

Complications of Induction of Labour with Foley's Catheter in Patients with a Previous Cesarean Section

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Abstract

Background: Management of IUD has immense significance in today's obstetric practice. To summarize, dinoprostone gel, misoprostol and intra cervical catheter can be used for induction of labour in second and third trimester IUD. Mechanical methods, i.e. the use of Foley's catheter balloon, though effective have not gained much popularity because of the fear of infection. **Objective:** To observed the complications of induction of labor with Foley's catheter in patients with a previous cesarean section. **Materials and Methods:** The observational study was carried out in the Department of Obstetrics & Gynecology, Dhaka Medical College Hospital. Dhaka, Bangladesh. Total 52 patients with singleton pregnancy with IUD, at ≥ 28 weeks of gestation was attending in the Department of Obstetrics & Gynae 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. **Results:** 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. Regarding maternal outcome 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. **Conclusion:** Common maternal complications were PPH, fever, ICU admission, laparotomy and rupture uterus. Induction can be done safely in carefully selected cases of previous LSCS with Foley's Balloon.

Keyword: IUD, cesarean section, Foley's Balloon, complications, Induction.

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INTRODUCTION

Labor induction is a common obstetric intervention that refers to the process of expediting delivery. A rapid increase in the rate of labor induction has been observed over the past few years [1]. Induction of labor with Foley's catheter resulted in a 40% successful vaginal birth rate and was found to be safe with only one scar dehiscence and no perinatal or maternal mortality [2]. A large-volume Foley catheter (60 mL) was used for labor induction in the third trimester of pregnancy. The potential risk factors associated with the use of the Foley catheter were

analyzed based on the clinical characteristics of pregnant women undergoing labor induction [1]. The biggest concern is scar dehiscence during labor, which is reported to be around 0.1 to 2.4% [3] In this regard, prostaglandins are contraindicated for induction of labor due to the high risk of rupture reported [5]. Spontaneous labor is the safest option for the successful vaginal birth in women with a scarred uterus. However, induction of labor may be needed for maternal or fetal indication. Mechanical methods like balloon catheters have been recommended for ripening of the cervix. Foley's single-balloon catheter has been used as an alternative to double-balloon catheters for cervical

ripening Patients with previous LSCS has a more successful outcome when onset of labour spontaneous rather than induced. Induction of labour in a scarred uterus has risk of scar dehiscence, rupture thus increasing maternal morbidity and mortality. However a repeat caesarean section for an IUFD means more preoperative and post-operative complications [5,6]. According to systematic review; met analysis over induction of labour with previous LSCS (scarred uterus) is not possible because of paucity of evidences [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].

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. Total 52 patients with singleton pregnancy with IUFD, at ≥ 28 weeks of gestation were included in this study. All patients presenting to the outpatient or emergency department with IUFD was enrolled in the study after taking informed valid consent. 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 shows that 38(73.1%) patients were found booked and 14(26.9%) were un-booked (Table-2). 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-3). Table 4 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.

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 \pm SD	28.3	± 6.4
Range (min-max)	18	-39

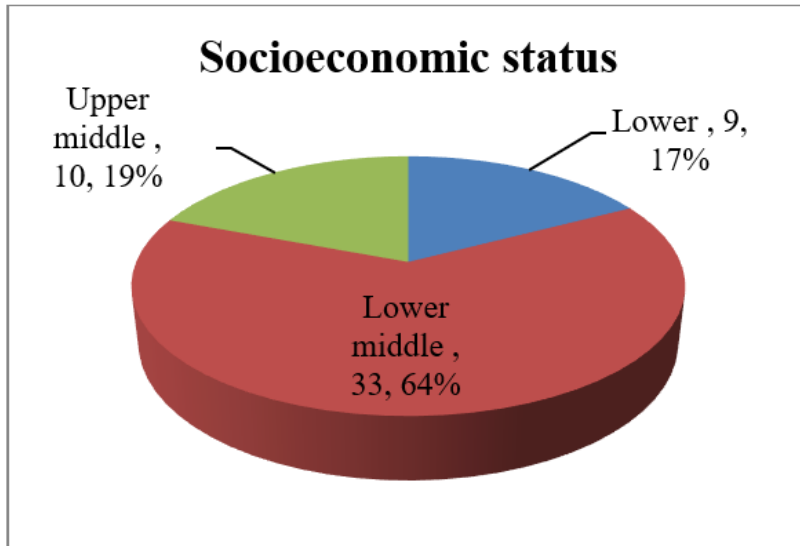


Figure I: Distribution of the study patients according to socioeconomic status (n=52)

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

Booking status	Number of patients	Percentage
Booked	38	73.1
Unbooked	14	26.9

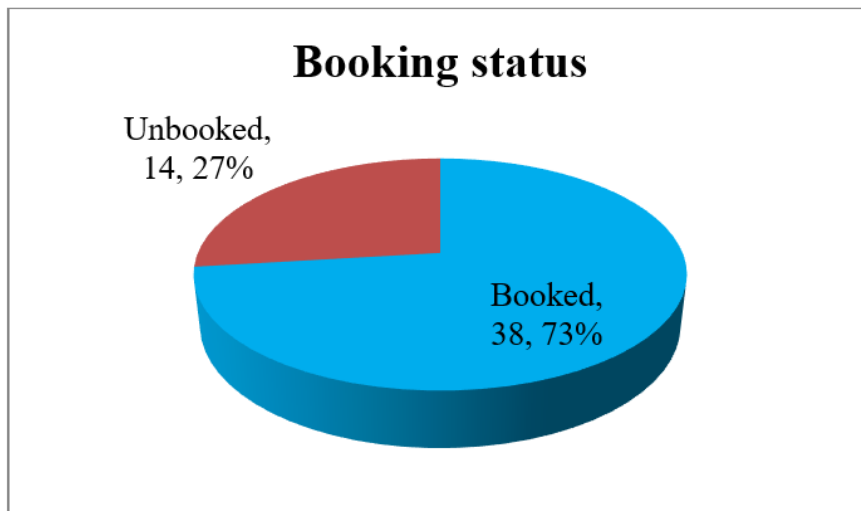


Figure II: Distribution of the study patients according to booking status (n=52)

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

Indication	Number of patients	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 4: Distribution of the study patients according to maternal outcome (n=52)

Maternal outcome	Number of patients	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

DISCUSSION

Labour induction has been recommended for properly selected women eligible for Trial of labor after cesarean section by most of the guidelines as an initiative to reduce repeat cesarean section rates [9,10]. 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.*, [11] also reported most women were 25–35 years old (76.5%). Amin *et al.*, [12] also observed majority of women were in the age group 21–30 years. In this study showed that 44(84.6%) patients had successful induction, among them 28(63.6%) had expulsion of catheter ≤ 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 with cervical catheter. Among the failed induction cases, 5(62.5%) had dinoprostone gel used followed by vaginal birth, 2(25.0%) underwent LUCS and 1(12.5%) had laparotomy. Induction delivery interval was found 16.3 ± 5.5 hours. Jois and Sunanda¹ 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.*, [13] 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 [12]. Gonsalves *et al.*, [11] 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. Women with a successful VBAC had a mean duration of labour of 8.04 ± 4.57 hours (range: 3–25 hours) for stage one labour and 22.74 ± 27.00 minutes (range: 2–165 minutes) for stage two labour. Nazneen *et al.*, [14] induction to delivery interval was 9.2 ± 4.1 hr. 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) [15] Amin *et al.*, [12] reported Induction of labour was done with dinoprostone gel in 64 cases (9 in second and 55 in third trimester), misoprostol in 28 cases (20 in second and 8 in third trimester) and intracervical Foley in 8 cases (3 in second and 5 in third trimester). 15/64 cases delivered with dinoprostone alone, an additional 6/64 cases delivered with second insertion of dinoprostone gel after 6 h, whereas majority of cases (43/64) needed a secondary method of induction, either oxytocin or Foley catheter. 28 cases required oxytocin as secondary method; 7/28 cases experienced minor side effects like fever, diarrhoea. Overall, 97 out of 100 patients delivered successfully. Failed induction of labour occurred in 3 cases all of whom required LSCS. The mean induction-to-delivery interval was 15.4 h. In present study observed that 49(94.2%) patients had normal vaginal delivery, 4(7.7%) had PPH, 3(5.8%) had fever, 2(3.8%) needed ICU admission, 1(1.9%) had rupture uterus, and 1(1.9%) had laparotomy. Jois and Sunandan [1] reported 43% of them were induced for severe pre-eclampsia and 57% for IUFD. Gonsalves *et al.*, [11] observed that the majority experienced no complications during the induction period (85.3%), although a few had vaginal bleeding (5.9%), intrapartum fever (4.4%), rupture of the membranes (2.9%) and cord prolapse shortly after insertion of the Foley catheter (1.5%). Masood study showed that the major maternal complications and neonatal outcome which was not significantly different among the study groups [16]. Deora and Shetty one case was rupture uterus, 1 was laparotomy, 1 was ICU admission and 1 was augmentation required [17].

CONCLUSION

Most of the patients had normal vaginal delivery. Common maternal complications were PPH, fever, ICU admission, laparotomy and rupture uterus. Induction can be done safely in carefully selected cases of previous LSCS with Foley's Balloon. Foleys catheter is advantageous in terms of lack of specific storage conditions and cost of treatment, it could be considered a cost effective alternative for pre induction cervical ripening.

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