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Original Research Article

Elective Foley's induction in previous one caesarean section

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ABSTRACT

Background: American college of obstetricians and gynecologists and the American academy of family physicians recommended that pregnant women with a single previous caesarean delivery and a low-transverse incision should be offered a trial of labour. This study was planned to measure safety and efficacy of elective Foley's induction as a method of induction in previous one caesarean section.
Methods: This was a prospective study of 150 women with previous caesarean section who were candidates for TOLAC admitted in labour room. Induction of labour via Foley's catheter was done in group A whereas group B had a spontaneous onset of labour in previous caesarean section cases. Augmentation was done, if required.
Results: There was spontaneous expulsion of Foley's catheter in 88% out of which 65.15% patients delivered vaginally and 34.84% were delivered by caesarean section. Out of 12% where Foley's catheter had to be removed after 12 hours manually, 88.89% were delivered by caesarean section.
Conclusions: A change in Bishop score after induction with Foley's catheter in previous caesarean section leads to higher chances of successful vaginal delivery. The likelihood of successful vaginal delivery increases with increase in FLAMM score.

Keywords: Bishop score, Caesarean section, FLAMM score, Foley's catheter

INTRODUCTION

Globally the trend of caesarean section rate is increasing; the rate of repeat caesarean section is also increasing.[1-4] ACOG and the American academy of family physicians recommended that pregnant women with a single previous caesarean delivery and a low-transverse incision should be offered a trial of labour.[5]

The purpose of induction of labor in previous caesarean patient is to achieve vaginal delivery and to avoid secondary caesarean rate.[6]

Indications for induction of labour in previous CS[7]

Induction is indicated when the benefits to either mother or fetus outweigh those of pregnancy continuation. More common indications include gestational hypertension, oligohydramnios, post-term pregnancy, various maternal medical conditions such as chronic hypertension and diabetes.

Contraindications for induction of labour in previous CS[8]

Methods to induce or augment labour are contraindicated by most conditions that preclude spontaneous labour or delivery. Prior unknown uterine incision type, contracted or distorted pelvic anatomy, abnormally implanted placentas, uncommon conditions such as active genital herpes infection or cervical cancer.

Induction of labour in case of previous CS may be associated with increase scar dehiscence or scar rupture.[9]

Labor induction in previous caesarean section[10]

Labor induction is associated with higher failure rate during TOLAC.

The risks for uterine rupture, however, are less clear with induction or augmentation, with the exception of misoprostol- which is contraindicated.

Oxytocin

Induction or augmentation of labor with oxytocin has been implicated in increased rates of uterine rupture in women undergoing TOLAC.

Prostaglandins

Induction with misoprostol is contraindicated in TOLAC owing to increased rate of uterine rupture.

Mechanical methods

Women with prior caesarean delivery, the uterine rupture risk using a transcervical Foley catheter for labor induction was not significantly greater than that with spontaneous labor or with using amniotomy with or without oxytocin.

Therefore, this study was conducted to know obstetrical outcome as well as effect on VBAC rate when we induced previous caesarean section patient. This study was planned to measure safety and efficacy of elective Foley's induction as a method of induction in previous one caesarean section.

METHODS

This was a randomized control trial-prospective study in the Department of Obstetrics and Gynecology, GMERS medical college and hospital, Sola, Ahmedabad, Gujarat during July 2020 to July 2022. All cases were randomized and allotted to either group A (induction of labour with Foley's in previous caesarean) and group B (spontaneous onset of labour in previous caesarean section) equally- 75 in each group according to random number table generated by the computer. Both groups were comparable in maternal variants like mean age, mean gestational age, mean BMI, parity, inter pregnancy interval, indication of previous cesarean section with outcome of delivery.

Inclusion criteria

One prior LSCS, singleton pregnancy (live and intrauterine fetal death), cephalic presentation, uneventful previous caesarean section, adequate pelvis.

Exclusion criteria

Absolute indication of caesarean section, previous complicated caesarean based on antenatal records, contracted pelvis, pre-existing maternal medical disorders like heart disease, renal disease, placenta previa, multiple pregnancy, antepartum hemorrhage

The data was analysed by MS Excel 2010 software.

RESULTS

Table 1 shows comparison of maternal variants in both groups (induced and spontaneous) which include age, gestational age, parity and BMI which were equally distributed among both groups and p-value being non-significant.

Table 1: Comparison of maternal variants in both groups.

	Group A (N_1=75)	Group B (N_2=75)	P value
Age (years)			
<25	24 (32%)	25 (33.33%)	0.8617
25-35	50 (66.67%)	49 (65.33%)	0.8631
>35	1(1.33%)	1 (1.33%)	1
Gestational age			
≤38	1 (1.33%)	1 (1.33%)	1
38-38+6	7 (9.33%)	8 (10.66%)	0.785
39-39+6	43 (57.33%)	46 (61.33%)	0.618
≥40	24 (32%)	20 (26.67%)	0.473
Parity			
1	51 (68%)	51 (68%)	1
≥2	24 (32%)	24 (32%)	1
BMI (kg/m^2)			
≤18.5	2 (2.67%)	3 (4.00%)	0.649
18.5-24.9	53 (70.67%)	54 (72.00%)	0.856
25-29.9	16 (21.33%)	15 (20.00%)	0.840
≥30.0	4(5.33%)	3 (4.00%)	0.698

Table 2: TOLAC outcome according to FLAMM scoring.

FLAMM score	VBAC		P value	CS		P value
	Group A	Group B		Group A	Group B	
0 to 2	2 (4.5%)	0	-	6 (19.3%)	2 (8.7%)	0.33
3-4	24 (54.5%)	11 (21.1%)	0.0007	23 (74.2%)	19 (82.6%)	0.46
5-6	17 (38.6%)	38 (73.1%)	0.0007	2 (6.5%)	2 (8.7%)	0.75
>6	1 (2.27%)	3 (5.8%)	0.39	0	0	0
Total	44 (100%)	52 (100%)		31 (100%)	23 (100%)	

FLAMM score was applied in group A after expulsion/removal of Foley's catheter.

For FLAMM score of 0-2, there was higher rate of CS than VBAC in both groups. It was seen that there was no CS done for those with >6 FLAMM score.

For FLAMM score of 3-4, group A showed 54.4% VBAC while group B showed 21.1% VBAC. The result was statistically significant, same as for FLAMM score of 5-6, group A showed 38.6% VBAC while group B showed 73.1% VBAC.

Table 3: Comparison of Bishop's score in group A (paired t-test).

Bishop's score	Group A (mean±SD)	P value
Mean pre-induction score	1.61±0.80	<0.001
Mean post induction score	4.64±1.53	
Mean change	3.03±0.73	

In group A, the mean pre-induction score was 1.61±0.80 and the mean post induction score was 4.64±1.53. The p value for this observation was <0.001 which was statistically significant.

Table 4: Outcome in both groups.

Outcome	Groups		P value
	Group A (N_1=75)	Group B (N_2=75)	
No intervention	31 (41.33%)	47 (62.67%)	0.008
Augmentation	44 (58.67%)	24 (32%)	0.001
Failure/NPOL	10 (13.33%)	4 (5.33%)	0.09

From the above table, it was interpreted that in group A there was no need for intervention in 41.33% of group A and 62.67% of group B, the p value being significant (0.008), while augmentation was needed in 58.67% in group A and in 32% in group B, the p value was again significant (0.001).

Table 5: Mode of delivery.

Mode of delivery	Group		Total	P value
	Group A	Group B		
Total vaginal	44 (58.67%)	52 (69.33%)	96 (64%)	0.173
LSCS	31 (41.33%)	23 (30.67%)	54 (36%)	
Total	75 (100.00%)	75 (100.00%)	150 (100.00%)	

It was observed that in group A there was induction failure in 13.33%, while it was 5.33% in group B. The p value for this observation was non-significant.

The above table shows that there was higher rate of VBAC in group B (69.33%) than in group A (58.67%), as compared to higher rate of LSCS in group A (41.33%) than group B (30.67%), the result being statistically non-significant (p value 0.173).

Table 6: Complication during Foley's induction.

	Foley's group (N=75)
None	66 (88%)
Rupture of membrane	1 (1.33%)
Fever	2 (2.67%)
Vaginal bleeding	4 (5.33%)
Cord prolapses	2 (2.67%)

From the above table we have observed that there was no complication in majority (88%) of the patients after Foley's induction. Complications like rupture of membrane, fever, vaginal bleeding and cord prolapse were observed in 1.33%, 2.67%, 5.33% and 2.67% patients respectively.

DISCUSSION

For FLAMM score of 0-2, the rate of CS was higher than VBAC in both groups. For FLAMM score of 3-4, group A showed 54.4% VBAC as compared to 21.1% in group B. For FLAMM score of 5-6, group B showed 73.1% VBAC as compared to 38.6% in group A. No CS were done for >6 FLAMM score.

In group A the mean pre-induction bishop's score was 1.61±0.80 and the mean post induction score was 4.64±1.53. Ferradas et al observed initial Bishop score of 1.16±1.3 before insertion of Foley's catheter and Bishop score was 3.22±2.03 after removal of catheter (p value <0.001).[11]

It was observed that augmentation was required in 58.67% in group A and in 32% in group B. Bujold et al also observed that need for augmentation was in 91.4% patients of induced group as compared to 44.2% patients of spontaneous group (p value <0.001).[12]

The rate of VBAC was higher in group B (69.33%) than in group A (58.67%). The rate of LSCS was higher in group A (41.33%) in comparison to group B (30.67%). Bujold et al studied that rate of successful vaginal birth after caesarean section was 78% with spontaneous onset of labour as compared to 55.7% patients who were induced with Foley's catheter.[12]

For a change of bishop score after induction, 67.21% patients were delivered vaginally. When there was no change in bishop score after induction, 21.42% were delivered vaginally while 78.57% underwent CS. Following complications were reported when induction was done with Foley's catheter: rupture of membrane (1.33%), fever (2.67%), vaginal bleeding (5.33%) and cord

prolapse (2.67%). Gonsalves et al reported complications like vaginal bleeding in 5.9%, intrapartum fever in 4.4%, rupture of membrane in 2.9% and cord prolapse in 1.5%.[13]

There are few limitations of this study. The study was unicentric study. Multicentric study should be carried out to validate the findings of our study. Moreover, computerized randomized technique and blinding would have improved quality. Sample size in our study was small. The study should be conducted with large sample size to see if observation is reproducible.

CONCLUSION

A change in Bishop score after induction with Foley's catheter in previous caesarean section leads to higher chances of successful vaginal delivery. The need for augmentation of labour is more in the patients with elective induction of Foley's catheter in previous caesarean section. The likelihood of successful vaginal delivery increases with increase in FLAMM score. Obstetric outcome like mode of delivery remains similar after induction of labour with Foley's catheter in previous caesarean as well as in spontaneous onset of labour in previous caesarean.

Hence, Foley's can be used for cervical ripening for induction of labour in previous caesarean section without compromising obstetric and perinatal outcome. It can be used in low resource settings as safe alternative method for cervical ripening for induction of labour.

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