Original Research Article

Indication of Induction of Labor-A Hospital Based Study

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Abstract

Introduction: Labor induction is the technique that excites childbirth and vaginal delivery. Inducing labour can be built with the pharmaceutical or non-pharmaceutical method. In low-income countries, the rates are generally minor. IOL is not risk-free, and many women find it painful. *Aim of the Study:* The study aims to investigate the indication of induction of labour. *Methods:* A Prospective cross-sectional study was carried out in the Department of Obstetrics & Gynecology, Bangabandhu Sheikh Mujib Medical University, Hospital, from January 2008 to June 2008. A total of 50 patients were enrolled in this study following the inclusive criteria. Data were collected using the predesigned semi-structured questionnaire. Verbal consent was taken before recruiting the study population. Completed data forms were reviewed, edited, and processed for computer data entry. *Result:* Among the study population (N=50), one-fifth of the mothers' (10,20.0%) age was under twenty. The majority of mothers were (34,68.0%) between 20-30 years old with a mean age of 25.4 ± 4.32 years. In seventeen patients (17,34.0%) labour induction was given by oxytocin drip followed by ARM, in ten patients labour induction was given by ARM followed by oxytocin drip & in twenty-three patients (23,46.0%) with unfavourable cervix prostaglandin was used and then followed by oxytocin drip and ARM. The total number of induction failures (who needed a caesarian section) was twenty (20,40.0%). Among the total number of caesarian sections, eleven (11,55.0%) were done due to fetal distress, nine (9,45.0%) were done due to abnormal uterine action, one (1,5.0%) was done due to cervical dystocia. *Conclusion:* Labor induction should be applied to improve birth consequences and when the potential aids outweigh the potential dangers. Researches point out that inducing labour lessens the risk of having a stillbirth, macrosomia and developing high blood pressure as the pregnancy advances.
Keywords: Labor Induction, Pregnant Women, Vaginal Delivery, etc.

INTRODUCTION

Labour induction is the method that stimulates childbirth and vaginal delivery. Inducing labour can be built with the pharmaceutical or non-pharmaceutical approach [1]. Approximately one-third of pregnant women have their labour medically induced with drug treatment [2]. World Health Organization (WHO) defined induction of labour (IOL) as the process of artificially stimulating the uterus to start labour. Over several years, the incidence of inducing labour for lessening the duration of pregnancy has sustained to rise. In high-income nations, the percentage of infants delivered at term following induction of labour can be as high as one in four births. However, in low-income countries, the rates are generally lower [3]. IOL is not risk-free, and many women find it uncomfortable. Failed induction might be considered failed if appropriate induction methods don't result in vaginal

delivery after 24 or more hours, low fetal rate, infection, uterine rupture, and bleeding after delivery [4]. The estimated due date (EDD) is the date that the spontaneous onset of labour is expected to happen. This due date may be estimated by adding 280 days to the first day of the last menstrual period (LMP) [5]. Pregnancy beyond 40 weeks occurs in 1 every 10 pregnancies. But the occurrence of prolonged pregnancy is reduced when the diagnosis is made precisely by use of early USG rather than from LMP alone. Accurate diagnosis of E.D.D during pregnancy is very significant as the outcome of induction of labour in pregnancy beyond E.D.D worse in women with uncertain dates than those with certain dates [6]. Pregnancy which exceeds E.D.D is related to many threats, such as placental insufficiency, fetal hypoxia, IUD and other difficulties associated with post-maturity and prolonged pregnancy is a cause of anxiety, distress and upset for many women and their families. Despite many trials, the diagnosis and management of pregnancy which exceeds E.D.D sometimes become a problem for obstetricians [7]. The risks are lower in uncomplicated prolonged pregnancies within 41 weeks. But beyond this period the risk increases every day. In any pregnancy that is beyond 41 weeks of confirmed gestational age, fetal wellbeing must be assessed. Induction of labour after 41 weeks was associated with few perinatal deaths [8]. The study intends to identify the indication of induction of labour.

OBJECTIVES
- To assess the socio-demographic pattern of patients with beyond E.D.D pregnancy.
- To ascertain the mode of delivery of beyond E.D.D pregnancy.

METHODS
A hospital based cross-sectional study was carried out in the Department of Obstetrics & Gynecology, Bangabandhu Sheikh Mujib Medical University, Hospital, from January 2008 to June 2008. A total of 50 patients (N=50) were enrolled in this study following the inclusive criteria. Data were collected using the predesigned semi-structured questionnaire. Purposive sampling technique was used. Ethical clearance was taken from the hospital. The information was kept confidential only to be used for the study purpose.

Inclusion Criteria
- Patient having uncompleted singleton pregnancy.
- Patient having pregnancy at or around 41 weeks.
- Patient having cephalic presentation.

Exclusion Criteria
- Patients with eclampsia/ pre-eclampsia, Cardiac disease and any other medical disease, CPD, Multiple pregnancy, APH.
- Patients with pre-existing fetal distress.

- Patients with previous history of caesarean section.

Data Analysis
The study coordinators performed random checks to verify data collection processes. Completed data forms were reviewed, edited, and processed for computer data entry. Frequencies, percentages, cross-tabulations were used for descriptive analysis. Simple statistical method was applied.

RESULT
Among the study population (N=50), one-fifth of the mothers' (10,20.0%) age was under twenty. The majority of mothers were (34,68.0%) between 20-30 years old with a mean age of 25.4 ± 4.32 years. Most of the patients (25,50.0%) had secondary education, nine patients (9,18.0%) were illiterate and sixteen patients (16,32.0%) had up to the primary level of education. Many of the patients (24,48.0%) came from middle-socio-economic condition, one-third of the patients (15,30.0%) came from upper class, thirty patients (30,60.0%) were primigravida and twenty patients (20,40.0%) were multigravida **[Table 1]**. Twenty-three patients (23,46.0%) came at 40+ weeks of pregnancy, eighteen patients came at (18,36,0%) on 41 weeks of pregnancy and nine patients (9,18.0%) came at 41+ weeks of pregnancy **[Table 2]**. E.D.D were diagnosed by LMP with clinical assessment only in thirteen cases (13,26.0%) and by LMP with a clinical assessment with was confirmed by investigation (USG) in thirty-seven cases (37,74.0%) **[Table 3]**. Twenty-eight patients (28,56.0%) had pre-induction bishop's score within 6-13 (favorable cervix) and twenty-two patients (22,44.0%) had bishop's score within 0-5 (unfavorable cervix), twenty-one patients (21,42.0%) had engaged head and twenty-nine patients (29,58.0%) had non-engaged head during examination **[Table 4]**. In seventeen patients (17,34.0%) labour induction was given by oxytocin drip followed by ARM, in ten patients labour induction was given by ARM followed by oxytocin drip & in twenty-three patients (23,46.0%) with unfavourable cervix prostaglandin was used and then followed by oxytocin drip and ARM **[Table 5]**. Total vaginal delivery were thirty (30,60.0%). Among them twenty-four patients (24,48.0%) delivered by normal vaginal delivery, six (6,12.0%) assisted vaginal delivery among them five (5,10.0%) by vacuum extraction and one (1,2.0%) by forceps. Caesarian section was done in twenty patients (20,40.0%) **[Table 6]**. Among primigravida (n=30), twelve (12,40.0%) had vaginal delivery and eighteen (18,60.0%) had caesarian section. Among multigravida (n=20), eighteen (18,90.0%) had vaginal delivery and two (2,10.0%) had caesarian section **[Table 7]**. The total number of induction failures (who needed a caesarian section) was twenty (20,40.0%). Among them eighteen (18,90.0%) were primigravida and two (2,10.0%) were multigravida. In patients who needed caesarian section diagnosis of postdated pregnancy was done by main invitations (USG) in eight (8,40%) patients and by

history with clinical failure in twelve (12,12%) patients. Out of total induction failure in nine patients (9,45%), induction was given by oxytocin and ARM añd in eleven patients (11,55.0%) induction was given by prostaglandin followed by oxytocin and ARM **[Table 8].** Among the total number of caesarian sections, eleven (11,55.0%) were done due to fetal distress, nine (9,45.0%) were done due to abnormal uterine action, one (1,5.0%) was done due to cervical dystocia, five (5,25.0%) were done due to uterine inertia, and two (2,10.0%) were done due to hyperstimulation [Table 9].

Table 1: Distribution of the study population based on Characteristics (N=50)

Characteristics	(N,%)
Age in years	
<20	10, 20.0%
20-30	34,68.0%
>30	6,12.0%
Mean ±SD	25.4 ± 4.32
Education	
Illiterate	9,18.0%
Upto primary	16,32.0%
Secondary	25,50.0%
Socioeconomic condition	
Lower class	11,22.0%
Middle class	24,48.0%
Upper class	15,30.0%
Gravidity	
Primigravida	30,60.0%
Multigravida	20,40.0%

Table 2: Distribution of the study population based on the Duration of Pregnancy (N=50)

Duration of pregnancy	(N,%)
40+ wk	23,46.0%
41 wk	18,36.0%
41+ wk	9,18.0%

Table 3: Distribution of the study population based on the Procedure of Diagnosis (N=50)

Procedure of diagnosis	Number
By LMP with clinical assessments and confirmed by investigation (USG)	37, 74.0%
By LMP with clinical assessments only	13,26.0%

Table 4: Distribution of the study population based on Pre-induction Clinical Findings (N=50)

Pre-induction clinical findings	Findings	(N,%)
Engagement of head	Engaged	21, 42.0%
	Not Engaged	29, 58.0%
Bishops score	0-5 (unfavorable cervix)	22, 44.0%
	6-13 (unfavorable cervix)	28, 56.0%

Table 5: Distribution of the study population based on Methods of Induction (N=50)

Methods of induction	(N,%)
Oxytocin drip followed by ARM	17,34.0%
ARM followed by Oxytocin drip	10,20.0%
Prostaglandin followed by Oxytocin drip and ARM	23,46.0%

Table 6: Distribution of the study population based on Mode of Delivery (N=50)

Mode of delivery	(N,%)
Vaginal Delivery	30, 60.0%
Normal vaginal delivery	24, 48.0%
Assisted vaginal delivery	6, 12.0%
Vacuum extraction	5, 10.0%
Forceps delivery	1, 2.0%
Caesarian section	20, 40.0%

Table 7: Distribution of the study population based on Mode of delivery in relation of Gravidity (N=50).

Mode of delivery	Primigravida (N,%)	Multigravida (N,%)	Total
Vaginal delivery	12, 40.0%	18,90.0%	30,100.0%
Caesarian section	18,60.0%	2,10.0%	20,100.0%
Total	30,100.0%	20,100.0%	50,100.0%

Table 8: Distribution of the study population based on failed induction cases (n=20).

Characteristics		(N,%)
Gravidity	Primigravida	18,90.0%
	Multigravida	2,10.0%
Procedures of diagnosis of posted pregnancy	Clinical assessment with investigation	8,40.0%
	Clinical assessments only	12,60.0%
Methods of induction	Oxytocin drip with ARM	9,45.0%
	Prostagandin with oxytocin drip with ARM	11,55.0%

Table 9: Distribution of the study population based on Indications of caesarian section (n=20)

Indication	(N,%)
Fetal distress	11,55.0%
Abnormal uterine action	9,45.0%
Uterine inertia	5,25.0%
Hyperstimulation	2,10.0%
Cervical dystocia	1,5.0%

DISCUSSION

Induction of labour is the non-natural initiation of uterine contractions after the period of sustainability to attain vaginal delivery before the onset of spontaneous labour [9].

This cross-sectional study was conducted in the Department of Obstetrics and Gynecology, Bangabandhu Sheikh Mujib Medical University, Dhaka. In this current study, most of the patients (34,68.0%) age was between 20 to 30 years with a mean age of 25.4 years. A study carried out in Ethiopia, found that majority of the patients was between 18 to 30 years old [10]. A retrospective cohort study found that most of the mothers were 26 to 28 years old [11]. Another study portrayed that the ages of the patients ranged from 18-43 years, with a mean age of 29.3 years [12].

In Australia, scientists showed that 45% of women aged between 20 to 34 years went through induction labour [13].

In this recent study, most of the mothers (25,50.0%) completed a secondary level of education. A similar result was found in another analysis, conducted in Nigeria [14]. Another related study found that the majority of mothers completed a four-year college program [15]. Another analysis depicted that, one-fourth (25.8%) of the mothers were unable to read and write [16].

In this present analysis, thirty patients (30,60.0%) were primigravida and twenty patients (20,40.0%) were multigravida. A study conducted in Dublin, Ireland showed that 50.4% were primigravidas and 49.6% were multigravidas [17]. Another study conducted in India revealed that a total of 4981 deliveries, 2179 were primigravida and 2802 were multigravida [18].

This present study found that twenty-three patients (23,46.0%) came at 40+ weeks of pregnancy. Based on gestational age and outcome, those whose gestational ages were equal to greater than 41 weeks and 3 days constituted the maximum number who had induction of labour, but the vaginal delivery rate was lowest in them [12]. Another related study found that half of the patients were multiparous and about 70% of the patients were undertaken induction labour at the gestational age of 37-41 completed weeks [16]. Another analysis found that almost 1 in 4 mothers (24%) experienced induction labour before 39 weeks [15]. Another similar study described that most of the women underwent induction labour before 290 days [19].

In this contemporary analysis, E.D.D were diagnosed by LMP with clinical assessment only in thirteen cases (13,26.0%) and by LMP with a clinical assessment with was confirmed by investigation (USG) in thirty-seven cases (37,74.0%). Several studies suggested that the past decade assessed the precision of LMP dating in contrast with an ultrasound [20-22]. Another article depicted that, E.D.D was adjusted in 13 (5.7%) women in the scan group and 2 (0.9%) in the no-scan group [23].

A study conducted in Bangladesh found that USG is a better option compared to LMP to estimate EDD [24].

In this analysis, twenty-eight patients (28,56.0%) had pre-induction bishop's score within 6-13 (favorable cervix) and twenty-two patients (22,44.0%) had bishop's score within 0-5 (unfavourable cervix). Another study found that the mean rise in the bishop score was 2.68±1.39 points for the entire cohort (p<0.005) [25].

In the present study, seventeen patients (17,34.0%) with labour induction were given oxytocin drip followed by ARM. Another contrast study showed that 30.6% of pregnant women did not require the use of oxytocin [25]. Another method established that mothers who had induction of labour with oxytocin alone were more likely to face failed induction of labour [26]. Recently, found that pregnant women induced by misoprostol were 1.5 times more likely to have failed induction in contrast with those who were induced with oxytocin [27].

In this study, total vaginal delivery were thirty (30,60.0%) & among them twenty-four patients (24,48.0%) delivered by normal vaginal delivery and caesarian section was done in twenty patients (20,40.0%). A similar study found that the rate of successful pre-induction resulting in delivery was 69.45 with vaginal births accounting for 66.6% of all cases [25].

Another study found that, in the 2nd trimester, most of the mothers (76.8%) underwent vaginal delivery [28].

Most obstetricians in developed countries favour conservative management (no induction) and they claim that induction increases the caesarian section rate [29].

In our study, among the total number of caesarian sections, eleven (11,55.0%) were done due to fetal distress, and nine (9,45.0%) were done due to abnormal uterine action. Another related article found that the most common indication observed included failed progress (18.29%), this was because of oxytocin, unjustified induction of labour without prior assessment of threats, fetal size, position, presentation, stage of labour and pelvic adequacy [30].

CONCLUSION

Labour induction increases the threat that the uterine muscles will not accurately contract after giving birth. This can lead to serious bleeding. However, labour induction should be applied to enhance birth outcomes when the potential benefits outweigh the potential risks. Researches point out that inducing labour reduces the risk of having a stillbirth, macrosomia and developing high blood pressure as the pregnancy advances.

RECOMMENDATION

Further research with a larger sample from distinct centres and a similar group of expected delivery should need to validate the current study results. To get robust data, multicenter studies are in great need of policymakers to interpret the demonstrable scenario and to take necessary steps toward mitigating this problem.

FUNDING
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CONFLICT OF INTEREST
None declared.

ETHICAL APPROVAL
The study was approved by the Institutional Ethics Committee.

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