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Original Research Article

Current practice of induction of labour and maternal outcome in ≥ 37 week of gestation: an observational study

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ABSTRACT

Background: As we know induction is done when benefit to mother and fetus outweigh benefits of continuing the pregnancy. According to NICE guidelines, induction of labor leads to 15% of instrumental deliveries and 22% of total LSCS. In new civil hospital, Surat (according to 2017) failure of induction of labor was 2nd most common indication of LSCS. The objective of this study were to analyse labor induction with respect to indication for induction of labor and its maternal outcome so that we optimize our protocol of labor and reduce our LSCS rates for the same, can reduce fetomaternal morbidities also.

Methods: This was prospective observational descriptive study carried out over duration of 6 month. 200 consecutive cases of consenting women requiring induction of labour and fulfilling inclusion criteria were selected. Induction was done with prostaglandin analogues. Data were collected includes age, parity, gestational age, bishop score, indication of induction, and maternal outcome. And data was analyzed by using EMI software.

Results: Timely induction of labor can reduce maternal morbidity and ensure the delivery of a healthy baby. Among 200 consenting women 58.5% were multigravida and 41.5% were primigravida. Most common indication of induction among study participants is prolonged rupture of membrane which is 35.5%. Among them 71.4% had vaginal delivery having poor bishop score. Most common indication for LSCS were fetal distress (34.8%).

Conclusions: We concluded that elective induction of labor was associated with lower rates of LSCS and improved maternal and neonatal outcome.

Keywords: Induction, Bishop score, Maternal outcome

INTRODUCTION

Induction implies stimulation of contractions before the spontaneous onset of labour, with or without rupture membranes.¹ Induction is done when benefit to mother and the foetus outweigh benefits of continuing the pregnancy. Maternal risk of prolonged pregnancy includes emergency caesarean section, post-partum haemorrhage and puerperal infection. There could be some specific conditions like: (a) term pre-labor rupture of membranes; (b) hypertensive disorders in pregnancy; (c) post-dated pregnancy; (d) pre-term pre-labor rupture of membranes; and (e) uncontrolled diabetes of pregnancy. Inducing agent

prostaglandin E2 (dinoprost gel) that increases the collagenase and hyaluronidase levels in cervix and increase the submucosal water content that lead to softening of cervix. It can cause uterine hyper-stimulation. Another inducing agent prostaglandin E1 (misoprostol) is less expensive, more stable and easier to store than PGE1. In this study we have seen the various indication of labour, its percentage and outcome of induction of labor.

Aim and objective

The aim of the study was to study the indication for induction of labour ≥ 37 weeks of pregnancy. The objective

of this study was to determine maternal outcome like mode of delivery and delivery complications of induction of labour.

METHODS

This observational, prospective study was carried out in department of obstetrics and gynaecology, government medical college surat enrolling 200 consecutive subjects fulfilling inclusion criteria with ≥ 37 weeks of pregnancy admitted to labor room over a period around 1 year from April 2018-April 2019, after obtaining approval from ethical committee.

Inclusion criteria

The study included all singleton pregnancy with cephalic presentation at NCHS after 37 weeks of gestation.

Exclusion criteria

Patients with gestational age < 37 weeks, fetal mal presentation, previous caesarean delivery or h/o any surgery over uterus, IUFD were excluded.

Data collection tools and statistical analysis

Induction was done either with dinoprost gel (0.5 mg) inserted intracervically or tablet misoprostol (25 mcg) kept intravaginally at post fornix. Induced subjects were monitored in labor room with continues fetal heart monitoring. after delivery fetomaternal outcome in view of mode of delivery, indications for LSCS, and neonatal condition were recorded. Collected data were compiled, managed, analysed and presented using student version of statistical package for social sciences software and MS excel.

The possible association between variables mentioned below was found using a Chi square test (p value < 0.05 was considered statistically significant).

RESULTS

This study is prospective observational study on fetomaternal outcome of induction of labour ≥ 37 weeks of pregnancy.

In this study, 200 subjects fulfilling the inclusion criteria were taken. patients were induced either with dinoprost gel 0.5 mg intracervically or 25 mcg tab misoprostol intravaginally. The demographic characteristics were comparable with respect to maternal age, parity and gestational age, indication for induction of labour and indication for LSCS. The outcome was compared were mode of delivery, the induction to delivery interval, maternal complications and fetal outcome. In our study primigravida subjects were 41.5% and multigravida patients were 58.5%. Majority of subjects were multigravida.

185 subjects had Bishop score was ≤ 6 . And most common indication for induction was PROM which was 35.5%. followed by 30.5% due to post-datism.

Out of 200 subjects 145 subjects had normal vaginal delivery and 55 subjects need operative intervention. Most common indication for LSCS was fetal distress: 16 (34%). And non-progress of labour was 2nd most common indication for LSCS: 8 (17.4%).

98 subjects deliver within 12 hours of induction. Maternal complication was observed in 12% of cases. Out of that rupture uterus was observed in 0.5% cases, infection in 5% cases and post-partum haemorrhage in 6.5%. 77.8%, 4.3%, and 17.9% cases of multigravida were delivered by vaginal, instrumental, and LSCS respectively and 65.1%, 4.8% and 30.1% cases of primigravida were delivered by vaginal, instrumental and LSCS respectively. The difference of mode of delivery according to parity was statistically significant. This observation was comparable with Thrishna study given below in discussion.

88.9% and 11.1% cases of multigravida have Bishop's score was < 6 and ≥ 6 and 97.6% and 2.4% cases of primigravida have Bishop's score was < 6 and ≥ 6 respectively. Which was statistically significant. Subject's with Bishop score < 6 , 1.4% had vaginal delivery, 4.3% had instrumental delivery and 24.3% had LSCS. With Bishop score of ≥ 6 , 86.6% had vaginal delivery, 6.7% had instrumental delivery and 6.7% had LSCS. In primigravida mode of delivery and Bishop score was statistically not significant. In multigravida this both parameters were statistically significant.

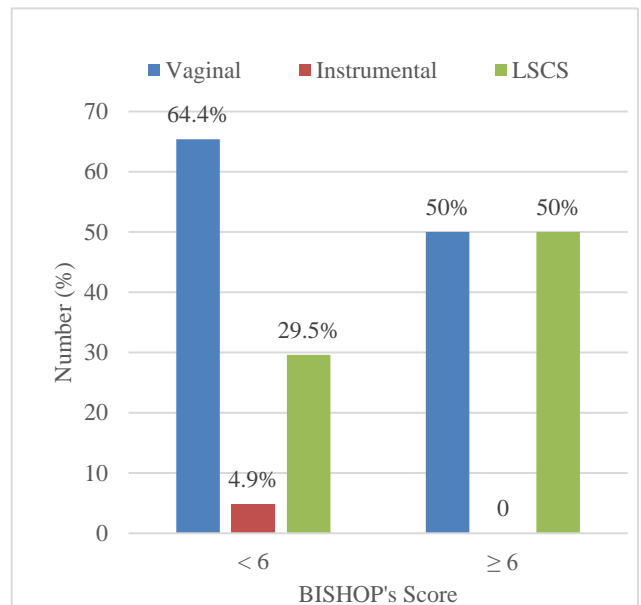


Figure 1: Association between primigravida cases and mode of delivery according to Bishop's score (N=83).

Primigravida cases have Bishop's score was < 6 65.4% had normal vaginal delivery, 4.93% had instrumental and

29.6% had LSCS. Subjects with Bishop score ≥ 6 , 50% had vaginal delivery and 50% had LSCS. The difference of Bishop's score of primigravida cases according to MOD was statistically not significant ($p > 0.05$). In primigravida other factors are also associated with mode of delivery like abnormal position of head, prolong latent phase compared to multigravida. According to Lamichhane et al, Subedi et al, Banerjee et al a study on outcome of induction of labor- a prospective study; even though most of the patients had poor Bishop score, 67.7% of patient had vaginal delivery.² Induction with prostaglandins analogous is effective in cervical ripening and vaginal delivery can be anticipated even in patient with poor Bishop.

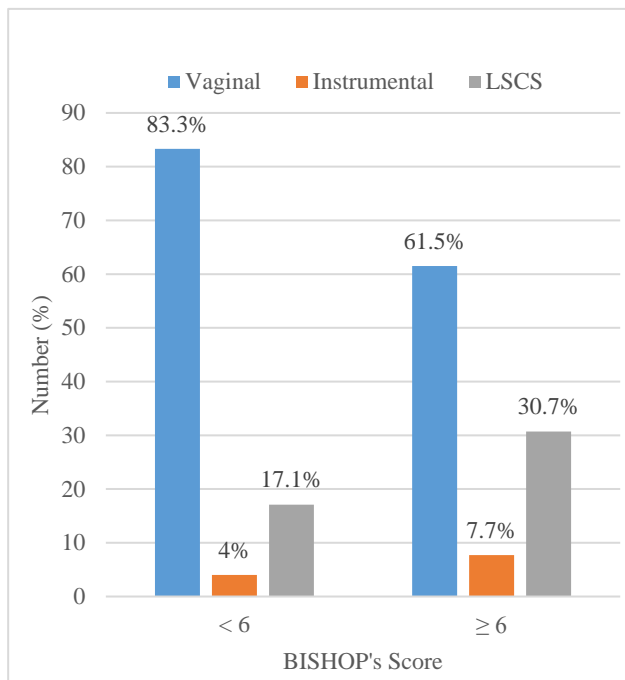


Figure 2: Association between multigravida cases and MOD according to Bishop's score (N=117).

Multigravida cases have Bishop's score was < 6 had 83.3% had vaginal delivery, 4% had instrumental delivery and 17.1% had LSCS. Subjects with Bishop score of ≥ 6 had 61.6% vaginal delivery, 7.7% had instrumental and 30.7% had LSCS. The difference of Bishop's score of primigravida cases according to MOD was statistically significant ($p < 0.05$).

Table 1: Indication of induction among study participants (N=200).

Indication of induction	Number (%)
Post-datism	61 (30.5)
PROM	71 (35.5)
Oligohydramnios	31 (15.5)
PIH	16 (8.0)
PLP	15 (7.5)
IUGR	1 (0.5)
GDM	1 (0.5)
Post-datism + oligohydramnios	4 (2.0)

In present study PROM as the indication of induction in 35.5% participants and post-datism, oligohydramnios, PIH, PLP, IUGR, GDM, and post datism+oligohydramnios in 30.5%, 15.5%, 8.0%, 7.5%, 0.5%, 0.5% and 2.0% respectively. According to Acharya, Devkota, and Bhattarai study done for outcome of misoprostol and oxytocin in induction of labour: it was found that post-dated pregnancy was the major indication for IOL, that is, 70.2% followed by gestational hypertension 7.3%.

According to Lamichhane, Subedi, Banerjee, Bhattarai, study was done on outcome of induction of labour: prospective study; post-dated pregnancy was most common indication (44.5%) for induction of labour f/b PROM (19.6%), PPROM (7%), PIH (12%), oligohydramnios (11.5%) and others like gestational diabetes mellitus, IUID.

Table 2: Indication of LSCS (N=46).

Indication of LSCS	Number (%)
Fetal distress	16 (34.8)
Non-progress of labor	11 (23.9)
Failure of induction	8 (17.4)
Meconium stain liquor	9 (19.6)
Suspected chorioamniotitis	2 (4.3)

In present study fetal distress was the indication of LSCS in 34.8% participants and nonprogress of labour, failure of induction, MSL and suspected chorioamniotitis in 23.9%, 17.4%, 19.6% and 4.3% respectively.

Suspected chorioamniotitis

(a) Primigravida 37 weeks pregnancy presented with pre-labour rupture of membranes for 4 hours with Bishop score: 2. 2 times induction was done with cerviprime gel. After that she had fever, tachycardia, fetal tachycardia and hypotension. She was taken for EMLSCS; (b) Multigravida 39 weeks of pregnancy presented with pre-labour rupture of membrane for 12 hours with Bishop score; (c) After 1 time of induction she had uterine tenderness, fetal tachycardia, fever, maternal tachycardia and leukocytosis. EMLSCS was done.

According to Lamichhane, Subedi, Banerjee, Bhattarai, study was done on outcome of induction of labour: prospective study; most common indication for LSCS in our study was failed induction, which was around 44%. The second common indication was fetal distress, which was 29%. Similar study done by Park et al reported that the rate of cesarean section for failed induction was 33%.¹⁷

According to study conducted at Dhaka Medical College: analyze that 55% cesarean was due to failed induction and 45% were due to fetal distress.^{17,18} According to Acharya, Devkota, and Bhattarai study done for outcome of misoprostol and oxytocin in induction of labour: 61% LSCS were due to fetal distress (most common), failure of

induction was second most common case of lscs which was 23.5%, 5.9% were non-progress of labour, 1.5% were due to suspected chorioamnitis and others were 7.4%.

Table 3: Maternal complications (N=24).

Complications	Number (%)
Rupture uterus	1 (0.01)*
Infections (puerperal pyrexia)	10 (5)
Post-partum haemorrhage	13 (6.5)

Note: *progress of labour. Emergency cesarean section was performed and ruptured uterus was noted intraoperatively. She had previous 3 normal vaginal deliveries. She delivered a 3.2 kg of female baby.

Study shows that maternal complication was observed in 12.0% (24/200) cases. Out of that, rupture uterus was observed in 0.01% cases, infection in 5% cases and postpartum hemorrhage in 6.5% cases.

DISCUSSION

Below table compares our present study with other studies. All studies are prospective observational studies. And have included singleton with vertex presentation. All these studies included subjects have gestational age ≥ 37 weeks. The primary outcome of these studies had spontaneous vaginal delivery and most common indications for LSCS fetal distress.

Table 4: Comparison of presence study with others studies.

Study	Present study	Acharya et al ^{15,16}	Lamicchane et al ²	Sultana et al ^{17,18}
Study design	Prospective Observational	Prospective observational	Prospective observational	Prospective observational
Inclusion criteria	Single tone live, vertex presentation with ≥ 37 weeks of gestation.	Single tone live, vertex presentation with ≥ 37 weeks of gestation.	Single tone live, vertex presentation with ≥ 37 weeks of gestation.	Single tone live, vertex presentation with ≥ 40 weeks of gestation.
Sample size	200	205	391	50
Indication for induction	Most common 35.5% PROM, 2 most common 30% post-datisms, 14.5% oligohydroamnios.	Most common 70.2% post-datism and 2 nd most common gestational hypertension 7.3%	Most common post-datism 44.5%, PROM 19.6%, oligohydroamnios 11.5%	Induction done for post-datism
Mode of delivery (%)				
Vaginal	72.5	64.9	62.91	48
Instrumental	4.5	1.9	4.86	12
LSCS	23	33.2	32.23	40
Indication for LSCS				
Fetal distress	34.8	61.8	29	55
Failed induction	13	23.5	44	45
Non-progress of labour	21.7	5.9		
Maternal complications	6.5% had post-partum hemorrhage and 5% had fever.	36.7% had nausea and vomiting and 24.1% had fever.		16% had abnormal uterine contraction and 8% had post-partum haemorrhage

Strengths

One of the strength of our study was the inclusion of study data on fetomaternal outcome in view of mode of delivery, induction to delivery interval and maternal complication in induction of labour in women with post-dated pregnancy, PROM, oligohydramnios, PIH, PLP, IUGR, and GDM. The overall risk of bias of the included studies was low as consecutive 200 cases were taken.

Limitations

In our study we only induced patient with medical indications. We had not included elective inductions. So, this study not give any result about fetomaternal outcome

in elective induction of labour. Induction must be weighed against the potential for decrease patient's satisfaction, increased use of inducing agents for labour process and impact on breast-feeding and cost and resource use. This study did not included the women with previous caesarean section, women with gestational age ≤ 37 weeks of pregnancy, women having twins pregnancy, and women having IUFD.

CONCLUSION

From our study we conclude that when induction is undertaken for appropriate reason and with a safe and efficient approach, this can greatly benefit the health of both mother. Although Bishop score is poor, Successful

vaginal delivery occur in majority of cases, where induction of labour is done in unfavourable conditions of pregnancy such as pre-eclampsia, oligohydroamnios, post-datism. Study conclude that induction did not increase the rate of caesarean section. Timely induction of labour can reduce maternal and perinatal morbidity. Further, prospective studies are needed to better assess the full impact of induction on maternal morbidity, maternal wellbeing and cost.

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