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Preinduction cervical ripening for induction of labour by intra-cervical foley's catheter at term

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Abstract
Background: In cervical ripening, before induction, is needed to increase the success of labour induction, to reduce complications and to diminish the rate of caesarean section and duration of labour. Aim & Objective of the study was to successive induction of labour depend on cervical status at time of induction, Aim was to prove efficacy and safety of intracervical foley's catheter in cervical ripening for induction of labour.
Methods: A randomized prospective study was conducted in department of obstetrics & gynaecology, SMS hospital, Jaipur. 50 women at term with Bishop's score <5 with various indications of induction of labour was enrolled for insertion of intracervical foley's catheter.
Results: Mean pre-induction Bishop's score was 2.26 ± 0.83 hr and Mean post induction Bishop's score was 8.02 ± 3.22 hr. Mean incremental change in the Bishop's score was 6.56 ± 1.92 hr. Mean induction to active labour interval was 8.66 hrs and mean induction to delivery interval was 11.07 ± 4.82 hrs.Need of labour augmented by oxytocin + ARM in 58.00% cases, , most common indication of LSCS was failed induction 66.67% and APGAR score at 1 minute and at 5 minute was 6.72 ± 0.80 and 7.94 ± 0.42.
Conclusion: This study showed that intracervical foley's catheter was effective for cervical ripening.

Keywords: Preinduction cervical, Increase, gynaecology

Introduction

The safe and effective methods of achieving delivery have always been the primary objective [1]. The induction rates have increased from 9.5% to 33.7% of all pregnancies annually [2, 3] Labour induction is artificial initiation of labour. Prior to its spontaneous onset for purpose of accomplishing delivery of feto-placental unit[4] & for benefit to either to mother or fetus outweight the benefits of continuing pregnancy [4]. The principal concern is how to provide the effective, easy to use, safest and less expensive way to terminate the pregnancy. The success of induction depends on the consistency, compliance and configuration of the cervix [5]. For that, Bishop's pelvic scoring system is most commonly used which is very much sensitive in predicting success of labour. Induction of labour when cervix it is unripe is associated with maternal complication and high rates of induction failure [6]. Common indication for labour include postdatism, pre-eclampsia, premature rupture of membranes, chorio-amnionitis, IUGR, isoimmunisation, maternal medical problems, fetal demise and oligohydramnios.[7]Common contraindications to labour induction are placenta praevia, transverse lie, prolapsed umbilical cord, scarred uterus, active genital herpes infection, and pelvic structural deformities [7]. Cervical ripening is an integral part of the conditioning phase of parturition, and it occurs independently of uterine contractions [8-10]. The higher the Bishop's score, the more "ripe" or "favourable" the cervix as for labour induction. Allow Bishop's score, equally considered less than or equal to 6, as "unripe" or "unfavourable" and will useful from cervical ripening [11, 12]. 'Cervical ripening' is a process by which the cervix becomes soft, compliant and partially dilated. Cervical ripening agents are used to make unfavourable cervix to a favourable cervix. Methods of cervical dilatation are as follows; laminaria tents, membranes stripping, mechanical dilatation-foleys catheter, mifeprestone, prostaglandins (PGE2, PGE1) [13].

Material and Methods

Randemized prospective study conducted in Obstetrics &Gynaecology, SMS Medical college Jaipur, over a period of one year and 50 primigravida women enrolled for intracervical foley's catheter, with inclusion criteria were gestational age >37wks who requiring induction of labour,cephalic presentation, bishops score <5 intact membranes,IUGR Without Fetal compromise, singleton pregnancy,and Exclusion criteria were cephalopelvic disproportion,pregnancy with previous uterine scar.
Methodology-Women were thoroughly evaluated regarding complete history, detailed general and obstetrical examination. Gestational age was assessed by LMP or earliest USG. Detailed pelvic examination and Bishop's score were noted. After getting informed and written consent, women were divided in two groups randomly. Intra cervical Foley's catheter No.18 was introduced through the endocervix under direct visualization into the extra amniotic space, using aseptic technique and balloon was inflated with 30 ml of normal saline and was retracted so that it rests on the internal os. The catheter was strapped to inner thigh after applying slight traction. Prophylactic antibiotic was given. Mobilization was encouraged. The Bishop's score was reassessed on spontaneous expulsion, in absence of spontaneous expulsion, the catheter was deflated, removed and the cervix reassessed after 12 hours or earlier if membranes ruptures. External electronic fetal heart rate monitoring was recorded before and for 40 minutes after

Foley's catheter insertion.

Observations

Table 1: Distribution of cases according to Gestational age

Gestational Age(in wks)		
	No.	%
37 - 39.6	34	68.00
40 - 41.6	10	20.00
≥42	6	12.00
Total	50	100.00
Mean ± SD	38.1 ± 1.12	

In our study, 34 (68.00%) women's gestational age were 37-39.6 weeks, 10 (20.00%) women's gestational age were 40-41.6 weeks & 6 (12.00%) women's gestational age were ≥42 weeks. Mean gestational age of women was 38.1 ± 1.12 weeks.

Table 2: Distribution of cases according to Indication of induction of labour

Indication of induction of labor	No.	%
IUGR	2	4.00
Postdate	15	30.00
Oligohydramnios	4	8.00
Hypertension	10	20.00
ICP	2	4.00
Due Date	17	34.00
Total	50	100.00

In our study, women were post-dated 30%, IUGR (4.00%, Oligohydramnios 8.00%, Hypertension 20.00%, ICP4.00% and on due date 34.00%.

Table 3: Cases according to Bishop's Score

Bishop's Score	n=50	
	Mean	SD
Mean Pre-induction	2.26	0.83
Mean Post-induction	8.02	3.22
Mean Incremental Changes	6.56	1.92

In our study, mean pre-induction Bishop's score was 2.26 ± 0.83, and Mean post-induction Bishop's score was 8.02 ± 3.22.

Table 4: distribution of cases according to induction to active labour & delivery interval

Active Labor Interval (in hrs) Mean ± SD	8.66 ± 1.90
Induction to Delivery interval Mean ± SD	11.07 ± 4.82

Table 5: Need of augmentation of labour

Need for Augmentation	n=50	
	No.	%
ARM	3	6.00
Oxytocin	7	14.00
Oxytocin + ARM	11	22.00

In our study, the need for oxytocin augmentation was 7 (14.00%) women, 3 (6.00%) women required ARM and 11 (22.00%) cases required oxytocin + ARM for augmentation. 29 (58.00%) cases went into spontaneous labour which did not require augmentation.

Table 6: Distribution of Cases according to mode of delivery

Mode of Delivery	Group-A	
	No.	%
LSCS	12	24.00
Normal Delivery	38	76.00
Total	50	100.00

In our study, the need for operative intervention was also reduced, Cesarean section was done in 12 (24.00%) cases.Most common indication of LSCS was Failed Induction followed by Fetal distress.

Discussion

Mean gestational age of women was 38.1 ± 1.12 weeks which was similar to study done by Kanada AR *et al* (2019)[14] i.e. 38.48 ± 1.35 wks in Group-1 and 38.43 ± 1.29 wks in Group-2.The mean gestational age of women in a study done by Rao SC *et al* (2019)[97] was 38.4 ± 1.03 wks in Group-1 and 38.2 ± 0.92 wks in Group-2.

In this study most common indication of induction of labour was due date, hypertention followed by oligohydroamnios, ICP, IUGR. Similar to our study Kanada AR *et al* (2019) [14]. reported most common indication for induction of labour was pregnancy induced hypertension and postdatism. Murmu S *et al* (2018) [15]. reported the most common indication for induction of labour was PIH, others were postdated pregnancy, FGR, decrease fetal movement, oligohydramnios.

In our study, mean pre-induction Bishop's score was 2.26 ± 0.83 ,and Mean post-induction Bishop's score was 8.02 ± 3.22.Similar observations was made by Perveena F *et al* (2016) [17], they reported that mean pre-induction bishop's score (2.4 ± 0.7) in Group-A & (2.5 ± 0.8) in Group-B and post-induction bishop score (7.70. ± 8) in Group-A & (7.6± 0.8) in Group-B and improvement in Bishop's was 5.31 ±.1 ($p<0.001$) and 5.1 ± 1.1 ($p<0.001$), there was not significant. Kadam DA *et al* (2015) [18]. observations also in accordance with my study, that mean change in Bishop's score in Group-A was 5.27 ± 2.28 and that of Group-B is 5.01 ± 2.53, so the p-value was 0.600 means there was no significant difference between them.

In this study we found that Induction to active labour and delivery interval was 8.66 ± 1.90 and 11.07 ± 4.82 hrs. Similar observation was made by Garg R *et al* (2018) [19]. reported that the mean induction to active phase interval in both groups which was 5.8 ± 0.80 hours in Group-A and 6.23 ± 0.40 hours in Group-B which is not significant ($p>0.1$).Devarajan A *et al* (2014) [13]. reported that the mean induction active labour interval for primi and multi in Group-1 were 6.27 and 7.25 hours and in Group-2 were 6.23 and 6.04 hours respectively. The difference between the two groups was statistically significant ($p < 0.05$). In similar study by Jha R *et al* (2017) [20]. reported that induction-delivery interval showed no significant difference in the two groups. The mean I-D interval was 16.01 ± 5.5 hours and 16.3 ± 3.81 hrs in Group-A and Group B respectively.In a study conducted by Alam A *et al* (2016) [21]. reported that induction-delivery interval showed no significant difference in the two groups. The mean induction-delivery interval was 16.01 ± 5.5 hours in Foley's group and 16.85 ± 3.81 hours in PGE_2 group.

In our study, the need for oxytocin augmentation was 7 (14.00%) women, 3 (6.00%) women required ARM and 11

(22.00%) cases required oxytocin + ARM for augmentation. 29 (58.00%) cases went into spontaneous labour which did not require augmentation Similar observation was made by Kanada AR *et al* (2019) [14]. they reported that spontaneous labour ensured in 12 women in Group-A (24%) compared with 14 women in Group-B (28%). In Foley's catheter group, need for augmentation of labour was required by doing ARM in 8%, oxytocin infusion 38% and both ARM + oxytocin in 30% women. In PGE_2 group, 12% women required ARM, 36% women required oxytocin and 24% women required both ARM + oxytocin. There was no significant difference in need for augmentation in both groups. Murmu S *et al* (2018) [16]. reported that in Group-1 8.6% women required ARM, 37.1% women required oxytocin augmentation whereas in Group-2, need for augmentation of labour by ARM was in 10%, oxytocin infusion in 40% and both ARM + oxytocin in 20% women. Spontaneous labour ensured in 25.7% women in Group-1 as compared to 30% women in Group-2. However, there was no significant difference in both groups as per chi-square test ($p > 0.05$).

In our study, the need for operative intervention was also reduced, Cesarean section was done in 12 (24.00%) cases.Most common indication of LSCS was Failed Induction followed by Fetal distress.

In a study conducted by Kanada AR *et al* (2019) [14]. reported no significant statistical difference in spontaneous vaginal delivery in both the groups. There was 76% spontaneous deliveries in Group-A whereas in Group-B it was 78%. The need for operative intervention (LSCS) was also not significant in both the groups. Alam A *et al* (2016) [21], reported the need for operative intervention (LSCS) was not significant in both the groups. LSCS was done in 21% in Group-A and 19% in Group-B.

Conclusion

Our study showed that for cervical ripening intracervical catheter was effective and safe. The advantage of foley's induction was simplicity of use, potential of reversibility,reduction of certain side effects like excessive uterine activity, nausea & vomiting and low cost.

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