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Study on induction of labour with intra cervical foley catheter in post-dated pregnancy

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Abstract

Introduction: Incidence of post-dated pregnancy is 5 to 10 %. Induction of labour is a common obstetric intervention. Induction of labour is done by pharmacological, surgical and mechanical methods, with the aim to achieve a normal vaginal delivery. It is done when the benefit of delivery outweighs the risk of continuing pregnancy. There are various maternal and fetal indications for induction of labour. In this study post-dated pregnancy with unfavourable cervix is taken into consideration, since it is the commonest cause. In our department we admitted the otherwise uncomplicated post-dated pregnant women with GA \geq 41 weeks with unfavourable cervix. There are various methods to ripen the unfavourable cervix and induction of labour. Undoubtedly cervical ripening had a close relationship with the success of delivery. It has been authorised that ripening of cervix with intra cervical Foley catheter possesses preference of cost effectiveness, simple procedure, reversibility, lack of uterine hyper stimulation, less fetal heart rate changes. Foleys catheter causes cervical dilatation through both direct mechanical dilatation and stretch induced release of endogenous prostaglandin. Concerns about increased risk of infection associated with the use of Foley catheter was only in milder form which was prevented with prophylactic use of capsule Amoxicillin while induction.

Methodology: This cross sectional observational study on induction of labour with intra cervical Foley catheter instillation in post-dated pregnancy was carried out in the Department of Obstetrics and Gynaecology in a semi urban based tertiary care centre Government Vellore Medical College from June 2019 to May 2020. During this study period 200 post-dated pregnant women with gestational age \geq 41 weeks with unfavourable cervix, with no maternal and fetal complications were included. Sixteen French Gauge Foley Catheter was inserted intra cervical and the Foleys bulb was inflated with 60ml of normal saline. Induction period was 24 hours. Maternal and fetal parameters were monitored. If the patients didn't go for labour within the 24 hours they were reassessed and further need of prostaglandin was given. Structured protocols were prepared for data collection and data collected during this study was analysed with SPSS software 11-5.

Results: In this study 200 post-dated pregnancy patients with unfavourable cervix were selected and induction of labour was done with intra cervical Foleys catheter. Induction period was 24 hours. In this study 167 patients went in for labour pain. Remaining patients who didn't go for labour pain were reassessed and further prostaglandin was used for induction of labour. Among 167 patients 138 patients had vaginal delivery, 26 patients had caesarean section and 3 patients had vacuum assisted vaginal delivery, 5 patients had PPH, 2 patients had intrapartum fever and 2 babies were admitted in NICU. No patient uterine hyper stimulation.

Conclusion: Induction with intra cervical Foleys catheter is an effective method for ripening of cervix in post-dated pregnancy with unfavourable cervix to achieve a vaginal delivery with less maternal and fetal complications.

Keywords: Induction, post-dated pregnancy, Foleys catheter

Introduction

Post-dated pregnancy incidence is 5 to 10%. Induction of labour is one of the common obstetric interventions done nowadays. There are many methods of induction of labour: pharmacological, mechanical and surgical methods. Induction of labour is done when the benefits of delivery outweigh the risk of continuing the pregnancy. Induction of labour with unfavourable cervix often leads to complications like failed induction which leads to an increase in caesarean sections. Induction of labour with intra cervical inflation of Foleys catheter causes changes in cervical dilatation by both dilatation and stress induced release of endogenous prostaglandin. Cochrane meta-analysis observed that induction with Foleys catheter for ripening of cervix is better than prostaglandin which has more incidence of uterine hyper stimulation, increase in fetal heart rate variability.

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Inclusion criteria

Post-dated pregnancy with GA \geq 41 weeks with regular menstrual cycle on the basis of LMP, USG done during first trimester.

Singleton pregnancy
Cephalic presentation
Unfavourable cervix with Bishop score $<$ 6
Reassuring FHR
Intact membranes
Adequate pelvis
Average baby size

Exclusion criteria

Previous scared uterus
High risk pregnancies
Multiple pregnancy
Anomalous fetus
Irregular cycles
USG not done during first trimester.
Placenta previa

Methodology

The study method was completely explained to the study group, written consent was obtained. All women who were admitted for induction of labour, cervical assessment was done with modified bishop score.

In this study carried out at Government Vellore Medical College, Antenatal ward 200 post-dated pregnant women with unfavourable cervix were inserted with 16 F Foley catheter with 30cc balloon by direct visualization with speculum. The Foley bulb was placed just above the level of internal cervical os and inflated with 60cc of sterile water the catheter was taped to the inner aspect of thigh with gentle traction. Foley induction time was fixed to 24 hours during this time maternal and fetal parameters were monitored. Foleys catheter was either expelled spontaneously or removed after 24 hrs. Reassessment of cervical scoring was done by Modified Bishop Score of more than 6 was considered favourable. Patients with favourable cervix were sent to labour ward. Oxytocin, analgesia, antibiotics were given according to the protocol. Patients with unfavourable cervix were reassessed and further prostaglandin were given. Maternal and fetal outcome were recorded and monitored.

Maternal outcome indicators taken were

Mode of delivery
Induction to delivery interval.
Uterine hyper stimulation,
Uterine hyper tony.
PPH.
Intrapartum infection.

For intrapartum infection any two of the parameters maternal fever of $>38^{\circ}\text{F}$ C during labour, fetal tachycardia >160 beats per minute, uterine tenderness, purulent vaginal discharge, total WBC $>20000\text{mm}^3$ should be present. Parenteral antibiotics were started if these signs were present. PPH was defined as blood loss of more than 500ml within 24 hours of delivery. Blood loss was measured by collecting and recording in bedpan container 2 weighing of materials including soaked sponges and pads on scale and subtracting the known dry weights of these materials.

Fetal outcome indicators taken were

Apgar at 1 minute.

Apgar at 5 minutes.

Meconium stained liquor.

Admission at NICU.

Neonatal death.

The data were entered in MS excel and analysed with SPSS version 11.5. Catagorical variables were described with frequency distribution and percentages. Continuous variables were expressed with mean and standard deviations.

Result

In this observational study 200 post-dated pregnancy patients with unfavourable cervix were selected for induction of labour with intra cervical Foleys catheter instillation under aseptic precaution. Among 200 induced patients 167 patients went in labour pains, remaining 33 cases were reassessed and further prostaglandin was given. Among the 167 patient 138 had normal vaginal delivery. 3 patients had vacuum assisted vaginal delivery. 26 had caesarean section. Maternal complication observed were 5 patients had PPH, 2 patients had intra partum fever none of them had uterine hyper stimulation. Neonatal outcome observed were 2 babies with meconium stained liquor, 2 babies were admitted in NICU.

Discussion

Table 1 show the age distribution character. 8 patients were under 20 years. 132 patients were in between 20 to 25 year. 47 patients were in between 26 to 30 years. 11 patients were between 31 to 35 years, 2 patients were above 40 years.

Table 1: Age Distribution

S.No	Age	Number of cases n =200
1	<20	8
2	20-25	132
3	26-30	47
4	31-35	11
5	36-40	2

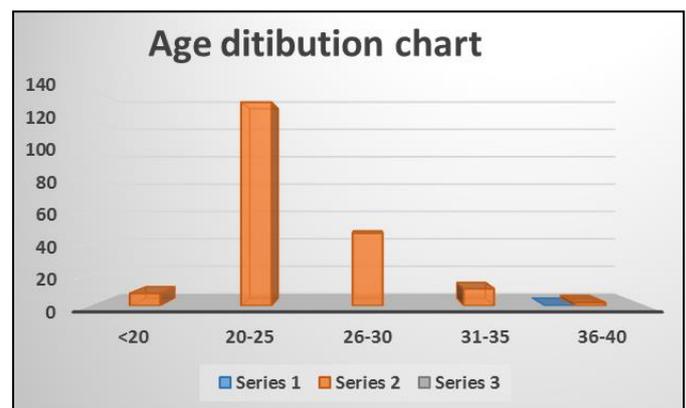
**Fig 1: Age ditibution chart**

Table 2 shows the parity distribution there were 117 primi, 66 were second gravida and 12 were multigravida and grandmultipara were 5 in this case study which was shown in table 2

Table 2: Parity Distribution Table

S. No	Parity	No. of cases = 200
1	Primipara	117
2	Second Gravida	66
3	Multigravida	12
4	Grandmulti	5

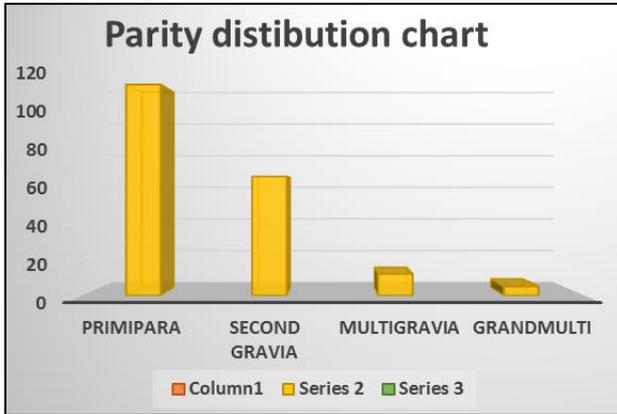


Fig 2: Parity distribution chart

Analysing the data from this observational study, among 167 patients who had labour pain, 27 patient went in for spontaneous labour without any need for augmentation of labour. There was a need for labour augmentation with ARM in 82 patients and 58 patients needed ARM and oxytocin drip to achieve vaginal delivery which is shown in table 3.

Table 3: Outcome of induction with onset of Labour pain and Intervention

Outcome of Induction to labour onset and Intervention	Number of Cases n=167
Spontaneous Delivery	27
ARM	82
ARM and Oxytocin	58

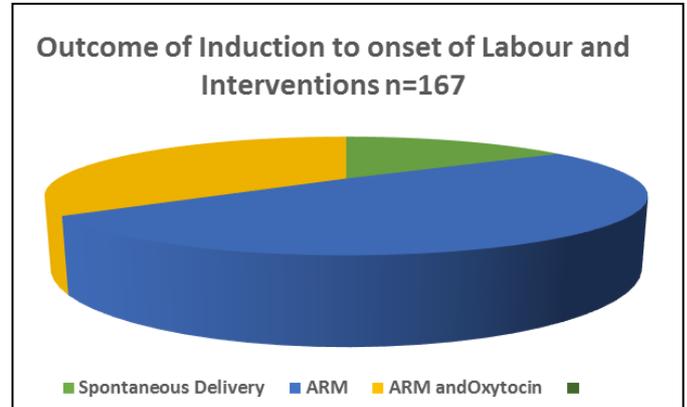


Fig 3: Outcome of Induction to onset of Labour and Interventions n=167

Data from this observational study showed that Mean pre induction Bishop Score was 4.34 and the mean post induction bishop score was 7.50.

The mean rise in Bishop Score from preinduction to post induction was 3.16 which was similar to the Jolanto Patro Malysza *et al.* study group.

Mean Induction to delivery interval was 26.06 hours which was similar to the study done by Jolanto Patro Malysza *et al.* shown in table 4.

Table 4: Outcome of Bishop Score

Mean preinduction Bishop Score	4.35
Mean post Induction Bishop Score	7.50
Rise in Bishop Score	3.16

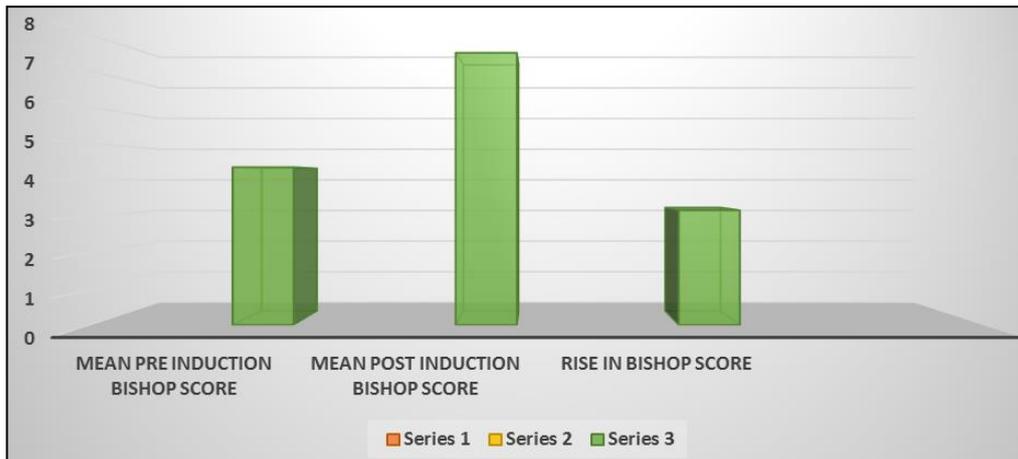


Fig 4: Outcome of Bishop Score

Table 5 shows the split up of, outcome of 167 patients who had labour pains following induction with Foley catheter. 138 patient had vaginal delivery, 3 patients had vacuum assisted vaginal delivery, and 70.5% had delivered vaginally which was similar as Policiano C *et al.* study. 26 cases were taken up for caesarean section, indication for caesarean section was mainly failure to progress and fetal distress, which is similar to the study done by Jozwiak M, Bloemenkamp KWM, and Kelly AJ *et al.* There were 5 cases of mild atonic PPH which was managed with uterotonics. Intrapartum fever was observed in 2 cases which was treated with parenteral antibiotic without any significant maternal morbidity which were similar to the M. Diederer, JSM

Gommers *et al.* study. There was no incidence of uterine hyper stimulation in this study.

Table 5: Obstetric Outcome and Maternal Morbidity

S. No	Obstetric Outcome	Number of cases
1	Spontaneous Delivery	138
2	Vacuum Assisted delivery	3
3	Caesarean Section	26
4	PPH	5
5	Maternal fever	2
6	Uterine Hyper stimulation	0

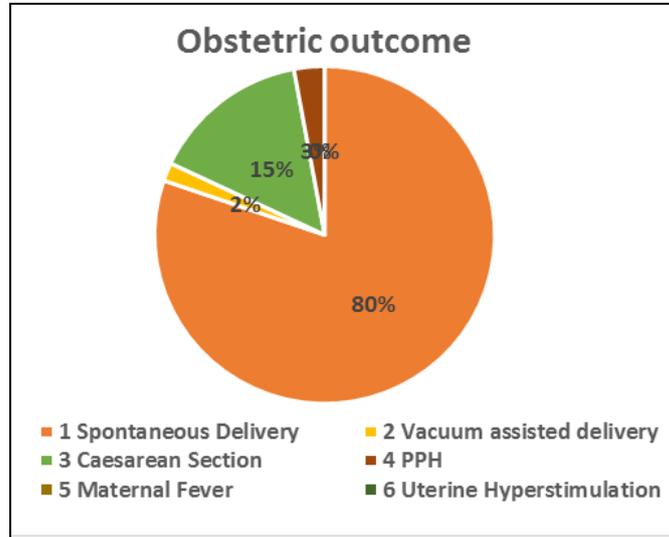


Fig 5: Obstetric Outcome

Table 6 shows the Neonatal outcome. The mean 1 minute APGAR is 7.8 and mean 5 minute APGAR is 8.77. Neonates admitted in NICU were 2, which were insignificant, similar to the study made by Kashanian *et al.*

Table 6: Neonatal outcome

Mean One minute Apgar	7.85
Mean Five minute Apgar	8.77
NICU Admission	2

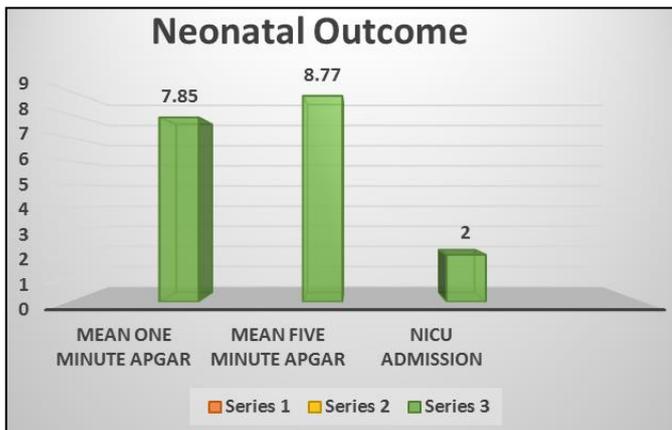


Fig 6: Neonatal outcome

Conclusion

Intra cervical Foley catheter instillation is effective, safe method for induction of labour which achieves a significant normal vaginal delivery with less maternal and fetal complication.

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