ORIGINAL RESEARCH

Assessment of usage of Misoprostol for induction of labor in full-term pregnancy: A tertiary care centre study

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ABSTRACT

Background: Induction of labour is usually performed by administering oxytocin or prostaglandins to the pregnant woman or by manually rupturing the amniotic membranes. The present study was conducted to assess the usage of Misoprostol for induction of labor in full-term pregnancy. **Materials & Methods:** 80 Primi gravida women were divided into 2 groups of 40 each. Group I was those in which females were induced with 25 µg misoprostol for cervical ripening labour induction and group II with no induction and watched for spontaneous progress of labour. **Results:** Education was primary in 18 in group I and 14 in group II, high in 20 and 22, degree in 2 and 4 in group I and II respectively. The socioeconomic status was upper in 5 and 7, middle in 11 and 13 and lower in 24 and 20 respectively. Status was booked in 25 and 26 and unbooked in 15 and 14 respectively. Bishop score was 1 in 18 and 8, 2 in 12 and 11, 3 in 3 and 4, 4 in 4 and 5 and 5 in 3 and 2 in group I and II respectively. The difference was non- significant (P> 0.05). Apgar score <7 was seen in 16 and 18 and >7 in 24 and 22. NICU admission was seen in 19 and 17. Perinatal morbidity was MAS was 3 and 1 and RDS in 2 and 3, birth asphyxia in 1 and 9 and meconium-stained liquor in 3 and 5 in group I and II respectively. Maternal complications were PPH seen in 2 and 5, cervical tear in 4 and 8, perineal tear in 2 and 0. The difference was non- significant (P> 0.05). **Conclusion:** Misoprostol is a useful medication for priming and inducing labor. When spontaneous labor progression is not possible, it can be utilized to induce labor in patients.

Key words: Misoprostol, perineal tear, Bishop score

INTRODUCTION

Induction of labour is defined as the process of artificially stimulating the uterus to start labour. It is usually performed by administering oxytocin or prostaglandins to the pregnant woman or by manually rupturing the amniotic membranes.[1] Over the past several decades, the incidence of labour induction for shortening the duration of pregnancy has continued to rise.[2]In developed countries, the proportion of infants delivered at term following induction of labour can be as high as one in four deliveries. Induction of labour is a common clinical situation. The reasons for induction are either clinical (post-term pregnancy, prelabour rupture of membranes, hypertensive disorders) or social (parents' and clinicians' convenience).[3,4]

Misoprostol is a prostaglandin El analogue used previously for treatment of peptic ulcer. Prostaglandin El is also effective in the termination of second-trimester pregnancy. There are several advantages in using misoprostol.[5] It is active orally; it is inexpensive; it is stable at room temperature; it does not require refrigeration for storage. Oral misoprostol is effective at inducing (starting) labour. It is more effective than placebo, as effective as vaginal misoprostol and vaginal dinoprostone, and results in fewer cesarean sections than oxytocin.[6] The present study was conducted to assess the usage of Misoprostol for induction of labor in full-term pregnancy.

MATERIALS & METHODS

The present study comprised 80 Primi gravida women. All gave their written consent to participate in the study.

Data such as name, age etc. was noted. They were divided into 2 groups of 40 each. Group I was those in

which females were induced with 25 µg misoprostol for cervical ripening labour induction and group II with no induction and watched for spontaneous progress of labour. Every four hours, vaginal exams were performed. Women were subjected to cesarean sections based on their MSL. The cervix was evaluated to see whether or not it was favorable for inducing labor using BISHOP's prelabour scoring system. Results thus found were assessed statistically. P value less than 0.05 was considered significant.

RESULTS

Table I Comparison of parameters

Variables	Parameters	Group I	Group II	P value
Education	Primary	18	14	0.97
	High	20	22	
	Degree	2	4	
Socioeconomic status	Upper	5	7	0.12
	Middle	11	13	
	Lower	24	20	
Status	Booked	25	26	0.93
	Unbooked	15	14	
Bishop Score	1	18	8	0.72
	2	12	11	
	3	3	4	
	4	4	5	
	5	3	2	

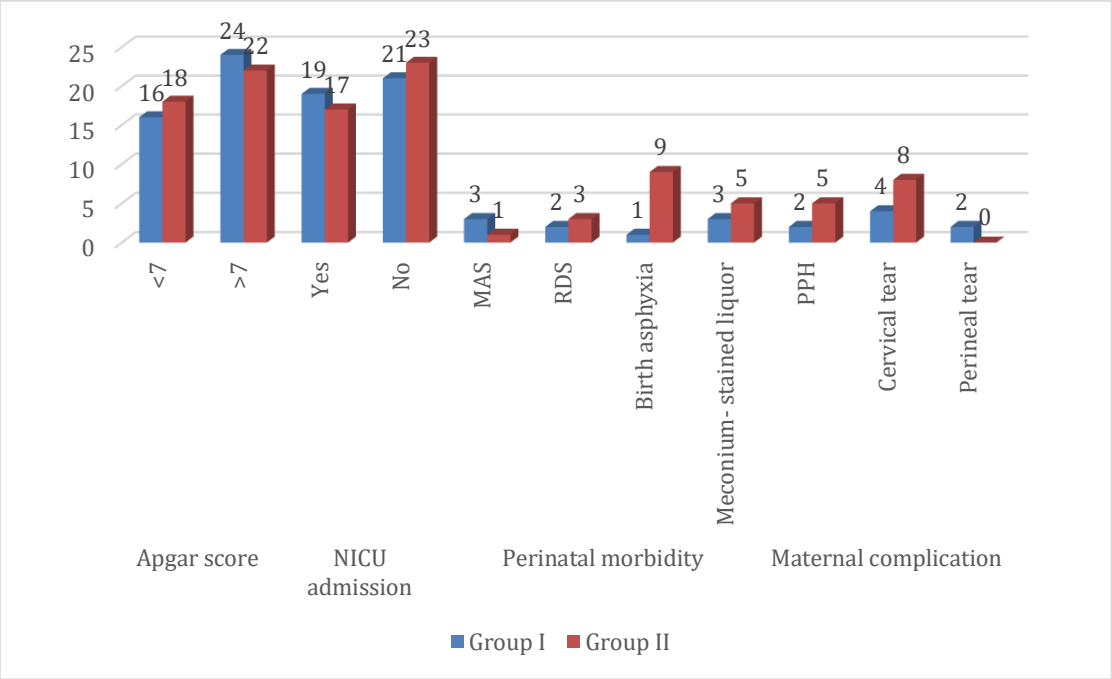
Table I shows that education was primary in 18 in group I and 14 in group II, high in 20 and 22, degree in 2 and 4 in group I and II respectively. The socioeconomic status was upper in 5 and 7, middle in 11 and 13 and lower in 24 and 20 respectively. Status was booked in 25 and 26 and unbooked in 15 and 14 respectively. Bishop score was 1 in 18 and 8, 2 in 12 and 11, 3 in 3 and 4, 4 in 4 and 5 and 5 in 3 and 2 in group I and II respectively. The difference was non-significant (P> 0.05).

Table II Comparison of outcome

Parameters	Variables	Group I	Group II	P value
Apgar score	<7	16	18	0.91
	>7	24	22	
NICU admission	Yes	19	17	0.85
	No	21	23	
Perinatal morbidity	MAS	3	1	0.09
	RDS	2	3	
	Birth asphyxia	1	9	
	Meconium- stained liquor	3	5	
Maternal complication	PPH	2	5	0.05
	Cervical tear	4	8	
	Perineal tear	2	0	

Table II, graph I show that Apgar score <7 was present in 16 and 18 and >7 in 24 and 22. NICU admission was seen in 19 and 17. Perinatal morbidity was MAS was 3 and 1 and RDS in 2 and 3, birth asphyxia in 1 and 9 and meconium-stained liquor in 3 and 5 in group I and II respectively. Maternal complications were PPH seen in 2 and 5, cervical tear in 4 and 8, perineal tear in 2 and 0. The difference was non- significant (P> 0.05).

Graph I Comparison of outcome



DISCUSSION

Misoprostol is more effective and well-tolerated when administered vaginally rather than orally when mifepristone and misoprostol are taken to end pregnancy in the first trimester. There were different protocols for induced abortions at less than 12 weeks in the 2012 World Health Organization (WHO) safe abortion guideline.[7] The woman's mobility is limited during the induction of labor, and the process itself may be uncomfortable for her. The mother and her child must be properly watched to minimize any hazards related to the surgery. This may put a burden on the scarce medical resources in areas with low resources.[8]

The discovery of prostaglandins gave rise to medical techniques as an alternative to surgical abortion. Over the past 20 years, their utilization has changed, and a variety of medications have been employed for medical first trimester abortions. Using mifepristone, methotrexate, and other prostaglandins at varied doses, methods, and intervals of administration has been the subject of several research.[9,10] Throughout the years, several professional associations have advised against delaying the commencement of labor in situations where doctors believe there are more hazards involved in inducing labor than in waiting for spontaneous labor to begin. These conditions typically involve hypertensive diseases, prelabour rupture of the amniotic membranes, maternal medical difficulties, fetal death, and gestational age of 41 completed weeks or greater.[11,12] The present study was conducted to assess the usage of Misoprostol for induction of labor in full term pregnancy.

We observed that education was primary in 18 in group I and 14 in group II, high in 20 and 22, degree in 2 and 4 in group I and II respectively. The socioeconomic status was upper in 5 and 7, middle in 11 and 13 and lower in 24 and 20 respectively. Status was booked in 25 and 26 and unbooked in 15 and 14 respectively. Bishop score was 1 in 18 and 8, 2 in 12 and 11, 3 in 3 and 4, 4 in 4 and 5 and 5 in 3 and 2 in group I and II respectively. Saeed et al[13] compared the efficacy of vaginal misoprostol with vaginal dinoprostone for term labor induction. 208 women were then randomized to receive either Treatment A (vaginal misoprostol) or Treatment B (vaginal dinoprostone). Labor commenced in a mean of 6.67 hours (±3.63) in Group A whereas it took a mean of 8.41 hours (±5.13) in Group B (p = 0.00). Actual induction to delivery (of the baby) interval was a mean of 11.68 hours (±4.55) for misoprostol and 15.37 hours (±5.30) for dinoprostone group (p = 0.00). There were no cases of uterine rupture in both groups; however, there were 10 cases of uterine hyperstimulation in Group A and 4 in Group B (p = 0.09).

We found that Apgar score <7 was present in 16 and 18 and >7 in 24 and 22. NICU admission was seen in 19 and 17. Perinatal morbidity was MAS was 3 and 1 and RDS in 2 and 3, birth asphyxia in 1 and 9 and meconium-stained liquor in 3 and 5 in group I and II respectively. Maternal complications were PPH seen in 2 and 5, cervical tear in 4 and 8, perineal tear in 2 and 0. Bendix et al[14] included 816 induced deliveries. The high- and low-dosage groups differed in rates of plurality and place of induction. Induction to delivery times lasting longer than 72 hours were significantly decreased in the low-dosage group. Women in the low-dosage group also less often needed additional induction ($P = 0.02$), and the rate of uterine hyperstimulation was low irrespective of protocol (1% vs 3%, $P = 0.16$). There were no cases of uterine

rupture in either group. The probability of vaginal delivery in the low-dosage group increased as did the risk of delivery with vacuum extraction whereas delivery by cesarean section slightly decreased. The risk of meconium-stained liquor was non-significantly decreased.

Sharma et al[15] included a total of 200 Primi gravida women who were randomized into 2 groups. Women induced with misoprostol 25 μg for cervical ripening labour induction and control group with no induction and watch for spontaneous progress of labour. Majority of the cases in the age group 18-24 years of age, case group mostly had unfavorable cervix and Bishop Score ≤ 6. There was a significant difference seen in induction to start of active labour in both groups ($p < 6$ hrs. 68 cases (there bishop score was higher at the admission).

CONCLUSION

Authors found that Misoprostol is a useful medication for priming and inducing labor. When spontaneous labor progression is not possible, it can be utilized to induce labor in patients.

REFERENCES

1. Meinert CL. Clinical trials: Design, conduct and analysis. New York: Oxford University Press, 1986:71-89.
2. Vrouenraets FP, Roumen FJ, Dehing CJ, vanden Akker ES, Aarts MJ, Scheve EJ. Bishop Score and risk of caesarean delivery after induction of labour in nulliparous women. Obstet Gynaecol 2005;105(4):690.
3. Caughey AB, Sundaram V, Kaimal AJ, Cheng YW, Gienger A, Little SE, et al. Maternal and neonatal outcomes of elective induction of labor. Evidence report/technology assessment. 2009(176):1.
4. Martin JA, Hamilton BE, Sutton PD, Ventura SJ, Menacker F, Kirmeyer S, et al. Births: final data for 2005. National vital statistics reports. 2007;56(6):1-103.
5. National Collaborating Centre for Ws, Children's H. National Institute for Health and Clinical Excellence: Guidance. Induction of Labour. London: RCOG Press National Collaborating Centre for Women's and Children's Health.; 2008.
6. El-Refaey H, Hinshaw K, Templeton A. The abortifacient effect of misoprostol in the second trimester. A randomized comparison with gemeprost in patients pre-treated with mifepristone (RU486). Hum Reprod 1993;8:1744-6.
7. Jain JK, Mishell DR. A comparison of intravaginal misoprostol with prostaglandin E2 for termination of second-trimester pregnancy. N Engl J Med 1994;331:290-3.
8. Creinin MD, Vittinghoff E. Methotrexate and misoprostol vs misoprostol alone for early abortion: A randomized controlled trial. JAMA 1994;272:1190-5.
9. El-Refaey H, Templeton A. Induction of abortion in the second trimester by a combination of misoprostol and mifepristone: A randomized comparison between two misoprostol regimens. Hum Reprod 1995;10:475-8.
10. Guerra G, Cecatti J, Souza J, Faundes A, Morais S, Gülmezoglu A, et al. Factors and outcomes associated with the induction of labour in Latin America. BJOG: An International Journal of Obstetrics & Gynaecology. 2009;116(13):1762-72.
11. Ho PC, Ngai SW, Liu KL, Wong GC, Lee SW. Vaginal misoprostol compared with oral misoprostol in termination of second-trimester pregnancy. Obstetrics & gynecology. 1997 Nov 1;90(5):735-8.
12. Abubeker FA, Lavelanet A, Rodriguez MI, Kim C. Medical termination for pregnancy in early first trimester (≤ 63 days) using combination of mifepristone and misoprostol or misoprostol alone: a systematic review. BMC Women's Health. 2020 Dec;20(1):1-7.
13. Saeed GA, Fakhar S, Nisar N, Alam AY. Misoprostol for term labor induction: a randomized controlled trial. Taiwanese Journal of Obstetrics and Gynecology. 2011 Mar 1;50(1):15-9.
14. Bendix JM, Friis Petersen J, Andersen BR, Bødker B, Løkkegaard EC. Induction of labor with high-or low-dosage oral misoprostol—A Danish descriptive retrospective cohort study 2015-16. Acta Obstetricia et Gynecologica Scandinavica. 2020 Feb;99(2):222-30.
15. Sharma P, Katare N, Rahman Z, Yadav G, Runwal S, Dhakarey S. Maternal and fetal outcome in vaginal misoprostol induced patient. International Journal of Health and Clinical Research. 2021 Feb 28;4(4):256-60.