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Study of Risk for Cesarean Section in Induced Term Pregnancies

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Abstract

Introduction: Induction of labour is one of the most common obstetrics intervention. There is a lot of variability in respect to indication, complication and failure of labour induction. With increasing rate of labour induction, the rate of cesarean delivery is also increasing and so identifying these risk factors has become important.

Aim: To assess the risk of Cesarean section following the induction of labor in all the women with singleton term pregnancies

Methodology: This observational study was conducted in 155 subjects in department of obstetrics and gynecology in the dhiraj general hospital, pipariya, vadodara from 1st January 2020 to 31st july 2020**.**

Results: In this study 86.4%of patients were from age group of 21-30 years. Out of 155 patients, 65.08% were primigravida and 34.20% were multigravida.The most common indication of induction was postdated pregnancies (45.8%) followed by premature rupture of membranes .Out of the 155 patients induced , 40 patients ended up having Cesarean and the most common risk associated with induction for taking these patients for Cesarean section was fetal distress in the form of non-reassuring non stress test (NST).

Conclusion: Study concludes reduced no. of cesarean sections due to induction of labour at term pregnancy. Primigravida with postdated pregnancy was a most common indication for induction of labour. Induction of labor should be performed with caution since it carries the potential risk of uterine hyperstimulation and fetal distress.

Keywords: Induction, Caesarean Section, Fetal Distress

Introduction

Induction of labour is one of the most common obstetrics interventions. According to recent studies, induction rate varies from 9-33% of all pregnancies with increasing rate of labour induction, the rate of cesarean delivery is also increasing and so identifying these risk factors has become important.

In historical time of Hippocrates, mammary stimulation and mechanical dilation of the cervical canal were used as

methods of induction [1].. Indications for induction of labour commonly includes gestational hypertension, premature rupture of membranes, post-term pregnancy, intrauterine growth restriction, and various maternal medical conditions such as chronic hypertension and diabetes. Induction of labor appears to have contributed to current trends in Cesarean section rates [2].

Induction of labour directly depends on cervix status and is considered successful when results in a vaginal delivery. In addition to unfavorable cervix other factors that increase the risk of ccesarean section after induction include: being nulliparous, obesity, maternal age greater than 30 years, fetal macrosomia, use of epidural anesthesia, and Chorioamnionitis [3]. There is a lot of variability in respect to indication, complication and failure of labour induction. So this observational study was conducted in Dhiraj general hospital, waghodia , vadodara to assess the risk of Cesarean section following induction of labor.

Materials and Methods

This observational study was conducted at the Department of Obstetrics and Gynaecology, Dhiraj general hospital after approval of ethics committee. The study included all singleton pregnancies, gestational age >37weeks, cephalic presentation and excluded malpresentations, previous Cesarean, multiple pregnancies and uterine malformations. Informed consent for all the patients included in study was taken.

Patients were enrolled for the study after confirming the inclusive criteria. All the data was collected through a questionaire and were clinically examined to assess for Bishop's score, obstetric scan. Induction was done using tab misoprostol 50 µg 4 hourly for a maximum of four doses in 24 h and augmented with oxytocin if required.Based on prevalence of 18% Cesarean section in urban India, sample size of 155 patients was taken [4].

Data was entered into Microsoft Excel data sheet and was analyzed using SPSS 22 version software for comparing proportions. Student's *t*-test was performed to see mean difference. Chi-square test was performed to see difference in proportions.

Results

A total of 155 patients were included in the study group. Demographic data were tabulated (Table 1).

Baseline demographics	Number	Percentage
Age		
< 20 years	26	16.77%
21 to 30 years	125	80.64%
> 30 years	4	2.58%
Parity		
Primigravida	102	65.80%
Multigravida	53	34.20%
Bishop's score		
1	4	2.5%
2	24	15.4%
3	61	39.3%
4	45	29.0%
5	16	10.3%
6	5	3.2%
Gestational age		
37 - 38 weeks 6 days	29	18.8%
39 - 40 weeks 6 days	79	50.9%
41 - 42 weeks	47	30.3%
Indication for induction of labor		
GDM	2	1.2%

GHTN	4	2.5%
IE	2	1.2%
PROM	37	23.8%
PDP	71	45.8%
PE	22	14.1%
OLIGO	17	10.9%

GDM: gestational diabetes mellitus; GHTN: gestational hypertension; IE: imminent eclampsia; IUD: intrauterine fetal demise; OLIGO: isolated oligohydramnios; PDP: post-dated pregnancy; PE: preeclampsia; PROM: premature rupture of membranes.

In this study 86.4%of patients were from age group of 21-30 years.Out of 155 patients , 102 patients were primigravida and 53 patients multigravida. 50.9% of all patients were of gestational age group of 39 – 40 week 6 days.

The most common indication of induction was postdated pregnacies (45.8%) followed by premature rupture of membranes.

Out of the 155 patients induced , 40 patients ended up having Cesarean and 115 patients were delivered vaginally. The most common risk associated with induction for taking these patients for Cesarean section was fetal distress in the form of non-reassuring nonstress test (NST).

Table 2. Mode of Delivery and Induction Method

Mode of delivery	**Misoprostol**	**Syntocinon**	**Total**
Vaginal delivery	81	34	115
Cesarean	40	0	40

In this study , the mean induction delivery interval amongst those delivered vaginally was less compared those who had undergone cesarean which was statistically significant. As shown below in Table 3.

Table 3. Mode of Delivery and Mean Induction Delivery Interval Between Both Groups

Mode of delivery	**Number of deliveries**	**Mean induction delivery interval**	**P value**
Vaginal delivery	115	11.21 h	< 0.001
Cesarean	40	17.8	

The Apgar score was average between both the groups (> 7) and showed no statistical significance. The percentage of NICU admission of babies was 2.7% vs. 36.5% in vaginal delivery and Cesarean delivery group and was statistically significant (Table 4).

Table 4: Association Between Mode of Delivery and Baby Condition

Baby condition	**Vaginal delivery**	**Cesarean**
NICU	2.7%	36.5%

Discussion

This study was conducted at Dhiraj general Hospital to determine the risk of Cesarean after induction. Demographic details and pregnancy risk factors were taken into account. Agent used for induction, induction to delivery interval in those that underwent Cesarean section was also taken into account and Pregnancy outcome was determined.

In our study 80.64% of all patients belonged to the age group of 21 - 30 years with 65.8% of them being

primigravida. Of these patients 50.9% were in the gestational age of 39 weeks to 40 weeks 6 days. . Similar results were also shown by studies done by Cnattingius et al [5] and Ehrenberg et al [6].

The selection of women undergoing induction of labor should be based on favorability of cervix[7, 8]; and the use of cervical ripening agents should be considered when cervix is not favorable [7]. Most commonly, Bishop's score has been used to evaluate cervical status before induction [9]. In this study, Bishop's score was < 6 prior to induction and was association with Cesarean delivery significantly. This result is supported by a study done by Johnson et al [10] which showed significant association between low preinduction Bishop's score and risk of Cesarean section.

The most common indication for induction of the patients is post-dated pregnancy followed by preterm premature rupture of membranes. . This study did not show a significant association between gestational diabetes mellitus and Cesarean delivery. A study by Zhang et al [11] showed that more than half of women with preeclampsia and eclampsia had Cesarean delivery.

In our study, induction of labor in case of PROM are not significantly associated with Cesarean deliveries. Labour induction in such cases reduces risk of maternal infections. Same results were concluded by Dare et al [12] .

As per our study Primigravida had a more risk for Cesarean section after induction and resulted in more NICU admission of babies.

Higher labor induction rates have been associated with increased Cesarean section rates [13], most likely reflecting no appropriate selection criteria. On the contrary a study done by Darney et al [14] concluded that elective induction done at term was associated with decreased odds of Cesarean section when compared to expectant management. Teixeria et al [15] concluded that Cesarean section after induced labor varied significantly across hospitals where similar outcomes were expected. The effect was more evident when the induction was not based on the unequivocal presence of commonly accepted indications.

The Cesarean section rate in our study was 25.9% and that of vaginal deliver was 74.1%. The most common reason for Cesarean section in induced patients was fetal distress confirmed by non-reassuring CTG,and resulting in NICU admissions 36.5% of neonates. According to Mhaske et al [16], it is better to take women with multiple risk factors for elective Cesarean section than inducing them at term.

Many prospective studies showed decreased risk of Cesarean delivery in women with postdated pregnancies those who underwent labour induction and there is positive evidence showing reduced odds of cesarean delivery if labor induction is used discriminately by a protocol .

Although The limitation of this study being a smaller sample size,it showd higher rates of vaginal deliveries compared to cesarean section after labour induction.

Conclusions

Our study concludes reduced no of cesarean sections due to induction of labour at term pregnancy. Primigravida with postdated pregnancy was a most common indication for induction of labour. Induction of labor should only be considered in cases where there is a clear medical indicatio. Induction of labor should be performed with caution since it carries the potential risk of uterine hyperstimulation and fetal distress [17].

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