

Comparison of Efficacy of Misoprostol and Dinoprostone in Inducing Labour at Term Cases

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ABSTRACT

Aim: To compare the efficacy of misoprostol and dinoprostone in inducing labour at term cases.

Results: Mean age of patients was recorded as 25.04±4.342 and 25.26±4.105 in Group-A & B. We recorded 43(86%) patients in Group-A and 34(68%) in Group-B delivered vaginally, caesarean section was carried out in 7(14%) in Group-A and 14(28%) in Group-B. Caesarean section rate was significantly low in Group-A. Comparison of time of delivery after drug administration was recorded on two intervals one after 12 hours of administration and 24 hours after administration of the drugs, in Group-A significantly maximum number of the patients were delivered within 12 hours i.e., 35(70%) in Group-A and 24(48%) in Group-B, while maximum duration of time of delivery after administration of the drug i.e. 24 hours was found in Group-B, where 26(52%) patients were delivered while in Group-A only 15(30%) patients were delivered in 24 hours.

Conclusion: Both the drugs in our study show satisfactory results but misoprostol is found to be comparatively better regarding spontaneous vaginal delivery and time of delivery as well.

Keywords: Term pregnancy, induction of labour, misoprostol, dinoprostone, efficacy

INTRODUCTION

Induction of labour means pregnancy termination any time after 28 weeks of gestation by a method that aims to secure delivery vaginally. It is a planned delivery in which parturition is done as an elective procedure at a predetermined time. During a normal pregnancy a closed unripe cervix ensures integrity of normal pregnancy till term. At term a complex process starts, which includes activation of Prostaglandin E₂ (PGE₂). It causes cervix to become soft and compliant. This facilitates cervical dilatation in response to myometrial contractions.¹

A successful labour is more likely when the cervix is ripe. Different methods have been used for cervical ripening and induction of labour. Successful induction of labour ending up in smooth delivery reduces the risk of caesarean section and condition of neonate is also improved.

Since appropriate induction of labour is a central component of good Obstetric practice, there is a necessity for a safe and effective treatment for cervical ripening that would reduce the length of stay in the hospital and, more importantly, the incidence of caesarean section.

Oxytocin represents a very important agent for the stimulation of myometrial contractility, however its success depends heavily on the degree of cervical ripeness. Cervical ripening is most effectively accomplished by local administration of Prostaglandins E₂ (Dinoprostone) as well as E₁ (misoprostol). Misoprostol is a synthetic E₁ methyl analogue

prostaglandin, is at present receiving attention as a cervical modifier and labour induction agent. However, there is still a need for better determination of its safety and effectiveness². Our study was conducted to compare the efficacy and safety of these two Prostaglandins (E₁ & E₂) for labour induction.

METHODOLOGY

A total of 100 cases (50 cases in two each groups) with post-date pregnancy, PROM, PIH and diabetes mellitus were enrolled from Jinnah Hospital, Lahore during the year 2012-13 while those patients with previous LSCS, abnormal presentation and unexplained vaginal bleeding were excluded from the study. These cases were at term and admitted for induction of labour. Before the start of the study, a list was generated through random number table, which identified the serial numbers of 50 pregnant women, who were given cytotec, while the other 50 were induced with glandin. After explaining side effects of the drug, discussing risks and benefits of induction. Bishop scoring and NST was done and 50µg cytotec or 3mg glandin was inserted in posterior fornix of vagina. The dose of either drug was repeated after 6 hours. Oxytocin was started at least 4 hours after the last dose. The demographic information (e.g. name, age, e.t.c.), progression of cervical dilatation beyond 3cm, mode of delivery, delivery within 24hrs of induction and 5 minutes APGAR score of neonates and side effects observed were recorded.

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RESULTS

Mean age of patients was recorded as 25.04+ 4.342 and 25.26+ 4.105 in Group-A & B. Majority of the patients were found at 41 weeks of gestation in both groups, mean gestational age was 39.64+1.467 in Group-A and 39.78+ 1.329 in Group-B. We compared gravidity of the subjects, primigravida were common in both groups, 46%(n=23) were found in Group-A, 50%(n=25) in Group-B, 34%(n=17) of subjects in Group-A and 32%(n=16) in Group-B were Gravida-2, while Gravida-3 women in Group-A were 20%(n=10) and 18%(n=9) in Group-B. Spontaneous vaginal delivery and caesarean section is presented in table No. 4, 86% (n=43) patients in Group-A and 68% (n=34) in Group-B delivered vaginally, caesarean section was carried out in 14 % (n=7) in Group-A and 28% (n=14) in Group-B. Caesarean section rate was significantly low in Group-A. Comparison of time of delivery after drug administration was recorded on two intervals one after 12 hours of administration and 24 hours after administration of the drugs, in Group-A significantly maximum number of the patients were delivered within 12 hours i.e. 70%(n=35) in Group-A and 48%(n=24) in Group-B, while maximum duration of time of delivery after administration of the drug i.e. 24 hours was found in Group-B, where 52%(n=26) patients were delivered while in Group-A only 30%(n=15) patients were delivered in 24 hours. Analysis of Apgar score was also done and shown in Table No. 6, where in Group-A 6%(n=3) were found with <7 Apgar score and 94%(n=47) were found with >7 Apgar score, while in Group-B 4%(n=2) were found with <7 Apgar score and 96%(n=48) were found with >7 Apgar score. There was no significant difference in A & B groups, P value was found as 0.646.

Table 1: Age Distribution

Age (Years)	Group-A		Group-B	
	n	%age	n	%age
20-25	33	66	29	58
26-30	10	20	15	30
31-35	07	14	06	12
Total	50	100	50	100
Mean+ S.D	25.04 + 4.342		25.26 + 4.105	

Table 2: Gestational Age

Gestational Age (weeks)	Group-A		Group-B	
	n	%age	n	%age
37-38	12	24	09	18
39-40	17	34	21	42
41	21	42	20	40
Total	50	100	50	100
Mean + S.D	39.64 + 1.467		39.78 + 1.329	

Table 3: Comparison of Gravidity

Gravidity	Group-A		Group-B	
	n	%age	n	%age
Primigravida	23	46	25	50
Gravida 2	17	34	16	32
Gravida 3	10	20	09	18
Total	50	100	50	100

Table 4: Comparison of Mode Of Delivery

Mode of delivery	Group-A		Group-B	
	n	%age	n	%age
SVD	43	86	34	68
CS	07	14	14	28
Total	50	100	50	100

P value: 0.032 (significant)

Table 5: Comparison of time of delivery (interval between induction to delivery)

Time (hours)	Group-A		Group-B	
	n	%age	n	%age
12	35	70	24	48
24	15	30	26	52
Total	50	100	50	100

P value: 0.025 (significant)

Table 6: Comparison of Apgar Score At 5 Minutes

Apgar score<7	Group-A		Group-B	
	n	%age	n	%age
Yes	3	6%	2	4%
No	47	94%	48	96%
Total	50	100	50	100

P value: 0.646

DISCUSSION

Modern obstetrics tend to improve the maternal and fetal safety during prenatal and parturition period. The prime objective of labour induction is to accomplish safe vaginal delivery.

Spontaneous labour and vaginal delivery is preceded by a cascade of synchronized events, which leads to ripening of cervix.³

A study conducted by Calder et al⁴ has reported that ripening of cervix governs the ease and success of induction of labour. Prince et al has observed that if ripening of cervix fails to occur, then delivery and labour may be prolonged and may cause many complications.

It has been analyzed that about 15% to 20% of all pregnancies require induction of labour.³ Cervical ripening before induction is essential and Prostaglandins (PGs) are thought to play a significant role in the process of cervical ripening and initiation of labour.⁵ Fetal membranes and decidua produce PGE2 during pregnancy and labour.¹⁰⁴ Release of this hormone leads to changes in the biochemistry of the cervix and also stimulates the production of PGF2a. In turn, PGF2a sensitizes the myometrium to oxytocin. Exogenous administration of PGE2 (dinoprostone) is known to mimic this natural process and lead to cervical ripening or labor.³

However PGE1 is also a suitable preparation for softening and effacement of cervix. The overall success rate in terms of vaginal delivery was 82% in our study. Misoprostol has been in the market since 1985. Many studies have been published showing the usefulness of Misoprostol in obstetrics and gynaecology.

Vaginal Misoprostol appears to be more effective than conventional methods of cervical ripening and labour induction.⁶

All induction agents can cause uterine hyper stimulation and fetal distress and Misoprostol is no exception. It was our observation that patient tolerated the tablet very well and for initial 2–3 hours after insertion of tablet patients had only dull backache and very mild contraction as this time was from latent to active phase. It mimics more like natural labour. The 2nd dose of Misoprostol was not given before 6 hours of the 1st dose due to cumulative effect of the drug which may lead to uterine hyperstimulation and danger of rupture.

Cervical ripening is a process that is intended to soften, dilate, and efface the cervix. An unripe cervix is generally not yet soft, is dilated less than 2 cm, and is less than 50% effaced. If the artificial rupture of membrane is carried out before 4 cm dilatation of the cervix, it may lead to failed induction, ascending infection and ultimately need for Caesarean Section. Administration of oxytocin in un-effaced cervix leads to uterine hyperstimulation without affecting the effacement of cervix.

In our study, ARM was not done before 4 cm cervical dilatation and similarly oxytocin was not given before 4 cm cervical dilatation, and was only given after ARM. We found 86% of the patients delivered vaginally in Group-A and 68% in Group-B, our findings are comparable with a study conducted by Ozkan S, Calişkan E, Doğer E, Yücesoy I, Ozeren S, Vural B,⁷ where they found 66% patients delivered vaginally as compared to 44.6% with dinoprostone at 12 hours after induction.

The limitation of this study was that we did not compare the mode of delivery with respect to time of delivery after induction, but keeping in view the significant increased number of patients delivered within 12 hours of induction in misoprostol i.e. 70%(n=35) and 48%(n=24), our results are comparable with the above study.

The most common indication of induction in our study was premature rupture of membranes followed by post dates pregnancy. Major indication for

Caesarean section in misoprostol group was fetal distress while in dinoprostone group it was failed induction.

Our results regarding time of delivery after administration of the drug was shorter in misoprostol group, and these results are comparable with a study conducted by Garry D, Figueroa R, Kalish RB, Catalano CJ, Maulik D⁸ where they also found the patients delivered with a shortest time with administration of misoprostol as compared to dinoprostone group.

The results of our study show that both the drugs are safe regarding successful induction of labour and time of delivery after drugs administration but misoprostol is found to be comparatively better regarding spontaneous vaginal delivery and time of delivery as well.

CONCLUSION

On the basis of results of our study we can confidently recommend that both the drugs in our study show satisfactory results but misoprostol is found to be comparatively better regarding spontaneous vaginal delivery and time of delivery as well.

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