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RESEARCH ARTICLE

COMPARISON OF CATHETER INDUCTION VERSUS CATHETER INDUCTION WITH EXTRA AMNIOTIC SALINE INFUSION FOR LABOUR INDUCTION

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ABSTRACT

Introduction: Induction of labour can be defined as the artificial initiation of labour, before its spontaneous onset, for the purpose of delivery of the fetoplacental unit[2,3]. Induction is indicated when the risk of continuing the pregnancy, for the mother or the fetus, exceeds the risk associated with induced labour and delivery. In developed countries, induction of labour accounts for about 25% of all deliveries. In developing countries, the rates vary; lower in some regions and high in some regions[4]. **Materials and methods:** This prospective observational study was performed over a period of 1.5 years in 140 pregnant women with gestational age of 37-42 weeks with singleton pregnancy . This Study Was performed in the Postgraduate department of obstetrics and gynaecology at Lalla Ded hospital Srinagar after obtaining approval from institutional ethical clearance committee. **Conclusion:** Our data supported the fact that addition of Extra amniotic saline in catheter induction can be considered as one of the first line methods in labour induction. Catheter induction with extra amniotic saline infusion leads to shorter induction to delivery intervals compared to plain catheter induction. Our study also highlighted that the rate of cesarean delivery in catheter induction with extra amniotic saline is comparatively less. There are no differences in the neonatal APGAR scores and NICU admissions in induction with the extra amniotic saline infusion or plain catheter induction. The potential risk of chorioamnionitis or endometritis in the catheter induction with EASI infusion is same as that of foleys induction alone

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INTRODUCTION

Induction of labour is a common procedure in obstetrics[1].Induction of labour can be defined as the artificial initiation of labour, before its spontaneous onset, for the purpose of delivery of the fetoplacental unit[2,3]. Induction is indicated when the risk of continuing the pregnancy, for the mother or the fetus, exceeds the risk associated with induced labour and delivery. In developed countries, induction of labour accounts for about 25% of all deliveries. In developing countries, the rates vary; lower in some regions and high in some regions[4]. The incidence of induction of labour is rising worldwide with a rate of 20-30% in developed countries at present. The rising rates may be explained by increasing maternal age, obesity, medical conditions as well as increased fetal monitoring.

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Despite the multiplicity of techniques, there is no universally accepted method of induction and ideal method of labour induction remains elusive[5,6] The most common reasons for induction of labour are[7]:

- Preeclampsia with gestational age greater or equal to 37 weeks
- Significant maternal disease not responding to treatment
- Significant but stable antepartum haemorrhage
- Chorioamnionitis
- Suspected fetal compromise
- Post-term pregnancy
- PROM at or near term
- Intrauterine fetal death
- Maternal request

Induction of labour using various methods may be associated with an increased risk of:

- Failure to achieve labour

- Cesarean section
- Operative vaginal delivery
- Tachysystole with or without FHR changes
- Chorioamnionitis
- Cord prolapse with ARM
- Inadvertent delivery of preterm infant in the case of inadequate dating
- Uterine rupture in scarred and unscarred uteri

Factors that have been shown to influence success rates of induction include:

- Bishop score
- Parity (prior vaginal delivery)
- BMI
- Maternal age and estimated fetal weight and diabetes[8,9,10,11].

There are two categories of artificial means of cervical ripening prior to labour induction:

- Mechanical (Includes the foley catheter balloon with or without extra amniotic saline infusion and laminaria tents)[12].
- Pharmacological (prostaglandins PGE1, PGE2, estrogen and Nitric oxide donors).

Mechanical devices dilate the cervix by accessing the fetal membrane, exert local pressure onto the cervix, overstretching the lower uterine segment and indirectly stimulating the secretion of prostaglandins[13] Mechanical methods are the oldest approaches used for induction of labour[14]. Advantages proposed for these mechanical methods include simplicity of use, potential for reversibility, reduction in certain side effects such as excessive uterine activity, and low cost. Currently, Foley catheter balloon is the most commonly used mechanical device for labor induction, which acts not only as a mechanical dilator of the cervix but also a stimulator of endogenous prostaglandins release from the fetal membranes. Pharmacological preprations cause connective tissue softening, cervical effacement, and uterine activity[15,16].

AIMS AND OBJECTIVES

The objective of this study was to compare the effectiveness of intra cervical foley catheter and extra amniotic saline infusion in woman referred for labour induction

- To determine the time period between induction and delivery in each group
- Whether there is any increased need for cesarean delivery consequent to induced labour in each group.
- Perinatal outcome in each method of induction.

MATERIALS AND METHODS

This prospective observational study was performed over a period of 1.5 years in 140 pregnant women with gestational age of 37-42 weeks with singleton pregnancy. This Study Was performed in the Postgraduate department of obstetrics and gynaecology at Lalla Ded hospital Srinagar after obtaining approval from institutional ethical clearance committee.

Inclusion Criteria

Primiparous woman; between 37 and 42 weeks gestation, With a singleton pregnancy, With the fetus in vertex presentation, An unfavourable cervix, defined as a Bishop score ≤ 6 and Intact membranes and reassuring fetal heart rate tracing.

Exclusion Criteria

- If there was significant vaginal bleeding
- If evidence of spontaneous labour
- Known contraindications to labour induction
- Fetal heart rate abnormalities
- Failure of successful placement of the Foley catheter
- Malpresentation
- Absent membranes

Procedure

Written informed consent was taken for participation in the study and after undergoing vaginal examination to determine the Bishop score, the patients were divided into two groups:

- Foley catheter group alone (A)
- Extra-amniotic saline infusion (B) group

The Foley Catheter was inserted for all patients in A and B groups after explaining the procedure to the patients. In group A, the catheter was pulled back against the internal os, traction was applied and catheter taped against the abdomen of patient. In group B patients, normal saline 150cc was infused through the catheter port at 40 ml per hour into the extra- amniotic space. The catheter was removed after 12 hours after insertion, unless it had been expelled spontaneously or removed after spontaneous rupture of membranes.

Outcome was made in terms of:

1.Interval between start of induction in each group to active phase
2.Rate of induction success
3.Duration of labour
4.Rate of cesarean delivery
5.Neonatal APGAR score at 1 and 5 minutes

Statistical Analysis: Continuous variables were expressed as Mean ±SD and categorical variables were summarized as frequencies. The statistical significance of the difference between two groups was based on p-value. p-value of <0.05 was considered to be statistically significant.

OBSERVATIONS AND RESULTS

In our study, the mean gestational age was 38.26 weeks in group A and 38.60 weeks in group B**.** In our study the mean induction delivery interval in group A patients was 18.29 hours and in group B patients it was 14.89 hours. The difference was statistically significant (P value=0.009).

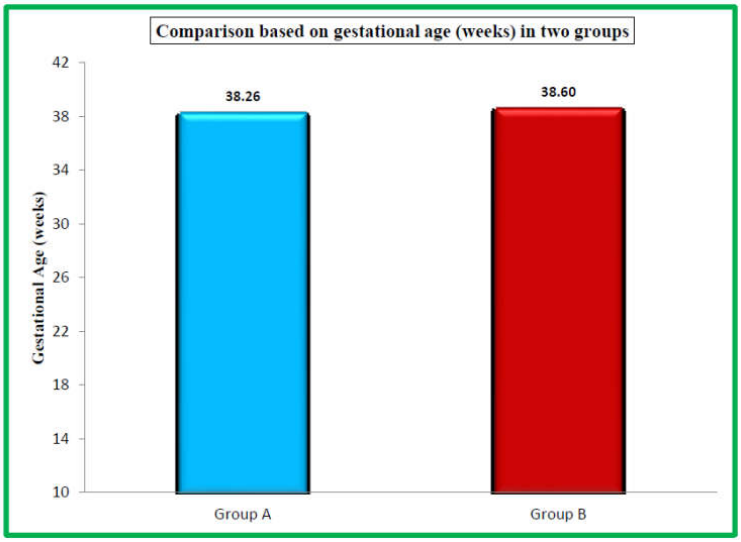

Figure 1. Gestational age (weeks)

Table 1. Induction delivery interval

Comparison based on induction delivery interval (hours) in two groups					
Induction delivery Interval (hours)	**N**	**Mean**	**SD**	**Range**	**P-value**
Group A	70	18.29	7.85	4-41	0.009*
Group B	70	14.89	7.35	3-39	

Table 2. APGAR score at 1 minute

Apgar score at 1 minute in two groups					
Apgar score	**Group A**		**Group B**		**P-value**
	No.	**%age**	**No.**	**%age**	
4	5	7.1	3	4.3	0.338
5	0	0.0	0	0.0	
6	10	14.3	14	20.0	
7	31	44.3	42	60.0	
8	24	34.3	11	15.7	
Total	70	100	70	100	
Mean±SD	6.98±1.07		6.83±0.85		

Table III: Mode of delivery

Comparison based on mode of delivery in two groups				
Mode of delivery	**Group A**		**Group B**	
	No.	**%age**	**No.**	**%age**
Normal	26	37.1	41	58.6
Instrumental(Vacuum)	4	5.7	2	2.9
LSCS	40	57.2	27	38.6
Total	70	100	70	100
Chi-square=6.55; P-value=0.038 (Statistically Significant Difference)*				

In our study, in group A patients, the APGAR score at 1 minute of 44.3% babies was 7, 34.3% had 8, 14.3% had 6 and 7.1% had 4. The mean APGAR score was 6.98. In group B patients, the APGAR score of 60.0% babies was 7, 20.0% had 6, 15.7% had 8 and 4.3% had 4. The mean APGAR score was 6.83. However the P-value was 0.338 which is statistically insignificant. In our study, in Group A patients, mode of delivery was normal vaginal delivery in 26 (37.1%) patients, Instrumental in 4 (5.7%) patients and cesarean delivery in 40 (57.2%) patients. In Group B patients, mode of delivery was normal vaginal delivery in 41 (58.6%) patients, instrumental delivery in 2 (2.9%) patients and Cesarean delivery in 27 (38.6%) patients.

DISCUSSION

In the present study, in group A, maximum number of patients (47.1%) were noted in the age group of 26-30 years, followed by 25.7% in the age group of 31-35 years. 17.1% were noted in the age group of 21- 25 years. In group B, maximum number of women (37.1%) was noted in the age group of 26-30 years, followed by 20.0% in the age group of 36- 40 years. 17.1% were in the age group of 31-35 years. The mean gestational age was 38.26+1.543 weeks in group A and 38.60+1.375 weeks in group B. the mean induction delivery interval in group A patients was 18.29+7.85 hours and in group B patients it was 14.89+7.35hours. The difference was statistically significant (P- value=0.009).In Group A patients, mode of delivery was normal Vaginal delivery in 26 (37.1%) patients, Instrumental in 4 (5.7%) patients and cesarean delivery in 40 (57.2%) patients. In Group B patients, mode of delivery was normal vaginal delivery in 41 (58.6%) patients, instrumental delivery in 2 (2.9%) patients and Cesarean delivery in 27 (38.6%) patients. P-value between two groups was. In group A patients, the APGAR score at 1 minute of44.3% babies was 7, 34.3% had 8, 14.3% had 6 and 7.1% had 4. The mean APGAR score was 6.98+1.07.In group B patients, the APGAR score of 60.0% babies was 7,20.0% had 6, 15.7% had 8 and 4.3% had 4. The mean APGAR score was 6.83+0.85.

In group A patients, maximum of 54.3% babies had APGAR score of 7 at five minutes and 0.0% had lowest of APGAR score of 4. The mean APGAR score was 7.17+0.65.In group B patients, maximum of 51.4% babies had APGAR score of 7 at five minutes while as 2.9% had minimum of APGAR score 4. The mean score was 7.34+0.78. In group A patients, 3 (4.3%) babies had abnormal FHR and 4(5.7%) had Meconium aspiration syndrome. In group B patients, 2 (2.9%) babies had abnormal fetal heart rate and 3 (4.3%) had Meconium aspiration syndrome. Chorioamnionitis occurred in 3 (4.3%) patients in each group and endometritis occurred in 5 (7.1%) patients in group A and in 3 (4.3%) patientsin group B.

Conclusion

Our data supported the fact that addition of Extra amniotic saline in catheter induction can be considered as one of the first line methods in labour induction. Catheter induction with extra amniotic saline infusion leads to shorter induction to delivery intervals compared to plain catheter induction. Our study also highlighted that the rate of cesarean delivery in catheter induction with extra amniotic saline is comparatively less. There are no differences in the neonatal APGAR scores and NICU admissions in induction with the extra amniotic saline infusion or plain catheter induction.

The potential risk of chorioamnionitis or endometritis in the catheter induction with EASI infusion is same as that of foleys induction alone.

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