

Comparison of fetomaternal outcome in induction of labour at 40 weeks versus 41 weeks various methods at a tertiary hospital

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Abstract

Background: Induction of labour implies the stimulation of uterine contraction before the spontaneous onset of labour and this can be done by surgical methods or medical methods. The present study, was aimed to evaluate outcome of various methods of induction of labour at 40 weeks and fetomaternal outcome at 40 weeks and at 41 weeks of gestation. **Material and Methods:** Present study was hospital based, prospective, observational study, conducted in pregnant women age group 18-34years, singleton pregnancy, vertex presentation, ≥ 40 weeks of gestation (gestational age confirmed by ultrasonography performed <22 weeks of pregnancy), willing to participate. Patients were randomly divided into 2 groups to compare the chosen methods of induction of labour as group 1 (intracervical foley's catheter) and group 2 (tablet misoprostol 25 microgram). **Results:** In present study, majority of pregnant women were from age group of 18-25 years (43%), followed by 31-34 years (34%) and age group 26-30 years (23%). Mean age was 24.19 years. Majority were primigravida (69%) and 31% were multigravida. Mean gestational age in weeks was 40.51 wk. 40week and 41week groups are contributing 64% and 36% of cases respectively. In present study, mode of induction in majority of cases tablet misoprostol (59%) was used and in 41% intracervical foley catheter. Majority 79% were delivered vaginally and 21 % by LSCS. In present study 30% had failed induction. Maternal morbidity in terms of PPH, cervical tear, perineal tear and Sepsis were 2% vs 3%, 2% vs 2%, 1% vs 2% and 2% vs 5% in 40 week and 41 week group respectively. Perinatal morbidity as Birth asphyxia, MAS, MSL were 4% vs 5%, 2% vs 4% and 2% vs 8% in 40 week and 41 week group respectively and difference was statistically significant. NICU admission was majorly seen among 41wks as compared to 40 weeks of gestation and difference was statistically significant. **Conclusion:** The difference between maternal outcome at 40 and 41 weeks of gestation is statistically not significant though there is increased incidence of duration of labour, operative deliveries, failed induction and maternal morbidity after 41 weeks

Keywords: induction of labour, misoprost, Foley's catheter, 41 weeks gestation

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INTRODUCTION

Induction of labour implies the stimulation of uterine contraction before the spontaneous onset of labour and this can be done by surgical methods or medical methods.¹ The

frequency of adverse neonatal outcome is lowest among uncomplicated pregnancies delivered between 39 and 40 weeks of gestation.^{2,3} The most frequent cause of prolonged pregnancy is inaccurate dating.⁴ The risk factors are primiparity, maternal genetic factors, prior postdatism, obesity and male gender of the fetus.⁵ In postdate pregnancy there are chances of fetal hypoxia, asphyxia, intracranial damage, meconium aspiration syndrome, macrosomia, atelectasis, hypoglycaemia and stillbirths. These perinatal risks increase with increase in the gestational age beyond 40 weeks.⁶ The maternal risks include an increase in labour dystocia, an increase in severe perineal injury related to macrosomia and operative vaginal delivery and an increase in the rate of caesarean delivery and postpartum haemorrhage.⁷ Since the evidence-based medicine approach do not allow any

definite conclusion regarding timing of induction of labour, the choice about when to induce should be balanced considering the orientation and the anxiety of the patient and the obstetrician. Induction of labour can be done by various methods like prostaglandins, foley catheter, oxytocin infusion and in conservative approach we wait till 42 weeks of gestation by close monitoring of patient using non-stress test, colour doppler.⁸ The present study, was aimed to evaluate outcome of various methods of induction of labour at 40 weeks and fetomaternal outcome at 40 weeks and at 41 weeks of gestation.

MATERIAL AND METHODS

Present study was hospital based, prospective, observational study, conducted in Department of Obstetrics and Gynaecology, SRTR Government Medical College, India. Study duration was of 2 years (November 2018 to October2020). Study was approved by institutional ethical committee.

Inclusion Criteria

Maternal age group 18-34years, singleton pregnancy, vertex presentation, ≥ 40 weeks of gestation (gestational age confirmed by ultrasonography performed <22 weeks of pregnancy), willing to participate.

Exclusion Criteria

- Cases less than 40 weeks of gestation and >41weeks of gestation.
- Maternal age > 34 years.
- Fetal distress at admission, anomalous fetus.
- Non-vertex presentation
- Antepartum hemorrhage, Previous uterine scar
- Maternal complications like pre-eclampsia, diabetes and Cardiac diseases
- All women who reported in spontaneous labour

After taking written informed consent from patients, clinical data was recorded in a prescribed proforma. In present study, intracervical Foley’s catheter and tab misoprostol were chosen for induction of labour.

Patients were randomly divided into 2 groups to compare the chosen methods of induction of labour.

Group 1. Cases in which surgical induction is done by intracervical foley’s catheter. 18 F Foley catheter was inserted into the endocervical canal under direct vision by doing a per-speculum examination. The catheter was advanced into the endocervical canal and into the extra amniotic space. the balloon was filled with 35 mL of sterile saline solution and the catheter was taped to the inner thigh to maintain traction. To maintain gentle traction, periodic repositioning of the distal tip on the thigh is necessary. The catheter was checked for expulsion of the balloon from the cervix every 6 hours by cervical examination and the catheter left in place until it spontaneously falls out. Group 2. cases in which medical induction of labour was done by

using tablet misoprostol 25 microgram per vaginal every 6 hourly under all aseptic precautions. After induction of labour by above mentioned methods progress of labour was periodically assessed by partograph. LSCS was done, whenever indicated, after decision by senior obstetrician. All neonates were attended immediately after birth and APGAR score recorded at 1- and 5-min interval. All data was collected and compiled in Microsoft excel. Data was analysed using SPSS version 20 and Open epi version 2.3.1 software. Mean and standard deviation was calculated for quantitative data and proportion and percentage for qualitative data. For data analysis Chi square test was used in qualitative type of data and student t test for quantitative type of data. p value <0.05 was considered statistically significant.

RESULTS

In present study, majority of pregnant women were from age group of 18-25 years (43%), followed by 31-34 years (34%) and age group 26-30 years (23%). Mean age was 24.19 years. Majority were primigravida (69%) and 31% were multigravida. Mean gestational age in weeks was 40.51 wk. 40week and 41week groups are contributing 64% and 36% of cases respectively

Table 1: Age distribution

Age in years	Frequency	Percentage
18-25	43	43%
26-30	23	23%
31-34	34	34%
Parity distribution		
Primigravida	69	69%
Multigravida	31	31%
Gestational age		
40 weeks	64	64%
41 weeks	36	36%

In present study, mode of induction in majority of cases tablet misoprostol (59%) was used and in 41% intracervical foley catheter. Majority 54% had duration of labour between 7 to 12 hours, followed by 27% had more than 12 hours and only 19% had less than 6 hours. Majority 79% were delivered vaginally and 21 % by LSCS.

Table 2: Mode of induction

	Frequency	Percentage
Mode of induction		
Tablet misoprostol	59	59%
Intracervical foley catheter	41	41%
Duration of labour		
<6 hours	19	19%
7-12 hours	54	54%
>12 hours	27	27%
Mode of delivery		
Vaginal	79	79%
LSCS	21	21%

In present study 30% had failed induction. Maternal morbidity in terms of PPH, cervical tear, perineal tear and Sepsis were 2% vs 3%, 2% vs 2%, 1% vs 2% and 2% vs 5% in 40 week and 41 week group respectively. On statistical analysis p value was 0.493, so maternal outcome in terms of morbidity is not significant.

Table 3: Maternal morbidity

Maternal morbidity	40 week GA	41 week GA	p value
Failure of induction	9	12	0.009
Complication			
PPH	2	3	
Cervical tear	2	1	
Perineal tear	1	1	
Sepsis	2	3	

In present study, we noted that at 1 minute 22 % had APGAR <7 and 78% had APGAR>7. At 5 minute, 12% had APGAR<7 among them 8 were in 40 week of gestation and 4 were in 41 weeks of gestation, difference was statistically not significant. Perinatal morbidity as Birth asphyxia, MAS, MSL were 4% vs 5%, 2% vs 4% and 2% vs 8% in 40 week and 41-week group respectively and difference was statistically significant. NICU admission was majorly seen among 41wks as compared to 40 weeks of gestation and difference was statistically significant.

Table 4: Perinatal morbidity

	40 week GA	41 week GA	p value
APGAR at 1 minute			0.58
<7	14	8	
>7	50	28	0.83
APGAR at 5 minute			
<7	8	4	0.009
>7	56	32	
Complication			0.0002
Birth asphyxia			
MAS	2	4	
MSL	2	5	
NICU admission	12	19	

DISCUSSION

As with the consideration of any intervention, the risks of expectant management need to be balanced against that of the intervention. The threshold of 42 weeks has been questioned and at the very least requires close consideration given that multiple studies find a lower rate of caesarean delivery from induction of labour at 41 weeks of gestation.⁹ In present study Majority 43% were in age group of 18-25 years, followed by 34% in 31 -34 years and only 23% in age group of 26 to 30 years. The results of present study are differ from study by Dobariya PV *et al.*,¹⁰ because early marriages are still prevalent in rural India so majority of patients were below 25 years in our study. In present study Majority 69% were primigravida and 31% were multigravida. The results of present study are

comparable with both Pratik R *et al.*,¹ and Mahapatro *et al.*,⁶ where majority was seen among primigravida In present study 40 week and 41 week groups are contributing 64% and 36% of cases respectively. The results of present study are comparable with both Patil R *et al.*,¹ and Shinge. *et al.*,⁷ majority were seen among 40 weeks gestational age. Results are not comparable with Dobariya PV *et al.*,¹¹ study because gestational age of patient's was more than 41 weeks. Present study showed that majority 70% delivered vaginally and only 30% delivered by LSCS. Results were comparable with a Paliulyte *et al.*,¹¹ (vaginal 78% and LSCS 22%) and Mahapatro⁶ (vaginal 62% and LSCS 38%). Present study showed that Maternal morbidity in terms of PPH, cervical tear, perineal tear and Sepsis were 2%vs 3%, 2% vs 2%, 1% vs 2% and 2% vs 5% in 40 week and 41week group respectively. On statistical analysis p value is 0.493, so maternal outcome in terms of morbidity is not significant. Our findings - corroborates with Paliulyte *et al.*,¹¹ while AB Caughey *et al.*,⁹ found more morbidities in their study. Present study showed that Perinatal morbidity as Birth asphyxia, MAS, MSL were 4%vs 5%, 2%vs4% and 2%vs 8% in 40 week and 41 week group respectively. On comparison, it is found statistically significant as p value is 0.009. results were compared to study by Pratik R *et al.*,¹ Dobariya PV *et al.*¹⁰ and Paliulyte *et al.*¹¹ The incidence of MSL were 29%vs16% in 41 and 40 weeks in study by Mahapatro *et al.*⁶ So more vigilant and careful foetal monitoring is required in 41week group.⁷ NICU admission was majorly seen among 41wks as compared to 40 weeks of gestation. Our study result showed more NICU admission as compared to study by Mahapatro *et al.*⁶ showed that 35 (8.7%) babies were admitted to NICU most of the admissions were for transient tachypnoea of new born. In light of our results and with the concern surrounding the increasing rates of caesarean deliveries it is interesting to consider whether earlier intervention could actually reduce the caesarean rate in this population. Certainly, the clinical evidence supporting induction of labour at 41 weeks of gestation and even earlier among certain subgroups is favorable with an increasing number of studies that suggest that the rates of caesarean delivery are similar between induction and expectant management with improved dating criteria. On the other hand, we found the increase in caesareans by gestational age to be greatest among nulliparous women, a group for whom induction has been associated with an increase in caesarean deliveries. Our study may have unidentified potential confounders that could vary between the different gestational ages. We attempted to control for identifiable confounders such as differences in maternal demographics, medical history and obstetric management. Another possible bias was that the actual dating of pregnancies may differ from that recorded.

Given these theoretic limitations, we believe that we offer further evidence that the management of post-term pregnancy and what is designated as post-term pregnancy needs to be readdressed. Further research is needed to gather prospective data and to continue to refine the risks posed to mothers and babies as they pass their due date. At the same time additional research on the risks and costs of increasing the prevalence of induction of labor will help in our efforts to appropriately counsel and support management decisions. As technology continues to change, risk and benefits will require ongoing reassessment.

CONCLUSION

The difference between maternal outcome at 40 and 41 weeks of gestation is statistically not significant though there is increased incidence of duration of labour, operative deliveries, failed induction and maternal morbidity after 41 weeks. Neonatal outcomes in terms of APGAR score and NICU admission is definitely better at 40 weeks of gestation as compared to 41 weeks of gestation and difference between the outcomes was statistically significant.

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