

Incidence of LSCS after Induction of Labour with Dinoprostone Gel in Nulliparous Women at Tertiary Care Center

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I. Introduction:

Caesarean section (CS) is one of the essential factors in reducing the risk of intrapartum fetal death. Nevertheless, CS can also cause several complications. For the mother, surgical complications such as bleeding, infection and thrombosis may occur,[1]and the risk of uterine rupture and placenta praevia in subsequent pregnancies is increased.[2]Overall, CS has been associated with a higher risk of severe maternal morbidity and mortality when compared with vaginal delivery[3].

Induction of labour is one of the most common procedures during pregnancy. Data from the National Centre for Health Statistics for the last decade indicate that the rate of labour induction has increased gradually from 9% to 20%. This increase has been noted both at community Hospitals and at the university tertiary care hospitals. Explanations for this jump in the induction rate are complex and multifactorial. Better planning of birth by the physician, patient and her family is the most common reason. Other reasons include the availability of Food and Drug Administration (FDA) approved cervical ripeners, more released attitudes towards marginal or elective inductions and litigious constraints.[4]

Labor induction is an obstetric intervention considered when there is a probable health benefit in initiating delivery versus expectant management, such as in pre-eclampsia, post-term pregnancy, oligohydramnios or intrauterine growth restriction.[5] Although both induced and spontaneous labours can end in caesarean delivery, there is a concern that labour induction may increase the likelihood of caesarean delivery.

Labour induction is the initiation of uterine contractions prior to their spontaneous onset, leading to cervical dilation and effacement and delivery of the baby.[7] The term generally refers to the third trimester and to last 4 weeks of the second trimester, when fetal survival is the anticipated outcome. labour is induced in 1 out of 5 births.[6,7]

There are several methods for labor induction, however the preferred method is intra-cervical prostaglandin E2(PGE2-cerviprime). which induces or accelerates the maturation of cervix also known as cervical ripening and stimulating the myometrial contractility.[8]

The fetal well-being is evaluated every 1 hour by intermittent auscultation. If the fetal heart rate is abnormal during intermittent auscultation, patient is further reassessed after a trial of left lateral position, oxygen supplementation, intravenous fluids. If the heart rate does not correct after 10 mins, artificial rupture of membranes (AROM) is done if feasible. Vaginal prostaglandin PGE2 gel 500 mcg(0.5mg) was inserted into the posterior fornix or intracervically. Depending on the favorability of the cervix and fetal status, repeat dose of PGE2 gel can be given in 2 or 3 doses every 6 hours. Failure of induction was defined as no onset of labor 24 hrs following the initiation of induction of labor or onset of fetal distress detected by intermittent auscultation. Cesarean section was done if there was a failure to go into active labor or if fetal distress/maternal risk exceeded the induction process benefits.

AIMS AND OBJECTIVES:

PRIMARY-

1. To determine the incidence of cesarean section after induction with dinoprostone gel in nulliparous women.

SECONDARY-

1.To identify factors affecting maternal and fetal morbidity after induction with dinoprostone gel in nulliparous women.

2.To explore the effects of induction by dinoprostone gel on mode of delivery in nulliparous women.

II. Review Of Literature:

The most common usage of the term review of literature is to refer to that section of a research study in which the researcher describes the linkage between the pre-existing knowledge and the current study. The present study was conducted on 300 patients at Dr S N Medical college, Umaid Hospital, Jodhpur to find out risk of cesarean delivery after induction at term in nulliparous women with an unfavourable Bishop score . PGE2 gel (dinoprostone gel) was selected as inducing agent as it is effective, acceptable to patients and non-invasive administration. It also shortens the duration of oxytocin acceleration. In present study 68% patients were booked and 32% were unbooked because of increase number of institutional deliveries promoted by the government of India under JSSK scheme. Another study done by Mehta et al showed similar results i.e. 85.5% patient were booked and 45.5% were unbooked. (9) The mean age of patient in present study was 23.09 years with maximum number of patient between 21 to 25 years (62.66%). The mean age in study done by Mehta et al also came out to be 22.2 years.(9) Study conducted by Balaji Naik majority of women were between age group 25-29 years.(10) Another similar studies done by Wilson, Ulmstem and Neilson mean age were 23.3 years, 25 years, and 24 years respectively.(11,12,13) The mean age in present study was less than other studies because of early marriages in this part of India. The most frequent cause of induction of labour in present study was post-dated pregnancy (46.66%) followed by HDP (13.66%) premature rupture of membrane at term (22.33%) and oligohydramnios (10.66%). There were other less common causes like IUGR, decrease fetal movement and intra uterine fetal death, Polyhydraminos, GDM. Similarly in another study done by balaji naik the most common cause of induction of labor was postdatism. (10) Study conducted by Bassetty KC et al the most common cause induction of labor was postdatism .(14) The most common cause seen by Yeast JD et al was also postdatism .(15) Postdatism was most common cause of induction of labour in study done by Kalpana Mehta et al. (9) The present study shows that mode of delivery was normal vaginal delivery in 75.66% followed by caesarean section in 24% and ventouse delivery in 0.33%. In study done by Tolcher et al caesarean rate was 29.4%, which is similar to our study.(16) The caesarean rate ranged from 23.3% to 33.8% in study conduct by Prins RP et al, Neilson DR et at, Calder AA et al and Macer J et al.(17,13,19,20) In study conducted by Mehta et al caesarean rate was 27%. (9) Present ceserean rate in also in between this range. The mean induction to delivery interval in present study was 12.64 hours. Another study done by Mehta et al showed induction to delivery interval 13.38 hours.(9) The study conducted by Calder et al, Wilson PD et al and Prins RP et at also shows mean induction to delivery interval in this range(19,21,17) The main indication for caesarean section in our study was failed Induction (44.44%) followed by fetal distress (33.33%) . Whereas in studies done by Mehta et al , Calder et al, Wilson PD et al and Macer JA et al most common indication for caesarean section was failed progress.(9,19,11,20) Another study conducted by Balaji Naik the mot common indication of caesarean section was failed progress.(10) Similarly study conducted by Bassetty et al most common indication of caesarean section was failed induction.(14) In present study maternal complication seen were postpartum haemorrhage (1.33%), Cervical tear (0.66%), and resuturing of wound (1.33%). Out of 300 patient, only eleven had these complication (3.66%). Similarly postpartum haemorrhage (1.5%) was also most common maternal complication in study done by Mehta et al.(9) Mean weight of babies our study are 2.9 kg. Similarly study conducted by Bassetty et al mean weight of babies was 2.9 kg.(14)

III. Materials and Methods:

TYPE OF STUDY: Observational analytical study

STUDY CENTRE: The study will be conducted in the department of Obstetrics and Gynaecology, Umaid Hospital Jodhpur.

INCLUSION CRITERIA:

1. All nulliparous women age 18-35 years having singleton and cephalic presentation induced by dinoprostone gel will be included in study.
2. Reactive fetal heart rate pattern

EXCLUSION CRITERIA:

1. Abnormal placentation (placenta previa).

IV. Methodology:

It is a hospital based in-patient study. Study conducted all nulliparous women, singleton pregnancy with cephalic presentation at Umaid hospital jodhpur. The sample size for the study will be 300.All patients will be explained in detail about the aim and objectives of the study and written informed consent will be taken from the patients.all women included in the study will be between 18-35 years age group.

Baseline characters such as name, age,reg. no,contact no gestational age at induction and indication for induction will be noted. After informed consent, careful history, general examination, systemic examination and

per abdomen examination will be done. A non-stress test will be performed for the assurance of fetal wellbeing. Digital vaginal examination will be done for pelvic assessment, to evaluate the cervix, and record the bishop score.

Routine investigations like Hb, blood group, Rh typing, CBC, urine examination, RFT, LFT, viral markers will be carried out, Bishop score will be used to estimate the prelabour inducibility and likelihood success of induction. The method of labour will be decided after initial vaginal examination during evaluation of Bishop's score.

DATA COLLECTION

Data will be collected from labor room of unaid hospital DR. S.N.MEDICAL COLLEGE Jodhpur

V. Observations

The total 300 patients were studied.

Table1:- Age distribution of patients

Age (in years)	Number	Percentage (%)
Below 20	67	22.33
21 – 25	188	62.66
26 – 30	37	12.33
31 – 35	8	2.66
Total	300	100%

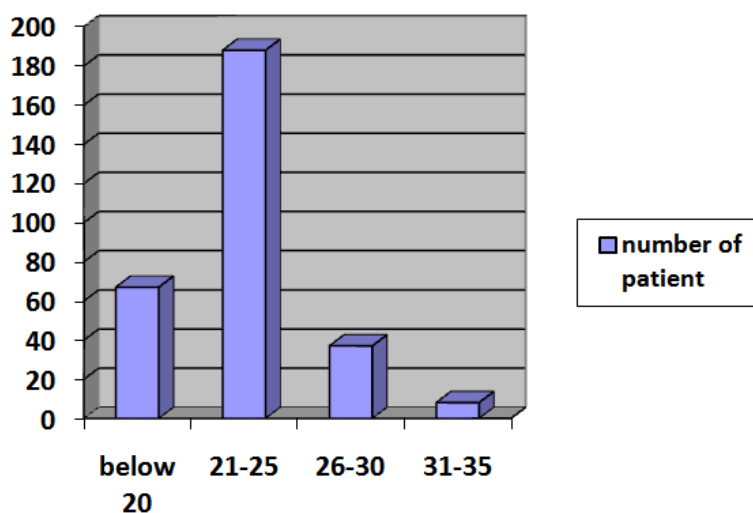


Table 1 show their age wise distributions out of which maximum patient were below 25 years (84.99%). Patient's age ranged from 18 to 35 years with maximum number of patients in 21-25 years age group. The mean age was 23.09 years.

Table 2:- Distribution of patient according to unit

Unit	Number	Percentage (%)
I	73	24.33
II	65	21.66
III	22	7.33
VI	46	15.33
VII	58	19.33
VIII	36	12
Total	300	100

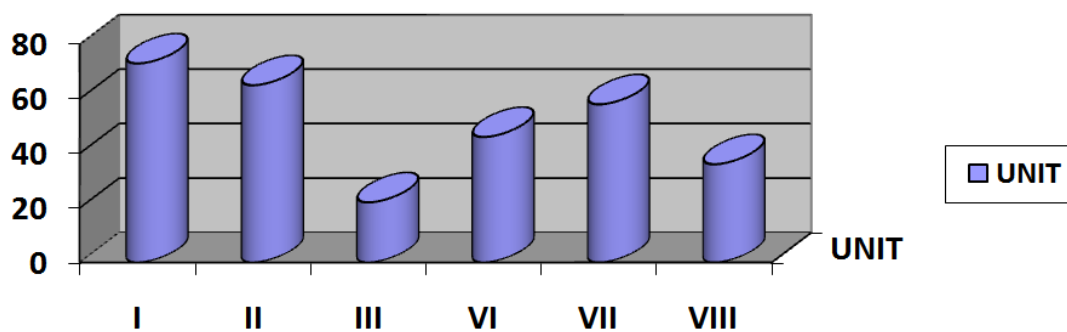


Table 2 show their unit wise distribution of patients. maximum number of patients (24.33) induced in unit I.

Table 3:- Distribution of Patients According to ANC Booking

Booking Status	Number	Percentage (%)
Booked	204	68
Unbooked	96	32
Total	300	100.00

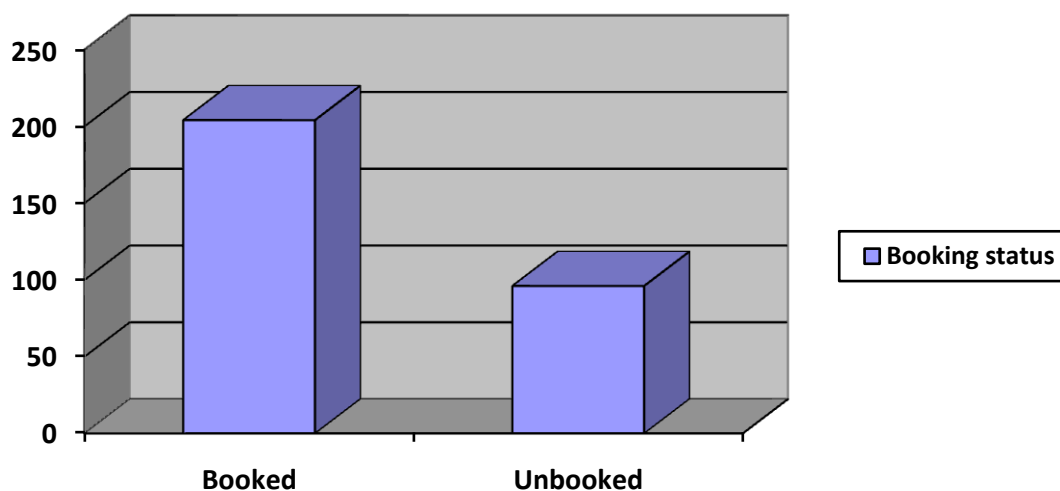


Table 3 show total 300 patients were studied, out of which 204 (68%) had attended antenatal clinic while 96 (32%) did not attend antenatal clinic during their present pregnancy.

Table 4:-Indication of induction.

Indication of induction	No. of patients	Percentage (%)
Postdatism	140	46.66
HDP	41	13.66
PROM	67	22.33
Oligohydraminos	32	10.66
IUGR	6	2
IUD	2	0.66
GDM	2	0.66
Polyhydraminos	4	1.33
Congenital anomaly	2	0.66
UPI	4	1.33
Total	300	100

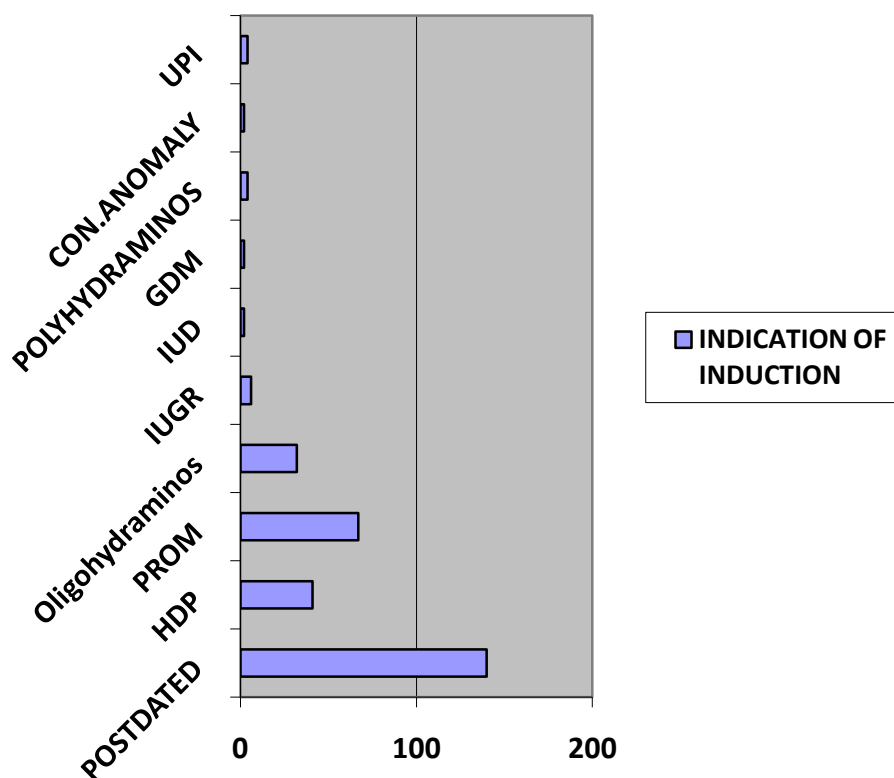


Table 4 show that the most frequent cause of induction of labour was postdatism (46.66%) followed by PROM (22.33%) ,HDP (13.66%) and Oligohydraminos(10.66). Less frequent causes were IUGR, GDM, Congenital anomaly, UPI, Polyhydraminos and IUFD.

Table 5:- Distribution of Patients according to mode of delivery.

Mode of delivery	Number of patients	Percentage (%)
Vaginal delivery	227	75.66
LSCS	72	24
Ventouse Delivery	1	0.33
Total	300	100

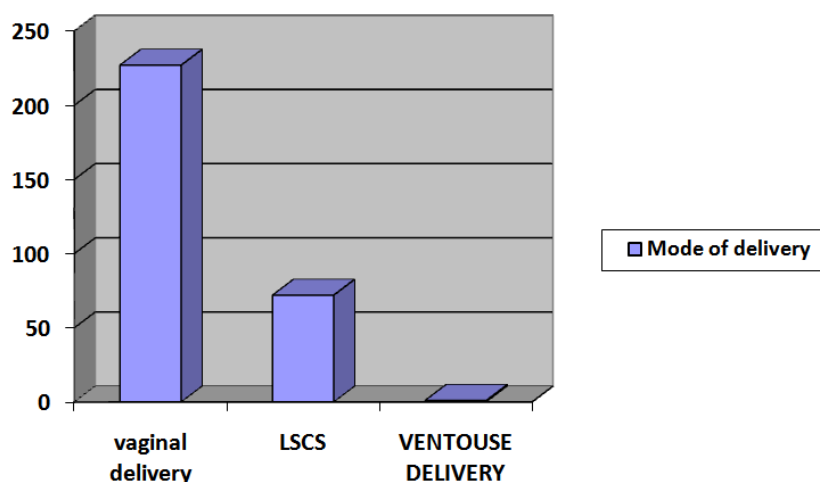


Table 5 show that 227 (75.66%) women had normal vaginal delivery whereas in 72 women (24%) cesarean section was done. remaining 1 women (0.33%) had ventouse delivery.

Table 6:- Distribution of Patients according to Induction Delivery Interval.

Patient delivered	Number	Percentage (%)
Within 12 hours of gel instillation	160	53.33
After 12 hours of gel instillation	140	46.66
Total	300	100%

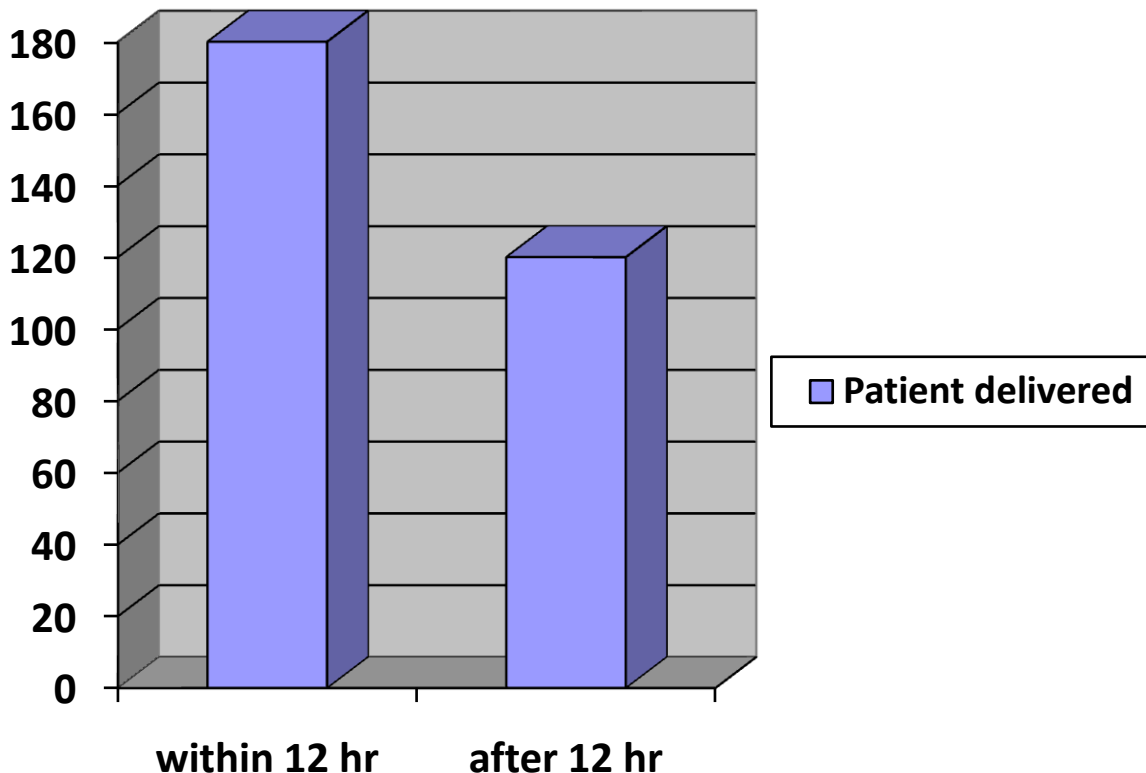


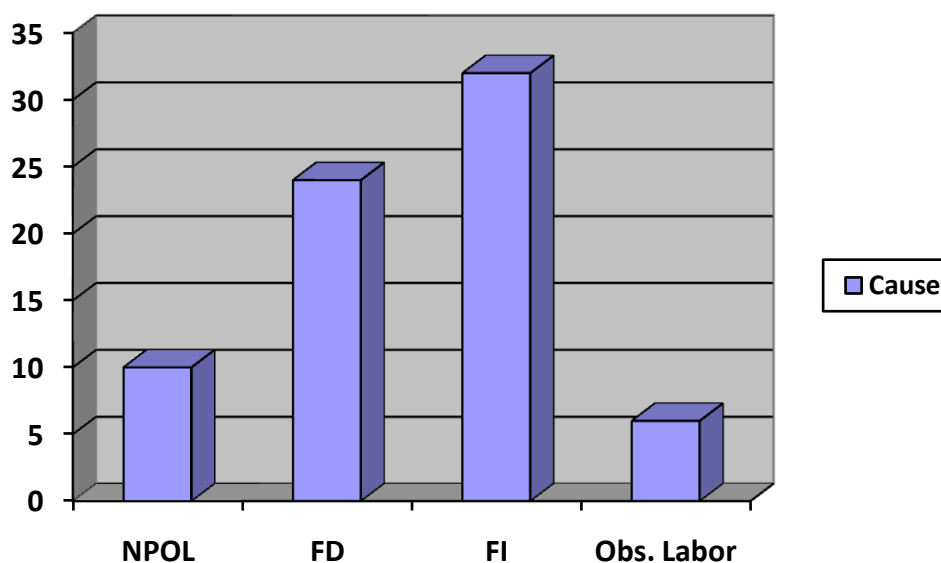
Table 6 show distribution of patients according to induction delivery interval shows that 53.33% patients delivered within 12 hours of gel instillation whereas 46.66% patients after 12 hours of gel instillation .

The mean induction to delivery interval in present study was 12.64 hours.

Table 7:-Cause of cesarean section after induction of labor

Cause	Number	percentage (%)
Failed progress	10	13.88
Fetal distress	24	33.33
Failed induction	32	44.44
Obstructed labor	06	8.33
Total	72	100%

Table 7 show that 72 patients who underwent cesarean section after induction of labour, the most common cause was failed induction (32 cases) followed by fetal distress (24 cases) and remaining 16 patients it was due to failed progress, obstructed labour.



NPOL-Non progress of labor

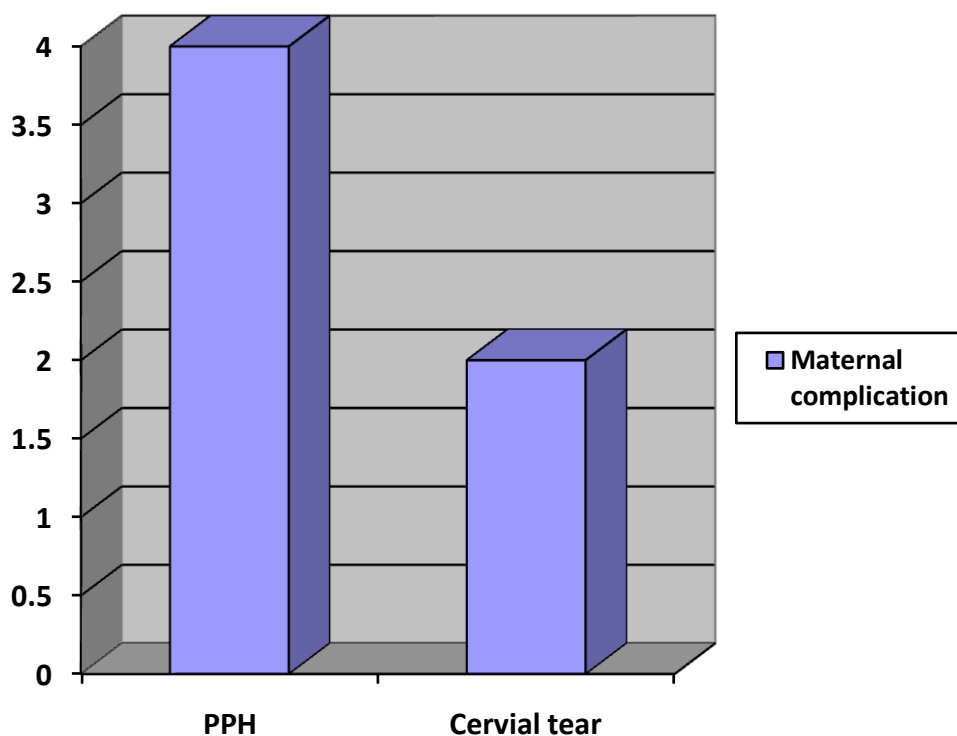
FD-Fetal distress

FI-Failed induction

Table 8:- Maternal intrapartum complication of induction of labor

Complication	Number	percentage (%)
PPH	04	1.33
Cervical tear repair	02	0.66

Table 8 show that Out of 300 patients, 06 had maternal complication of induction of labour. Postpartum haemorrhage was noted in 4 (1.33%) cases, all four cases underwent intra uterine packing and received blood transfusion. Two had cervical tear.



PPH-Post partum hemorrhage

Table 9:- Maternal postpartum complication

Complication	Number
Episiotomy gap	01
LSCS wound gap	03
Infra levator hematoma	01

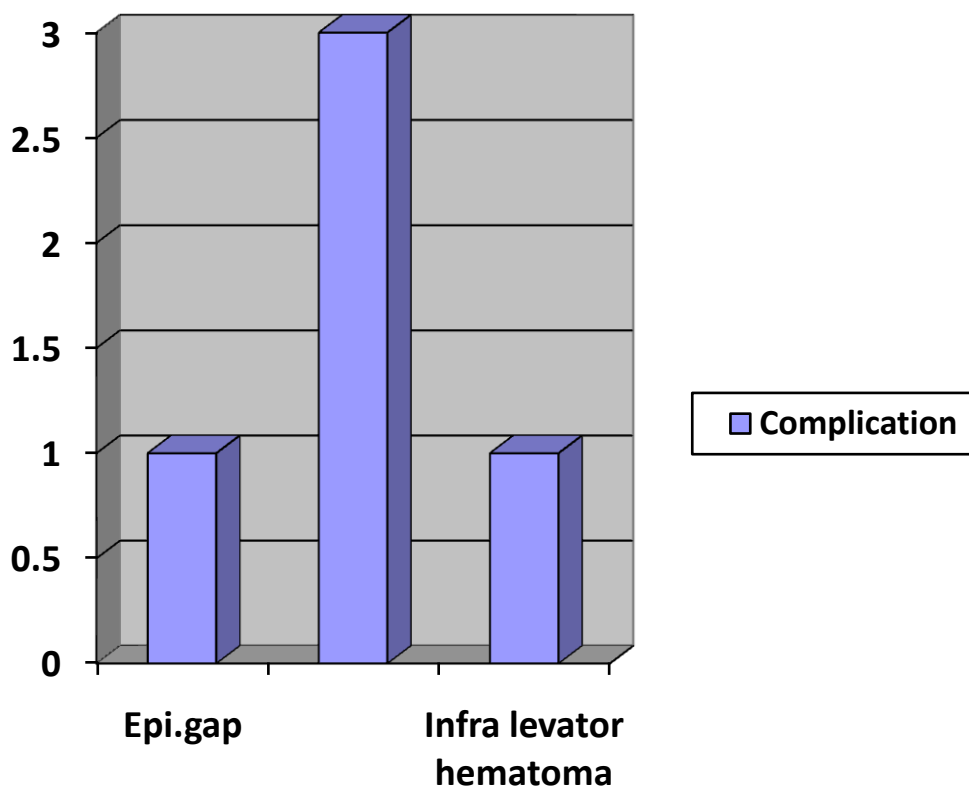
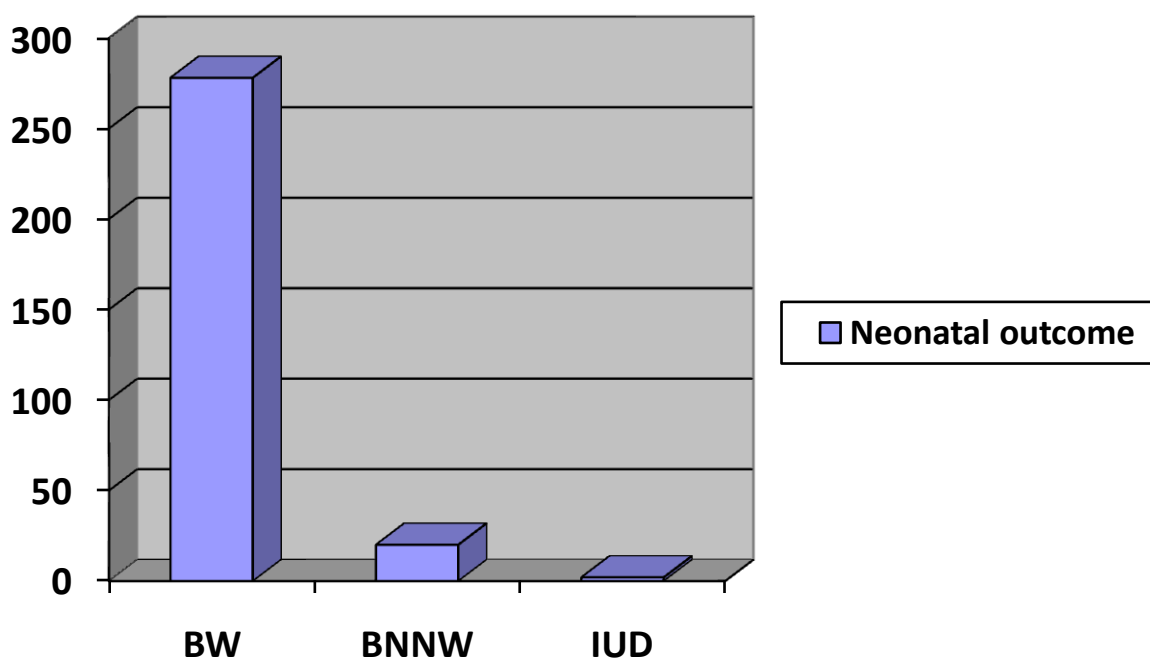


Table 9 show, out of 300 patients, 5 had maternal post partum complication of induction of labor. episiotomy gap noted in 1(0.33%) patient, LSCS wound gap found in 3(1%) .rest 1 patient have infra levator hemtoma.

Table 10:- Neonatal Outcome

Neonatal Outcome	Number	Percentage (%)
BW	278	92.66
BNNW	20	6.66
IUD	02	0.66
Total	300	100



BW-Baby well
 BNNW-Baby in neonatal ward
 IUD-Intra uterine death

Table 10 show that 278(92.66%) baby shifted to mother side after delivery and only 20(6.66%)baby admitted in neonatal ward after delivery after induction of labor.2 baby IUD boen.

Table 11:- Birth Weight Distribution.

Birth Weight In Kilograms	Number	percentage (%)
Less than 2	12	04
2-3	178	59.33
More than 3	110	36.66
Total	300	100%

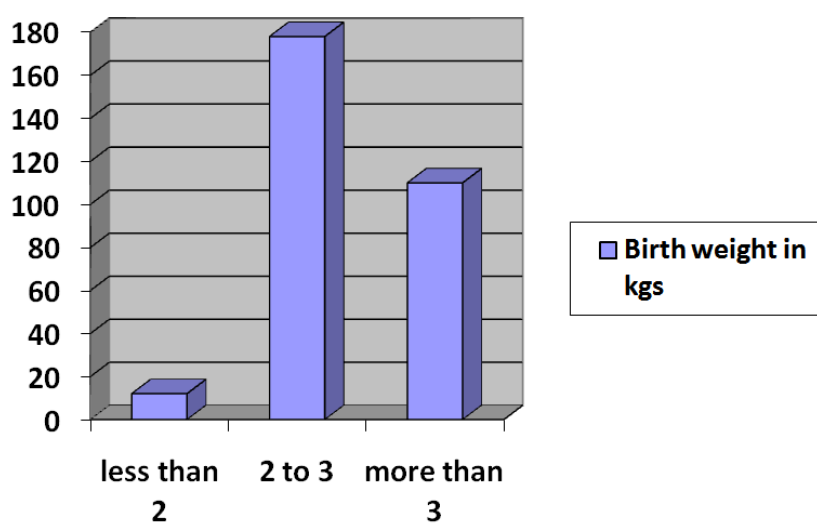


Table 11 show that most of baby weight at birth 2-3 kilograms [178 baby (59.33%)].only 12 baby have less than 2 kilograms weight at birth.
 Mean weight of babies our study are 2.9 kgs.

Table 12 :-Distribution of baby according to sex.

Baby sex	Number	Percentage (%)
Male	152	50.66
Female	148	49.33
Total	300	100%

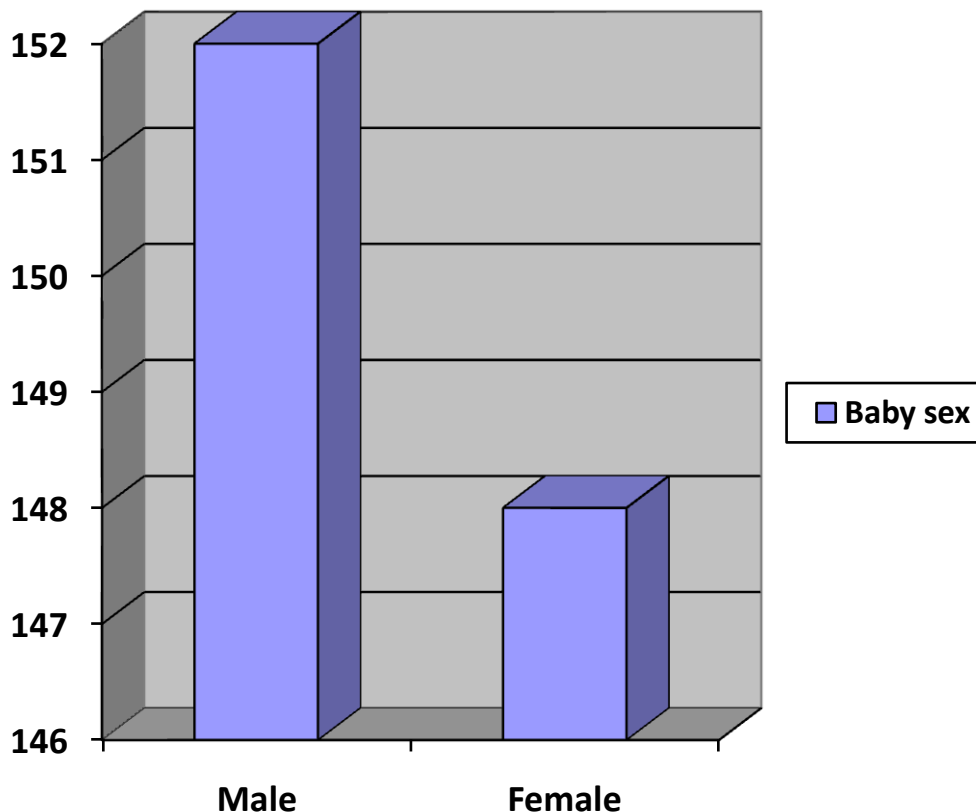


Table 12 show that out of 300 delivery, 152 born male child and 148 born female child.

VI. Conclusion

The present study was undertaken with the aim to find out risk of cesarean delivery after induction at term in nulliparous women with an favourable bishop score and to evaluate the effect of induction of labour by PGE2 gel on the route of delivery on nulliparous women. Mean bishop score at induction was 3.31 which improved to 4.0 after 12 hours of gel instillation, further augmentation of labour with oxytocin was done according to changes in the cervical state. The mean induction to delivery interval was 12.64hrs. in present study, 53.33% patients were delivered within 12 hours of gel instillation in this study. In present study 75.66 % women had normal vaginal delivery, 24% had cesarean section, and 0.33% women had ventouse delivery. Most common indication of cesarean section was failed induction followed by fetal distress. Dose of PGE2 gel used intracervically was so low that no systemic side effects like nausea, vomiting were noted. Postpartum haemorrhage was noted in 4 patients. All four cases underwent intrauterine packing during cesarean section and all 4 patients received blood transfusion. Resuturing of wound was done in three patient. Traumatic complication like cervical tear was noted in 2 patients. Thus, it is concluded that induction of labour in the presence of an unripe cervix is associated with failed induction, failure to progress of labour and risk of cesarean section. Bishop score is good predictor of successful induction of labour, in this study, successful induction of labour has a statically significant positive relationship with the bishop score.

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