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Original Article

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Maternal Outcome among the Misoprostol Induced Term Pregnant Women

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Abstract

Background: Use of misoprostol in term pregnancy can give some maternal adverse events. **Objective:** The purpose of the present study was to see the maternal outcome among the term pregnant women. **Methodology:** This descriptive, prospective cohort study was carried out in the Department of Obstetrics and Gynaecology at Sir Salimullah Medical College and Mitford Hospital during the period from September 2005 to February 2006. Primi or second gravida patients with the gestational age between 37 weeks to 42 weeks in singleton pregnancy with cephalic presentation and not in labour who came for delivery purposes during the study period at any age were selected as study population. After proper selection of the cases, induction of labour (IOL) was done by applying tablet Misoprostol 50mcg in the posterior vaginal fornix. Purpose of induction of labour was successful when vaginal delivery occurred without any untoward side effects and without any surgical interference. **Result:** A total number of 60 pregnant women were recruited in this study of which 60% patients were within 23-30 years of age. Out of 43 cases of vaginal delivery 22 cases needed 1 dose of Misoprostol 21 cases needed more than 1 dose. 60% of study population who were primigravide had vaginal delivery in 67% cases and caesarean section in 33% cases and among 40% 2nd gravida cases vaginal delivery was 79% and caesarean delivery was 21%. **Conclusion:** In the conclusion, the use of Misoprostol results in a shorter induction to delivery time, a reduction in the rate of caesarean delivery and also did not appear to produce miserable adverse effects on the method of delivery or the foetus. [J Shaheed Suhrawardy Med Coll, June 2015; 7(1):6-9]

Keywords: Neonatal outcome, Misoprostol, term pregnancy, neonatal asphyxia

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Introduction

Induction of labour is an integral part of modern obstetric practice[1]. It is simple, safe, effective and preferably non invasive[2]. There are different methods of induction of labour like medical, surgical and combined. There is no ideal accepted method of induction of labour. History says, from ancient time many methods were used for induction of labour. Now-a-days, oxytocin and prostaglandins are randomly used for induction of labour. Oxytocin is the drug of choice for labour induction when the cervix is favourable. At present oxytocin is the prime labour induction drug available in this country[3]. Prostaglandins are equally effective as that of oxytocin but are more effective in cases of intrauterine fetal death or early gestational period with unfavourable cervix and have got no diuretic effect. Prostaglandins are hormones naturally present in the uterus that cause contractions during labour. Recently, a prostaglandin (Misoprostol), a synthetic Prostaglandin E1 analogue marketed as a gastrointestinal mucosal protection agent is a safe, easily available, efficacious and inexpensive for use in cervical ripening and labour induction.

Prostaglandin is superior to oxytocin as prostaglandin is local hormone which softens the cervix directly. In fact, prostaglandin provides an excellent alternative to conventional oxytocin for induction of labour[4]. There has been a growing body of literature to suggest that misoprostol is highly effective and safe as a labour inducing agent[5]. It is

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less expensive and can be stored at room temperature and has fewer side effects. The use of misoprostol results in a shorter induction to delivery time, a reduction in rate of caesarean section and without any adverse effect on the mother and the neonatal outcomes. It is rapidly absorbed and is more effective than oxytocin or dinoproston for induction of labour. Misoprostol is a cheap and stable PGE_1 analogue that is active both by the vaginal & oral route of administration for cervical ripening and induction. When it is given orally, it is rapidly absorbed by the gastrointestinal tract and undergoes de-esterification to its free acid, which is responsible for its clinical activity. The peak concentration and half-life of misoprostol acid, the active metabolite, are 12 and 21 minutes, respectively[6]. The total systemic bioavailability of vaginally administered misoprostol is three times greater than that of orally administered misoprostol[7]. In Bangladesh, misoprostol is available as tablet form, each containing 200mcg. Although the safety and reliability of induction has greatly increased in recent years, in more advanced countries because of development of newer and better induction techniques and modern facilities for foetal and maternal monitoring, we are still in position where we have to depend mainly on clinical judgment and this imposes several limitations. However, in absence of sophisticated monitoring techniques patients are induced everyday practice with best possible efforts and attention, cases are managed to have a better obstetric outcome. In this study, the role of vaginal misoprostol for the induction of labour was evaluated in the department of Obstetrics and Gynaecology in SSMC and MH. The aim of study was to assess the efficacy of local application of Misoprostol as method of induction of labour.

Methodology

This prospective cohort study was carried out in the Department of Obstetric and Gynaecology at Sir Salimullah Medical College and Mitford Hospital during the period from 1st September 2005 to 28th February 2006. The women who were primigravida or second gravida with the gestational age between 37 weeks to 42 weeks with cephalic presentation and not in labour were included in this study singleton pregnancy with vertex presentation, unfavourable cervix (Bishop's score < 6) and intact membrane were included in this study. Cephalopelvic disproportion, multiple pregnancies, fetal distress, malpresentations, H/O asthma, any contraindication to normal vaginal delivery, H/O uterine surgery like LUCS, myomectomy or hysterotomy operation and ruptured membrane were excluded from this study. The methods of induction of labour by vaginal Misoprostol were explained to the patients. Consent was taken from every patient. All relevant clinical information of the cases was recorded systematically in a predesigned clinical data sheet. At first, proper history of the patient was taken which included period of amenorrhoea, H/O antenatal check up, immunization, gravida, last menstrual period etc. Then general examination of the patient was done to detect any disease which complicates pregnancy or labour. This was followed by per abdominal examination to see foetal presentation, lie, foetal heart sound. Then per vaginal examination was done to do the clinical pelvimetry and Bishop's scoring. If the pelvis was adequate for normal vaginal delivery then irrespective of any Bishop's score cases were selected for induction of labour. After proper selection of the cases, induction of labour was done by applying Tab Misoprostol 50mcg in the posterior vaginal fornix. Misoprostol is available in our country as Tab Cytomis each containing 200 mcg. So, 1/4th of the tablet was used. Close observation of the patient was done to see when the labour started. If the labour did not start then the same dose was repeated up to the establishment of true labour pain. When the labour started close monitoring of the patient and the foetus were done. When the labour went into the active phase then further application of Tab Cytomis was stopped and the Partograph was maintained. Following the Partograph the progress of labour was monitored. If the labour was seen to be prolonged then augmentation was done by giving oxytocin drip. Close observation of the progress of labour was done to see whether there was any untoward effect of induction of labour like tachysystole, hyperstimulation or foetal distress. Uterine tachysystole is a contraction frequency of more than five within 10 minutes for 2 consecutive 10 minutes period. And uterine hyperstimulation is exaggerated uterine response with late FHR decelerations or fetal tachycardia greater than 160 beats per minute or other worrisome changes. Hyperstimulation of uterus is any uterine contraction lasts longer than 60 seconds or if there are more than 4 contractions in 10 minutes. Uterine hyperstimulation is always a concern when a labour is stimulated. Step was taken when there was hyperstimulation or tachysystole as they might end into rupture of uterus. To prevent this dangerous type of side effect, tocolysis of uterus was tried. When tocolytic measure was failed then caesarean section was the alternative. Purpose of induction of labour was successful when vaginal delivery occurred without any untoward side effects and without any surgical interference. After collecting all the data, analysis has been done by using SPSS and the results are displayed in tables and diagrams. Discussions have been done by comparing the results of the study with the results from similar study done in home and abroad.

Results

A total number of 60 women were enrolled for this study. The mean age of the study population was 24.08 ± 3.25 years. The mean Bishop's Score was 6.2 ± 1.76. The mean Gestational Age was 40.41 ± 1.1 weeks. The mean induction delivery interval was 11.1± 4.4. In this study 36 (60%) patients were parimigravida & 24 (40%) patients were second gravid (Table 1).

Table 1: Details of Patients at Induction

Variables	Value
Primigravida	36(60.0%)
Second gravida	24(40.0%)
Age [Mean±SD (Range) in years]	(18 - 31)
Bishop's Score [Mean±SD (Range)]	6.2 ± 1.76 (3 - 10)
Gestational Age (in weeks)	40.41 ± 1.1 (38 - 42)
Induction delivery interval (hours)	11.1± 4.4(4-24)

It had been detected that 21 (35%) patients had unfavourable Bishops' score with 3-5 and 39 (65%) patients had favorable Bishops' score with 6-10 (Table 2).

Table 2: Age distribution of the patient (n=50)

Bishops' score	Frequency	Percentage
3-5 (unfavourable)	21	35.0
6-10 (Favourable)	39	65.0
Total	**60**	**100.0**

It was found that 31 (51.7%) patients needed only 1 dose of misoprostol and 24 (40%) patients needed 2 doses and only 5 (8.3%) patients needed 3 doses of Misoprostal (Table 3).

Table 3: Total Doses of Misoprostol Given

Total doses	Frequency	Percentage
1	31	51.7
2	24	40.0
3	5	8.3
Total	**60**	**100.0**

A total number of 39 patients had favourable pre- induction cervical score, among them 79% had delivered vaginally and 21% had undergone LUCS. 21 patients had unfavourable cervix, among them 57% experienced vaginal delivery and 43% experienced LUCS (Table 4). In this study 60% of study population who were primigravide had vaginal delivery in 67% cases and caesarean section in 33% cases and among 40% 2nd gravida cases vaginal delivery was 79% and caesarean delivery was 21% (Table 5).

Table 4: Relation of Cervical Score with Mode of Delivery

Mode of delivery	Fabourable score	Unfabourable score	Total
Vaginal delivery	31(79.0%)	12(57.0%)	43(71.7%)
LUCS	8(21.0%)	9 (43.0%)	17(28.3%
Total	**39(100.0%)**	**21(100.0%)**	**60(100.0%)**

Discussion

A variety of clinical practices are used in different centers for management of induction labour & consequently there are no agreed guidelines that describe the method of induction of labour[8]. In 1970 when more reliable methods become available, labour induction rates rose about 50% in specialized center[8]. The success of induction depends to a large extent on the consistency; compliance and configuration of the uterine cervix[9]. In 10% of all pregnant women have an unfavourable cervix and require labour to be induced[10]. Therefore induction of labour to be effective it is not sufficient simply to stimulate contractility of the myometrium. The induction method must endeavour as far as possible to replicate the events of normal parturition. In addition to generating myometrial contractility it must induce the changes of cervical ripening if these have not occurred naturally[1].

A well designed prospective study was done to evaluate the outcome of induction of labour by vaginal Misoprostol in term pregnancy in the department of Obstetrics and Gynaecology, Sir Salimullah Medical College and Mitford Hospital, Dhaka from September 2005 to February 2006. For this study 60 patients were selected after fulfilling the inclusion and exclusion criteria. In each case, induction of labour was done after taking proper history and all the information were recorded in the data collection sheets. All the records were studied with analysis of various aspects of the cases in relation to the present study.

Table 5: Mode of Delivery In Relation to Gravida

Mode of delivery	Primigravida	2nd Gravida
Vaginal delivery	24(67%)	19(79%)
Caesarian delivery	12(33%)	5(21%)
Total	**36(60%)**	**24(40%)**

The study was conducted to evaluate the outcome of induction of labour in term pregnancy to see whether routine induction of labour increases the rate of caesarean section, to find out the cause of failure of aim of induction and any complication of induction of labour.

In the study out of 60 patients 36 (60%) cases were primigravida and 24 (40%) cases were second gravida. The mean age was 24.08 ± 3.25 years. The lowest aged patient was 18 years and eldest one was 31 years. It is promising and hopeful regarding safe mother that all the patients were in early age group. Mean gestational age was 40.41±1.1 weeks range was 38-42 weeks. Mean Bishop's score was 6.2 ±1.76 and range was 3-10.

In analysis of indications of induction of labour-Post dated pregnancy was on the top of the list the number of which was 33 (55%), Preeclampsia was in the second position the number of which was 10 (16.65%). Then according to the chronological order the number of Pregnancy induced hypertension was 8 (13.35%), that of Oligohydramnios and Rh negative mother were same that was 4 (6.65%) each then at the bottom of the list was Intrauterine growth retardation the number of which was 1(1.7%). Among 60 patients 43 (71.6%) patients delivered vaginally and 17 (28.4%) patients needed caesarean section. Again out of 43 vaginal delivery 22 (51.20%) patients needed single dose of Misoprostol tablet and 21 (48.8%) patients needed more than one dose. In this study patient with both favourable and unfavourable cervix were taken. The study showed better outcome in patient with favourable cervix. Regarding pre induction cervical score 39 (65%) cases had favourable score. Among them 31 (79%) cases delivered vaginally and 8 (21%) cases had undergone caesarean section. And among 21 (35%) unfavourable cases 12 (57%) cases experienced vaginal delivery and 9 (43%) cases had undergone caesarean section. This study indicates that there is a direct potential relationship between cervical condition (Bishop's score) and vaginal delivery.

Mode of delivery in relation to gravidity, it is seen that multigravida (79%) has more percentage of vaginal delivery than that of primigravida (67%) and caesarean delivery is more in cases of primigravida (33%) than that of multigravida (21%). Regarding induction delivery interval, the interval between IOL and onset of labour was significantly shorter. Mean induction delivery interval was of 11.1± 4.4 hrs. In this study conducted in S.S.M.C &

MH with Prostaglandin reveals that maternal and foetal outcome of the patients undergoing induction of labour are not very different in comparison to other study. There is a similar type of study carried out by Amiruzzaman[11] and was studied among 65 patients. The mean age of patients of the study was 24.65 years and in this study it is 24.08 ±3.25 years, which is almost similar. In this study, in the analysis of indication of induction of labour prolonged pregnancy is on the top which is same in this study. In his study 48 (73.85%) cases were delivered vaginally and 17 (26.15%) cases needed caesarean section- the results are almost similar to that of this study. Out of 48 vaginal delivery 83.33% patients needed single dose of oral Misoprostol tablet and 16.67% needed more than one dose. However in this study 51.20% cases needed one dose of vaginal Misoprostol and 48.80% needed more than one tablet. Another similar study done by Jahan[12] showed that 63% patient with unfavourable cervix required caesarean section after induction of labour and in that study no prostaglandins was used for cervical ripening. In this study, because of prostaglandins the percentage of caesarean section was only 43% and vaginal delivery was 57%. In another study done by Kenedy et al[13], the mean age of the patients was 26.6 years and mean cervical score was 6.6. But in this study the mean age was 24.08±3.25 years and mean Bishop's score was 6.2±1.76. According to that study Prolonged Pregnancy occupied the top of the list which was 52% and Hypertensive disorder of pregnancy was next in order those are same in this study.

In this study it was found that due to routine induction of labour, vaginal delivery rate was more in multigravida (79%) less in primigravida (67%) and caesarean section rate was less in multigravida (21%) and more in primigravida (33%). These results are comparable with a study done by Parry et al[14]. In that study in multigravida, induction of labour was associated with a significant reduction in incidence of caesarean section from 22% in the control group to 11% in the induced group, for primigravida the difference was in opposite direction but did not reach the significance (induced group 31% to control group 24%). So these appear to be the evidence for multiparous women that induction of labour is associated with improved vaginal delivery outcome. If the indications of caesarean section was analyzed in this study 58.82% caesarean section were done due to foetal distress and 23.53% were due to failure to progress as a result of abnormal uterine action. But according to several studies these indication of caesarean section are not potentially related to induction of labour. Study done by Parry et al[14] showed that the incidence of caesarean section for foetal distress is same in both induced and control group. More over a study done by Alexander[15] showed that risk factors intrinsic to the patient (nulliparity, cervical scoring, misdating) rather than labour induction itself, were the cause of higher caesarean delivery rate. This was also reflected in the present study that caesarean section rate was higher in primigravida (33%) than mutligravida (21%). So by reducing the risk factor we can have a better outcome of induction. The present study has proved that the use of prostaglandin for cervical ripening, the delivery outcome can be improved.

Conclusion

In the conclusion, it can be said that the use of Misoprostol results in a shorter induction to delivery time, a reduction in the rate of caesarean delivery and also did not appear to produce miserable adverse effects on the method of delivery or the foetus. There is increasing evidence that Misoprostol, administered vaginally, is as effective as conventional methods of induction of labour.

References

1. Hofmeyr GJ. Induction and augmentation of labour. Dewhurst's Textbook of Obstetrics & Gynaecology, Seventh Edition 2007:205-212
2. Dutta DC, Konar H. Text book of obstetrics including perinatology and contraception 6th ed. Calcutta (India): New Central Book Agency (P) Ltd 2004:599
3. Harman Jr JH, Kim A. Current trends in cervical ripening and labor induction. American family physician 1999;60:477-484
4. Kwon JS, Davies GAL, Mackenzie VP. A comparison of oral and vaginal misoprostol for induction of labour at term: a randomised trial. BJOG: An International Journal of Obstetrics & Gynaecology 2001;108:23-26
5. Farah LA, Sanchez-Ramos L, Rosa C, Del Valle G, Gaudier FL, Delke I, Kaunitz AM. Randomized trial of two doses of the prostaglandin E 1 analog misoprostol for labor induction. American journal of obstetrics and gynecology 1997;177:364-371
6. Cohen JS. Adverse drug effects, compliance, and initial doses of antihypertensive drugs recommended by the Joint National Committee vs the Physicians' Desk Reference. Archives of internal medicine 2001;161:880-885
7. Zieman M, Fong SK, Benowitz NL, Banskter D, Darney PD. Absorption Kinetics of misoprpstol with oral or vaginal administration. Obstet Gynecol 1997; 90: 88-92
8. Calder AA, Embrey MP, Tait T. Ripening Of The Cervix With Extra□Amniotic Prostaglandin E2 In Viscous Gel Before Induction of Labour. BJOG: An International Journal of Obstetrics & Gynaecology 1977;84:264-268
9. Trofatter KF, Gall A. Pre-induction cervical ripening with prostaglandin E2 gel. Am. J Obs, Gynae 1985; 153:268-71
10. Raybum WF. Prostaglandin Es gel for cervical ripening and induction of labour: a critical analysis. Am J Obstet Gynecol 1989; 160:529-34
11. Amiruzzaman M. Use of Oral Prostaglandin for Induction of labour: Department of Obstetrics and Gynaecology ,Rangpur Medical College Hospital Rangpur, Bangladesh. 2004
12. Jahan S. Clinical study of the indications and outcome of induction of labour at IPGMR. Bangladesh College of Physicians and Surgeons: 1990
13. Kennedy JH, Stewart P, Barlow DH, Hillan E, Calder AA. Induction of labour: a comparison of a single prostaglandin E2 vaginal tablet with amniotomy and intravenous oxytocin. BJOG: An International Journal of Obstetrics & Gynaecology 1982;89:704-707
14. Parry E, Parry D, Pattison N. Induction of labour for post term pregnancy: an observational study. Australian and New Zealand J Obstetrics Gynaecology 1998;38:275-280
15. Alexander JM, MC Intire DD, Leveno KJ. Prolonged Pregnancy:Induction of labour and caesarean births; University of Texas South Western Medical Center Dallas; I: Obstet Gynaecol 2001; 97(6): 911-5