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Original Research Article

Case series of Foley's induction in patients with previous caesarean

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ABSTRACT

Background: The objective of this study was to study the efficacy of intracervical Foley's catheter induction in women with previous history of caesarean section and to evaluate the maternal and fetal outcome of these pregnancies.
Methods: It is a prospective analysis of 30 patients whose labour was induced by intracervical Foley's bulb for VBAC delivery. This study was conducted in KIMS, Hubli. Age, parity, indication of previous caesarean, inter-pregnancy interval and outcome of index pregnancy were studied in detail and analysed.
Results: 30 women with previous history of caesarean were included into the study. Various indications of induction during index pregnancies were- post-datism, IUGR, intra-uterine foetal demise and severe pre-eclampsia and eclampsia. Out of 30 women, 18 (60%) had successful VBAC delivery, 12 (40%) underwent repeat LSCS. 19 cases needed augmentation of labour. Indications for caesarean section were failed induction in 5 (16.6%) women, threatened scar rupture in 3 (10%), non-progress of labour in 2 (6.6%) and meconium stained amniotic fluid in 2 (6.6%). No cases of uterine rupture or maternal mortality was noted in the study.
Conclusions: In our study the rate of vaginal birth was 60% without major maternal complications. Hence intracervical Foley's catheter is an effective, safe and acceptable for labour induction in women with previous caesarean.

Keywords: Previous caesarean, VBAC

INTRODUCTION

"Once a caesarean, always a caesarean" is a notion commonly practised by many obstetricians. The National institute for Health (NIH) consensus indicated that women with lower segment caesarean section could safely attempt vaginal birth after caesarean (VBAC). VBACs increased in number and reached peak in 1996. Thereafter the trend reversed and there was a fall in women undergoing VBAC after 1996. As the number of VBACs increased, the factors which increased the risk of uterine rupture became apparent.

A trial of labour, whether induced or spontaneous, in women with previous caesarean is a major concern because of increased chances of rupture of uterus. Elective repeat caesarean section is perhaps the most popular among obstetricians where spontaneous delivery has not started by 41 weeks gestation and cervix is unfavourable.

It is commonly believed that women with prior caesarean delivery who undergo induction of labour are less likely to have vaginal birth.[1] Induction of labour in presence of unfavourable cervix is the most common dilemma faced by obstetricians. 'To induce or not to induce' is a major concern among obstetricians.[2] Induction of labour in previous caesarean has long been a topic of controversy. Various techniques have been used to ripen unfavourable cervix, which include pharmacological and non-pharmacological methods (mechanical methods). Pharmacological methods include use of prostaglandins,

oxytocin, mifepristone, isosorbide mononitrate etc.[3,4] Non-pharmacological methods include double balloon catheter, intracervical foley's catheter, bougies, hygroscopic laminaria tents etc. due to increased risk of uterine rupture with prostaglandins in previous caesarean; its use has been discouraged as a ripening agent in previous caesarean deliveries.[5]

The use of an intracervical balloon catheter to ripen the cervix is not a new concept. It was first described by Embry and Mollison in 1967. Foleys catheter was placed just past the internal os, 40 ml balloon was inflated with sterile water. Foley's catheter has been proved to be much more economical, without detrimental side effects that other methods offer. Bujold et al also noted that clear advantage of using intracervical bulb is that, it does not stimulate uterine contractions.[12]

METHODS

The study was conducted in a tertiary care centre and a medical college, Karnataka Institute of Medical Sciences, Hubli. Patients with previous history of Cesarean section.

Inclusion criteria

- Singleton pregnancy (live and intrauterine foetal death)
- Past history of lower segment caesarean section
- Cephalic presentation
- Bishop's score <6
- Adequate pelvis
- Previous uneventful caesarean section.

Exclusion criteria

- Multiple pregnancy
- History of complication during previous caesarean section and puerperium
- Antepartum haemorrhage
- Recurring indication for caesarean section
- Classical caesarean section.

After taking informed consent and explaining about the procedure, intracervical Foley's catheter is inserted

Method of inserting Foley's catheter - Under aseptic conditions, A 20 French Foley's catheter with a 40ml balloon was inserted into the endocervical canal, beyond the internal os and the balloon was inflated with 40ml of sterile water.

End point of induction

- Fall of Foley's catheter
- Any intrapartum contraindications of induction
- 24 hours of initiation of induction, if no response noted, removal and re-insertion after 12 hours.

Immediately after the expulsion or removal of Foley's catheter, bishop's score was reassessed. Patients with favourable bishop's score, artificial rupture of membranes were performed and labour was augmented with oxytocin in most cases. Oxytocin infusion was titrated every 30minutes depending upon the frequency and adequacy of contractions.

Primary outcome

successful induction of labour and ripening of cervix, defined as woman achieving active labour status after initiation of induction

- Improvement in effacement and dilatation of cervix

Secondary outcome

- Duration of induction (time of insertion to fall of catheter)
- Induction - delivery interval
- Failed induction
- Mode of termination of pregnancy - foetal and maternal outcome
- Apgar score at 1 and 5 min (in case of live foetus).

RESULTS

Data collected – demographic characters, age, indication of previous caesarean, presence of any intra- or post-partum events, inter-pregnancy interval were analysed. Indication of induction of labour during index pregnancy, bishop score at the time of insertion and fall of Foley's catheter, mode of delivery were studied. Maternal and perinatal outcomes, complications were also studied in detail.

Table 1: Previous pregnancy characteristics.

Previous history of successful VBAC delivery	3
Indications for previous sections	
Oligohydramnios	3
Premature rupture of membranes	3
Fetal distress	8
Breech	4
Monochorionic twins	2
Non-progress of labour	2
Eclampsia and pre-eclampsia	2
Cephalopelvic disproportion	6

Table 2: Indications for Foley's induction during index pregnancy were.

Post-dated pregnancy	6 (20%)
IUGR	2 (6.66%)
IUD	6 (20%)
Eclampsia and pre-eclampsia	3 (10%)
Others	13 (43.33%)

Out of 30 women in whom Foley's catheter was inserted for induction of labour, no complications were noted in the mother. Index pregnancy - labour and delivery outcomes after Foley's induction.

Table 3: Index pregnancy - labour and delivery outcomes after Foley's induction.

Foley's induction related complications	0
Bishop's score (at the time of insertion of Foley's catheter)	2-5
Bishops score (at removal/expulsion of Foley's catheter)	4-10
Oxytocin Augmentation of labour required in	19
Induction- delivery interval duration	8-38 hours
Induction - removal/expulsion of catheter duration	4-23 hours
Removal and re-insertion of catheter required in	8

Out of 30 women in whom Foley's catheter was inserted for induction of labor, no complications were noted in the mother. Bishop's scoring at the time of insertion varied from 2-5, bishop's score at fall of catheter varied from 4-10. 19 women needed augmentation of labour following expulsion/removal of Foley's catheter. 8 women needed removal of catheter after 24hours of induction and reinsertion after 12hours. Mean duration of induction-delivery interval is 23 hours(8-38hrs). mean duration of induction- removal/expulsion of foley's catheter is 13.5hours (4-23hrs).

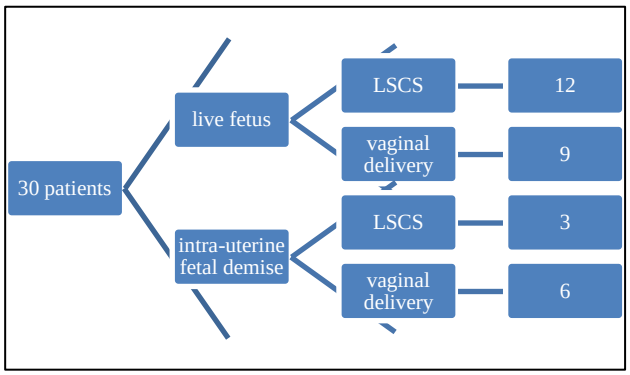

Figure 1: 30 patients among the study group.

Table 4: Women underwent caesarean section.

Meconium stained amniotic fluid	2
Failed induction	5
Threatened scar rupture	3
Non-progress of labour	2

30 patients among the study group, 12 women underwent caesarean section for various indications; 3 (10%)women with diagnosis of intra-uterine foetal demise underwent caesarean section for threatened scar rupture and failed induction. No cases of uterine rupture or maternal mortality were noted.

Table 5: Maternal complications and neonatal outcomes.

Maternal complications	
Uterine rupture	0
Meconium stained liquor	2
Uterine hyperstimulation	0
Maternal death	0
Post-partum haemorrhage	0
Post-operative wound infection	**0**
Wound gaping	0
Pyrexia	5
Neonatal outcomes	
Birth weight varied from	1.12 kg - 3.46 kg
Complications	
Fresh still birth due to cord prolapse	1
Early neonatal death	1

Perinatal outcome

Among the 21 women with live intra-uterine foetus, outcomes were - 20 live foetuses, one fresh still birth due to cord prolapse. Two babies were admitted in NICU for respiratory distress, one baby died on day 2, and the other baby was discharged to mother's side on day 12. 18 babies were healthy, with no post-natal complications.

DISCUSSION

Induction of labour is the commonest obstetric intervention. For women with unfavourable cervix requiring induction of labour, usually mechanical methods or prostaglandins are used. Low dose oxytocin as cervical ripening agent has also been studied to be equally efficacious.[6] Since prostaglandins are contraindicated, intracervical Foley's catheter is a method of induction in patients with previous LSCS. Use of Foley's catheter reduces the risk of uterine hypertonicity and rupture. It induces cervical ripening without inducing any uterine contractions.

Jozwiak et al, conducted a retrospective cohort study in Netherlands, during the period of 2003-2012 in a teaching hospital to evaluate spontaneous vaginal delivery and complication rates after induction of labour with trans cervical Foley's catheter in women with previous history of caesarean section.[7] The study concluded with the inference that Foley's catheter is an effective method to achieve vaginal delivery in women with previous caesarean. There is low risk of uterine rupture and maternal and neonatal (infection) morbidity in the cohort.

SOGC Clinical practice guidelines no. 155 (8) (replaces guideline no. 147, February 2005. Guidelines for Vaginal

Birth After Previous Caesarean Section. These guidelines are prepared, reviewed to provide evidence based guidelines for provision of trial of labor in women with previous caesarean. The conclusion and inference of this study was that use of Foley's catheter for induction of labour and augmentation of laour with oxytocin is safe in women with previous caesarean

IOL at term with Foley's catheter is associated with increase in intracervical pathogenic organisms, despite taking aspetic measures. In our study, 5 patients suffered from pyrexia which may be due to prolonged placement of catheter or lack of administration of prophylactic antibiotics.

Success rates of VBAC delivery in our study was 60%, with no significant maternal complications. The most common indication for induction of labour in our study was post-datism and intrauterine foetal demise. Out of 40% of patients who underwent repeat caesarean, most common indication was failed induction. No intra-partum or intra-operative complications were noted. No cases of uterine rupture or maternal mortality were noted in our study. The main limitation during the study was monitoring of patients with diagnosis of intrauterine foetal demise for uterine rupture.

CONCLUSION

Labour induction for women with a prior caesarean delivery is considered acceptable practice. Nevertheless, the final determination of induction should be undertaken by the needs of the woman, with informed risks and consents. Based on our study, intracervical Foley's catheter induction can be considered as a safe and valuable method of induction in a low resource setting like our institution to promote more vaginal births.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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