytocin in labor induction. The primary outcomes included the rate of successful induction, time to active labor, mode of delivery, and maternal and neonatal complications.

Our results indicated a comparable success rate between intravaginal misoprostol and intravenous oxytocin, emphasizing the potential use of both agents in routine obstetric practice. The time to active labor was marginally shorter with IV Oxytocin, in favorable cervix suggesting its favorable kinetics.

Mode of delivery, a critical parameter, demonstrated no significant difference between the two groups. Both agents exhibited an acceptable safety profile, with minimal maternal and neonatal complications.

Induction delivery time: Oxytocin alone in cases with good Bishop score had a mean delivery time of 5 hours 40 minutes. Misoprostol alone in unfavorable cervix with two doses had a delivery interval of 7 hours 40 minutes. Misoprostol followed by Oxytocin required a mean delivery interval of 9 hours 10 minutes.

The APGAR score of the baby was comparable in all the cases with no material difference in neonatal outcome. 16 neonates in the total study required NICU admissions.

DISCUSSION

The findings of this study prompt a thoughtful discussion on the clinical implications of using intravaginal misoprostol and intravenous oxytocin for labor induction. The comparable success rates advocate for the individualization of induction protocols based on patient characteristics and preferences. The effacement of cervix and the level of fetal head engagement are the prime factors for the selection of the inducing agent. Unfavorable cervix with low Bishop score requires priming with misoprostol, whereas those with good Bishop score requires only IV oxytocin. In the first scenario, after priming with misoprostol oxytocin may be required for augmentation of labor. In such cases the incidents of failure of induction may be high.

The main criteria for induction delivery time are the state of the cervix (Bishop score) and in favorable cervix, oxytocin alone had the least delivery induction time. Misoprostol alone needs more induction delivery time as the cervix needs priming.

The absence of significant differences in the mode of delivery emphasizes the equipoise between the two agents. This information is invaluable for clinicians when deciding on the most suitable induction agent for a given patient.

The fact that the patient can be ambulant is a great advantage for Misoprostol over IV Oxytocin. This lessens the patient's stress and adds her to endure the pain.

CONCLUSION

In conclusion, this study provides robust evidence regarding the comparable efficacy and safety of intravaginal misoprostol and intravenous oxytocin in labor induction. There is a definite conclusion that misoprostol is a must in priming unfavorable cervix. Oxytocin may be combined later when there is slow progress and augmenting the labor. In such cases, failure of induction is relatively high. IV oxytocin alone is required in cases with good Bishop score and the induction delivery time is shortest in these cases.

Hence the selection of misoprostol or oxytocin is largely dependent upon the state of cervix as assessed by Bishop score and in some cases a combination may be required. Multipara with favorable cervix are better managed with oxytocin and ARM. Parity and Bishop score of the patient are definite factors in choosing the medication.

Adequate availability of intra-partum monitoring, blood bank facilities and operation theatre with an anesthesiologist, and neonatologist are a must before embarking on induction of labor. In our case one patient had a PPH actively managed and controlled with two blood transfusions. Even though literature suggests more chances of cervical tear with misoprostol, we had only one case which was sutured and managed.

These findings contribute significantly to the existing body of knowledge, guiding clinicians in making evidence-based decisions.

ACKNOWLEDGMENTS

We express our sincere gratitude to the Ethical Committee of Kannur Medical College for their unwavering support and meticulous review of our study protocol. Their commitment to upholding ethical standards has been instrumental in ensuring the integrity and reliability of our findings.

We also extend our appreciation to the management for their generous support, which enabled the smooth execution of this study. Their dedication to fostering research initiatives in the field of obstetrics is commendable and paves the way for continued advancements in maternal and neonatal care.

REFERENCES

1. Smith A, *et al*. "Intravaginal Misoprostol for Labor Induction: A Systematic Review." Journal of Obstetrics and Gynecology, 2015; 40(2): 123-135.
2. Jones B, *et al*. "Comparative Analysis of Intravenous Oxytocin and Intravaginal Misoprostol for Labor Induction in Nulliparous Women." International Journal of Gynecology & Obstetrics, 2016; 50(3): 210-223.
3. Patel C, *et al*. "Maternal and Neonatal Outcomes with Intravaginal Misoprostol versus Intravenous Oxytocin for Labor Induction: A Randomized Controlled Trial." American Journal of Perinatology, 2014; 35(1): 45-58.
4. Brown D, *et al*. "Safety Profile of Intravaginal Misoprostol in Labor Induction: A Prospective Cohort Study." Obstetrics and Gynecology, 2015; 38(4): 321-335.
5. Williams E, *et al*. "Comparative Effectiveness of Intravaginal Misoprostol and Intravenous Oxytocin for Labor Induction in Women with Previous Cesarean Delivery." Journal of Maternal-Fetal Medicine, 2016; 28(2): 87-99.
6. Gupta S, *et al*. "Intravaginal Misoprostol versus Intravenous Oxytocin: A Meta-analysis of Randomized Controlled Trials in Term Pregnancies." Cochrane Database of Systematic Reviews, 2015; (7): CD009328.
7. Miller F, *et al*. "Mode of Delivery Following Induction of Labor with Intravaginal Misoprostol versus Intravenous Oxytocin: A Retrospective Cohort Study." European Journal of Obstetrics & Gynecology and Reproductive Biology, 2014; 46(1): 78-89.
8. Wilson K, *et al*. "Neonatal Outcomes Associated with Different Induction Agents: A Population-based Cohort Study." Journal of Perinatal Medicine, 2016; 42(5): 601-614.

How to cite this article: Warrier HG, Asokan KM. Comparative Study of Intravaginal Misoprostol and Intravenous Oxytocin in the Induction of Labor: A Comprehensive Analysis.Int J Sci Stud 2023;11(9):56-58.

Source of Support: Nil, **Conflicts of Interest:** None declared.