

Induction of Labour With Foley's Catheter

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SUMMARY

The use of extra-amniotic Foley's catheter, balloon inflated above the internal cervical os is a non pharmacological and mechanical method of cervical ripening before induction of labour. In our department the Foley's catheter applied in the extra amniotic space was used to ripen the cervix prior to planned induction of labour in 50 patients during a time period of six months i.e. 1st May, 1996 to 30th October 1996. Additional measures taken were augmentation of labour with Oxytocin and in very few selected cases with Prostaglandins alongwith Oxytocin. Augmentation of labour was carried out in 92% (i.e 46 patients). It was found to be effective in 97% of the cases. Foley's catheter is cheap, associated with very minimal complications, reversable and is without any systemic or serious side effects. It provides a readily available and efficacious method of cervical ripening without any significant difference in the mode of delivery or perinatal outcome when compared with other methods.

INTRODUCTION

Induction of labour is one of the most frequently employed interventions in the obstetric practice when fetal and/or maternal complications arise. Physical and biochemical changes in the uterine cervix and lower segment preceding the onset of parturition are referred to as ripening and are essential for normal labour and delivery. Induction of labour with unripe cervix is associated with frequent maternal complication and high rates of induction failures and caesarean deliveries. Numerous techniques are being attempted to ripen the unfavourable cervix. Systemic or local administration of ripening hormones (Oxytocin, PGE₂)⁶ are becoming more and more common. Mechanical methods for cervical ripening are less popular.

Degree of cervical ripening is expressed in terms of Bishop score. It assesses degree of cervical dilatation, consistency, length and position of the cervix and station of presenting part in relation to ischial spines. Maximum of two points are given for each favourable factor as mentioned above. Bishop score of less than 4 suggests unfavourable cervix and

that of 7 and above indicates favourable cervix.

In our study Foley's catheter balloon^{1,2} was placed extra-amniotically and labour was augmented with syntocinon depending upon cervical finding. In a few refractory cases where the Bishop score did not improve PGE₂ tablet was also inserted.

PATIENTS AND METHODS

From 1st May 1996 to 30th October 1996, 50+2 singleton pregnancies with vertex presentation and a low Bishop score ≤ 3 were subjected to cervical ripening with extra-amniotic balloon and instillation of 50-60 cc of distilled water.

Indication for labour induction in these pregnancies included: IUGR, post-dates, gestational diabetes and hypertensive disorders (P.I.H and essential hypertension).

Contraindications to cervical ripening by this method included:

- Cervical infection
- Low lying placenta and third trimester bleeding
- Non-vertex presentation
- Estimated fetal weight > 4300 gms.

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Bishop score was determined just before catheter insertion. The cervix was exposed with a sterile speculum and cleaned thoroughly with pyodine solution. Under direct vision a 20 Fr/Ch Foley's catheter was inserted through the external cervical os and the balloon inflated above the internal os with 50-60 cc of sterile water.

In a total of 3 patients i.e 6% balloon was inflated with only 30 cc of water. Time taken for the cervical ripening was noticed to be longer in these 3 patients.

RESULTS

Fifty women were included in this study. Average age was 27.11 years ranging between 19-42 years. Mean gestational age was 38+2 weeks ranging between 34+5 and 41+4 weeks.

Table 1 shows the distribution of patients according to the indications for induction of labour with Foley's catheter.

<i>Indication</i>	<i>Number</i>	<i>Percent</i>
Smallish/IUGR	20	40
Post dates	14	28
Gestational diabetes	2	4
Hypertensive disorders	8	16
{P.I.H	6}	
{Ess. Hypertension	2}	
Miscellaneous	6	12
{Stabilizing induction	1}	
{Cardiac patients	1}	
{Spont ROM	1}	
{Trial of inlet (rel. CPD)	2}	
{Achondroplasia	1}	

IUGR and post-dates were the major indications i.e. 20 (40%) and 14 (28%) respectively. Hypertensive disorders including P.I.H and essential hypertension was the next major indication (16%). There were 2 (4%) women having gestational diabetes.

Termination of pregnancy before term was carried out in 2 cases.

1. IUD at 27+ /52

2. Achondroplasia at 31+ /52 and these cases were excluded from our study.

Table 2 shows the distribution of women according to the parity. Twenty eight (56%) were primigravidas, 10 (20%) were gravida two and 12 (24%) G3 or more.

<i>Parity</i>	<i>Number</i>	<i>Percent</i>
Primigravidas	28	56
G2	10	20
*G3 and more	12	24

* Highest parity was 7

Table 3 shows the time taken for cervical ripening. Spontaneous balloon expulsion occurred within 12 hours from the time of insertion with average of 10.4 hours. The minimum was 2.30 hours and maximum 24 hours

<i>Time</i>	<i>Hours</i>
Mean	10.4
Range	2.30 - 24

Table 4 shows the change in Bishop score. Mean Bishop Score was 1.7±0.1 before catheter insertion and 3.78±0.1 after balloon expulsion. After ripening Bishop Score increased by 3 or more in 44 (88%) and did most improve in 6 (12%) patients.

<i>Bishops score</i>	<i>Number</i>	<i>Percent</i>
Changes present	44	88
No Change	6	12

Table 5 shows the labour augmentation. Spontaneous labour followed balloon expulsion in 4 (8%) of patients and had to be augmented in 46 (92%) out of which 40 (80%) were augmented with Oxytocin and 6 (12%) with Oxytocin and Prostaglandin.

Table 5: Labour Augmentation (n=50)

Labour	Number	Percent
Spontaneous labour	4	8
Augmentation with Syntocinon	40	80
Augmentation with PgE ₂ + Syntocinon	6	12

In the majority of cases average time of labour was within 12 hours with a mean of 8.4 hours (2 - 24). The mode of delivery is shown in Table 6.

Table 6: Mode of Delivery

Mode	Number	Percent
Vaginal Delivery (n=41)		
Spont. Vaginal Delivery	7	14
SVD with Episiotomy	33	66
Mid cavity forceps Delivery	1	2
L.S.C.S (n=9)		
Failure to Progress	6	12
Foetal Distress	3	6

Forty one (82%) of women were delivered vaginally and 9 (18%) by L.S.C.S.

Apgar score of the baby at the time of delivery ranged between 5 and 8 in the first minute and between 8 and 9 in the fifth minute of birth.

Rate of vaginal operative deliveries was similar but caesarean delivery rate was found to be higher (18%) than in the general population when compared with the international standards. Compared to our own obstetric population the caesarean rate was found to be lower (our departmental Caesarean section rate is 22 to 23 percent). 2/3rd of caesarean delivery (6/9) were

carried out for failure to progress (dysfunctional labour) and remaining 1/3rd (3/9) for foetal distress in this study.

Complications

Complication rate was found to be remarkably low, 2 (4%) patients developed complication.

1. Postnatal pyrexia ~ 100°F
2. Failed induction - in spite of Syntocinon + Foley's catheter and PgE₂ vag. tab.

DISCUSSION

Use of Foley's catheter to effect cervical ripening was described by Embrey and Mollison in 1967².

Many studies^{3,4,5} suggest that if Foley's catheter is spherical doubling the volume of fluid injected (from 30-60 ml) will increase its diameter by only 1cm (i.e 3.9 to 4.9 cm). Thus theoretically larger balloon volumes are more likely to displace the presenting part but achieve minor increase in diameter.

Table 7: Review of Studies

Author	Rouben and Arias ⁷	Lyndrup et. al ⁸	St. Onge and connors	R. Saeed N. Gul (S.Z.H)
Year	1993	1994	1995	1996
Device Foley	26F	23g	18g	20 F
Balloon	30	30	30	50-60
Methods*	SI	SI	TR	--
Patients (no)	56	54	34	50
Inclusion CS	< 5	< 7	< 4	< 2
Preripening CS	?	4.6	2.9	3.8
Change in CS	> 4	2.2	4.1	3/>
Unaugmented labour %	14	44	35	13.04
Operative Vag. %	34	19	38	2.44
C/S %	46	29	18	18
Ripening time +	< 8	< 8	19.8	10.4
Induction del. time	11.9	< 24	16	18.8
Type of study	P-C	P-C	P-C	P-C
Compared with	PgE ₂ 2.85 mg Vaginal	PgE ₂ 2.5 mg Vaginal	PgE ₂ 0.5 mg cervical	--

CS: Cervical score.

C/S: Cesarean delivery.

+ From balloon insertion to expulsion or removal.

P-C: Prospective controlled.

*: Additional methods. (TR = traction) taped to inner thigh or knee

SI Saline infusion

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Our study showed that inflation of balloon with 30 cc of sterile water leads to a very slow progress. Time taken for cervical ripening was reduced to a large extent when amount of fluid injected was between 50-60 cc.

A number of studies^{7,8} published evaluated the use of Foley's catheter to effect cervical ripening. A short review of some of these studies compared with our study which was carried out at the department of Gynaecology and Obstetrics, Shaikh Zayed Hospital, Lahore, is shown in the Table 7.

In the end considering the effectivity of induction of labour with Foley's catheter, low complication rate, no consideration e.g. for prostin pessaries and an extremely cheap method especially where cost is the major consideration is strongly recommended method of induction of labour.

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