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Role of Intracervical Catheterization for Induction of Labour for IUFD with previous one Lower Segment Caesarean Section

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Abstract **Original Research Article**

***Background*:** Induction of labor in a scarred uterus is a contentious issue in obstetric practice, but in properly selected and managed instances, the outcome is positive. When the infant is unsalvageable or has IUFD, a vaginal delivery is always preferred. Many professional organizations urge induction of labor in previous LSCS. ***Objective*:** To observe the role of intracervical catheterization for induction of labor for IUFD with the previous one Lower Segment Caesarean Section. ***Materials and Methods*:** The Observational study was conducted in the Department of Obstetrics & Gynecology, Dhaka Medical College Hospital. Dhaka, Bangladesh during July 2020 to December 2020, Patients with singleton pregnancy with IUFD, at ≥28 weeks of gestation were included in this study. Details of history, general physical and systemic examination, ultrasonography, basic laboratory investigations like haemoglobin level, and DIC profile were recorded. The method of induction decided by each consultant was noted, and results was analysed. All the data was collected with the above mentioned methods and entered in to SPSS version 23. ***Results*:** Forty-four (84.6%) patients had effective induction, with 28 (63.6%) having catheter expulsion in ≤12 hours and 16 (36.4%) having more than 12 hours. Forty-three (82.7%) were augmented with oxytocin, three (5.8%) had scar soreness, and eight (15.4%) failed induction. Failed ICC was discovered in 8 cases, with 5 (62.5%) using dinoprostone gel followed by vaginal birth, 2 (25.0%) having LUCS, and 1 (12.5%) having laparotomy. The induction delivery interval was 16.3 ± 5.5 hours. Forty-nine (94.2%) patients had normal vaginal birth, four (7.7%) had PPH, three (5.8%) had fever, two (3.8%) were admitted to the intensive care unit, one (1.9%) had a laparotomy, and one (1.9%) had a ruptured uterus. Induction failed in 1 (1.9%) of patients with past vaginal delivery, and 7 (13.5%) of those without prior vaginal birth. ***Conclusion*:** Induction is safe in carefully selected cases of previous LSCS with Foley's Balloon. Foleys catheter is advantageous in terms of the absence of required storage conditions and treatment cost, making it a cost-effective option for pre-induction cervical ripening.

Keyword: LSCS, Cervical Ripening, Foley's Catheter, Induction of Labor.

INTRODUCTION

Induction of labour is a common obstetric procedure. Both mechanical (eg, Foley catheters) and pharmacological methods (eg, prostaglandins) are used for induction of labour in women with an unfavourable cervix. Intrauterine fetal death is the most undesirable consequence of pregnancy, when it occur it carries a time related risk of consumption coagulopathy and psychological distress. Various methods have been described to induce labor are available. But when patient presents with fetal death along with previous caesarean section delivery choice of suitable method of induction is always difficult because of chance of scar rupture [1]. With a primary cesarean delivery rate of 21.9% in the United States, there is a vital need for evidence-based decision making regarding mode of delivery in subsequent pregnancies. Patients with a previous low transverse cesarean delivery can subsequently opt for a planned repeated cesarean delivery (PRCD) or a trial of labor after cesarean delivery [2]. IOL is one of the commonest obstetric interventions, occurring in approximately 25% of term pregnancies in developed countries. For women with an unfavorable cervix requiring IOL, cervical preparation is usually recommended by either prostaglandins or

mechanical methods. The use of intracervical Foley catheter reduces the risk of uterine hypertonicity and rupture in women with previous one caesarean section as the intracervical placement of the Foley catheter induces the cervical ripening without inducing any uterine contractions [3]. Foetal death is defined by WHO as death before the complete expulsion or extraction from the mother of a product of human conception, irrespective of the duration of pregnancy that is not an induced termination of pregnancy' [4]. IUFD is a tragic event for the parents and a cause of great stress for the caregiver. Spontaneous labour usually ensues after IUFD in majority of women within 2 weeks. However, induction of labour is performed in many cases due to psychological and social pressures, and these women need a method which can reduce the duration of labour. Currently, there are no standard protocols for induction of labour in IUFD. Prostaglandins (misoprostol, dinoprostone gel), oxytocin and intracervical Foley catheter have all been tried. Misoprostol in different doses and routes has been tried but not been standardized [5]. As number of pregnancies with previous LSCS increasing, so in case of IUFD unless there is no definitive indication of caesarean section patients should be induced for a vaginal delivery [6, 7]. Still there is no ideal method of IOL with previous LSCS and research is continued for IOL to achieve the goal to reduce rates of elective repeated caesarean section and over all caesarean section rates [8]. Many of the professional organizations recommend induction of labour in previous LSCS. Thus, this study was done to evaluate the success rate, determinants of failure and complications of induction of labour with foley's catheter in patients with previous 1 LSCS.

MATERIALS AND METHODS

The Observational study was conducted in the Department of Obstetrics & Gynecology, Dhaka Medical College Hospital. Dhaka, Bangladesh during January 2020 to July 2020, Patients with singleton pregnancy with IUFD, at ≥28 weeks of gestation was attending in the Department of Obstetrics & Gynae, Dhaka Medical College Hospital, Dhaka were included in this study. Details of history, general physical and systemic examination, ultrasonography, basic laboratory investigations like haemoglobin level, and DIC profile were recorded. The method of induction decided by each consultant was noted, and results was analysed. All the data was collected with the above mentioned methods and entered in to SPSS version 23. Around 15 to 20 patients of IUFD with previous 1 LSCS are admitted per month. The patients were examined by the researcher for certain signs and those were recorded in the check-list. Investigations were done for supporting the diagnoses. According to the participants' understanding level, sometimes the questions was described in the native language so that the patients can understand the questions perfectly and answer accurately. An 18 F Foley's Catheter introduced into cervix with all aseptic precaution. The balloon inflated with 80 cc distilled water and fixed. A patient is asked to pull the catheter at 20-30 minutes interval. The catheter was kept for 24 hours or when spontaneously drops out, whichever earlier. All the data was collected by the researcher own to avoid the errors. At very beginning it was clarified that the participants have the right to refuse to answer of any question during completing questionnaire. They can be withdrawn from the study at any time and refusing to participate was not affecting his/her treatment in any way. It also clarified to all participants about the aim of the study. Participants was ensure that any personal information was not published anywhere.

RESULTS

Table 1 shows that more than one fourth (26.9%) patients belonged to age 26-30 years. The mean age was found 28.3±6.4 years with range from 18 to 39 years. Table 2 shows that 38(73.1%) patients were found booked and 14(26.9%) were unbooked. 34(65.4%) of the patients received antenatal check-up regularly and 18(34.6%) received irregularly. Figure I shows that 17(32.7%) patients had diabetes mellitus, 11(21.2%) had hypertension and 3(5.8%) were hypothyroid. Table 3 shows that albumin was 3.6±0.7 g/dl, 5(9.6%) was found positive sugar of urine and 39(75.0%) was 28-32 weeks of gestational age. Forty four (84.6%) patients had successful induction, among them 28(63.6%) had expulsion of catheter in ≤12 hours and 16(36.4%) had >12 hours. Forty three (82.7%) received augmentation with oxytocin, 3(5.8%) developed scar tenderness and 8(15.4%) had failed induction. Failed ICC was found 8 cases, among them 5(62.5%) had dinoprostone gel used followed by vaginal birth, 2(25.0%) had LUCS and 1(12.5%) had laparotomy. Induction delivery interval was found 16.3±5.5 hours (Table-4). Table 5 shows that 49(94.2%) patients had normal vaginal delivery, 4(7.7%) had PPH, 3(5.8%) had fever, 2(3.8%) were ICU admission, 1(1.9%) had laparotomy and 1(1.9%) had rupture uterus. In those with prior vaginal delivery, 1(1.9%) patient had failed induction and those with no prior vaginal birth, 7(13.5%) had failed induction (Table-6).

Table 1 Distribution of the study patients by age (n=52)

Age (year)	Number of patients	Percentage
≤20	7	13.5
21-25	12	23.1
26-30	14	26.9
31-35	11	21.2
>35	8	15.4
Mean ±SD	28.3±6.4	
Range (min-max)	18-39	

Table 2: Distribution of the study patients according to booking status and ANC (n=52)

Booking status	Number	Percentage
Booked	38	73.1
Unbooked	14	26.9
ANC		
Regular	34	65.4
Irregular	18	34.6

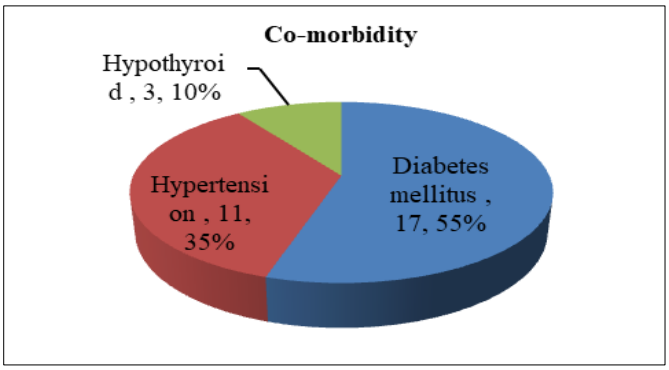

Figure I Distribution of the study patients according to co-morbidity (n=52)

Table 3: Distribution of the study patients according to investigations (n=52)

Urine	Number	Percentage
Albumin (g/dl) (mean ±SD)	3.6±0.7	
Sugar		
Positive	5	9.6
Negative	47	90.4
Gestational age (weeks)		
28-32	39	75.0
33-36	9	17.3
≥37	4	7.7

Table 4: Distribution of the study patients according to indication (n=52)

Indication	Number	Percentage
Interval between insertion and expulsion of catheter (n=44)		
≤12 hours	28	63.6
>12 hours	16	36.4
Augmentation with oxytocin	43	82.7
Any scar tenderness	3	5.8
Failed induction	8	15.4
Mode of delivery with failed ICC (n=8)		
Dinoprostone gel used followed by vaginal birth	5	62.5
LUCS	2	25.0
Laparotomy	1	12.5
Induction delivery interval (hours)	16.3	±5.5

Table 5: Distribution of the study patients according to maternal outcome (n=52)

Maternal outcome	Number	Percentage
Mode of delivery		
Vaginal delivery	49	94.2
Other than vaginal delivery	3	5.8
Maternal complication		
PPH	4	7.7
Fever	3	5.8
ICU admission	2	3.8
Laparotomy	1	1.9
Rupture uterus	1	1.9

Table 6: Distribution of the study patients according to obstetric history (n=52)

Obstetric history	Number	Percentage
Those with prior vaginal birth		
Success	21	40.4
Failed	1	1.9
Those with no prior vaginal birth		
Success	23	44.2
Failed	7	13.5

DISCUSSION

In this study observed that more than one fourth (26.9%) patients belonged to age 26-30 years. The mean age was found 28.3±6.4 years with range from 18 to 39 years. Gonsalves *et al*., [9], also reported most women were 25–35 years old (76.5%). Amin *et al*., also observed majority of women were in the age group 21–30 years.

In this study, those with prior vaginal delivery 1(1.9%) patient had failed induction while those with no prior vaginal birth 7(13.5%) had failed induction. Jois and Sunanda [10], reported out of the 62 patients recruited for the study, 51 patients had a successful vaginal delivery with labour induction 41 patients (66%) were with no previous vaginal deliveries. Gonsalves *et al*., [9], observed 20 women had had one previous vaginal delivery (29.4%). Overall, the success rate of vaginal birth after a previous Caesarean delivery was 69.1%, with the remaining patients undergoing an emergency Caesarean section (30.9%). According to previous research, the overall success rate of VBAC is 72–76% [11-12]. Yokoi *et al*., [13], also concluded that the best predictor for a successful VBAC was a previous VBAC in their study of 664 women with one previous Caesarean delivery.

In current study observed that 17(32.7%) patients had diabetes mellitus followed by 11(21.2%) had hypertension and 3(5.8%) had hypothyroid. Amin *et al*., [14], reported the commonest documented aetiology for IUFD was hypertensive disorders (25), IUGR (11) and diabetes mellitus (3); aetiology was unexplained in 26 cases. Kanada and Jain the most common indication for induction of labor in the present study was pregnancy induced hypertention [15].

Of the 44 patients (84.6%) who had effective induction, 28 (63.6%) had catheter ejection within 12 hours, while 16 (36.4%) had it take longer than 12 hours. 43 (82.7%) underwent oxytocin augmentation, 3 (5.8%) developed scar tenderness, and 8 (15.4%) experienced unsuccessful cervical catheter induction. Out of the unsuccessful induction instances, one (12.5%) had a laparotomy, two (25.0%) had LUCS, and five (62.5%) received dinoprostone gel followed by vaginal birth. The time between induction deliveries was 16.3±5.5 hours. Jois and Sunanda[1] reported 41 patients (66%) were with no previous vaginal deliveries and pregnant for the 2nd time with 6 of them showing failure, 15 (24%) were with history of 1 vaginal delivery with 3 failures and 6 (10%) had history of 2 previous vaginal deliveries with 2 of them showing failure. Dekker *et al*., [16], concluded that the risk of rupture with induction of labour was 0.54% for oxytocin alone, 0.68% for prostaglandin alone, 0.63% without either and 0.88% when they were combined.15th risk of rupture with induction of labour was 0.54% for oxytocin alone, 0.68% for prostaglandin alone, 0.63% without either and 0.88% when they were combined [16]. Gonsalves *et al*., [9], the most common indication for induction of labour was intrauterine growth restriction with oligohydramnios (27.9%). All women went into labour when the catheter was removed; however, 46 women (67.6%) and 42 women (61.8%) required oxytocin and artificial rupture of the membranes, respectively, to augment labour. Nazneen *et al*., [17], induction to delivery interval was 9.2±4.1hr. Oxytocin use was more common during labor in women who had started out with transcervical Foley balloons than in those who started with prostaglandins (RR 1.51, 95% CI, 1.15–1.97). Amin *et al*., [5], reported also agreement with our observation.

In the current study, 49(94.2%) patients had normal vaginal delivery, 4(7.7%) had PPH, 3(5.8%) had fever, 2(3.8%) required ICU hospitalization, 1(1.9%) had ruptured uterus, and 1(1.9%) underwent laparotomy. Jois and Sunanda [10], reported that 43% were induced for severe pre-eclampsia and 57% for IUFD. According to Gonsalves *et al*., [9], the majority of patients (85.3%) had no difficulties throughout the induction period, while a few had vaginal hemorrhage (5.9%), intrapartum fever (4.4%), membrane rupture (2.9%), and cord prolapse shortly after the Foley catheter was inserted (1.5%). The Masood study found that the major maternal problems and newborn outcome did not differ significantly between the study groups [18]. Deora and Shetty cases involved a ruptured uterus, one laparotomy, one ICU hospitalization, and one augmentation necessary [19].

CONCLUSION

The majority of the patients had normal vaginal deliveries. Common maternal complications included PPH, fever, ICU admission, laparotomy, and

uterine rupture. Induction is safe in carefully selected cases of past LSCS using Foley's Balloon. Foleys catheter is favorable in terms of absence of required storage conditions and treatment cost, making it a cost-effective choice for pre-induction cervical ripening.

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