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A Prospective Study of Maternal and Fetal Outcomes in Induced Labours at Term

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ABSTRACT:

BACKGROUND: Childbirth is the period from the onset of regular uterine contractions until expulsion of the placenta. The process by which this normally occurs is called labor. Induction implies stimulation of contractions before the spontaneous onset of labour,with or without ruptured membranes. Induction is indicated when the benefits to either the mother or fetus outweigh those of continuing the pregnancy. The aim of the study is to investigate the outcome of induction of labour in primiparous women and the fetal outcome.

OBJECTIVES OF THE STUDY: To evaluate the association of labour induction with the risk of caesarean delivery, toinvestigate the course of induced labour and method of delivery and fetal outcome.

MATERIALS AND METHODS: It hospital based study to be conducted on 200 patients attending the department of obstetrics &gynaecology, Narayana medical college and hospital, nellore over a period of two years. The study group will comprise of randomly selected 200 patients fulfilling the the inclusion and exclusion criteria .Medical and obstetric indicatios as well as the outcome of induction are recorded for each parturient.The data will be analysed to assess the success rate of induction of labour,fetal outcome and the risk of caesarean delivery associated with induction of labour.The results will be subjected to appropriate statistical analysis. The data will be tabulated and analyzed.

RESULTS: Out of 200 cases70% of cases were primigravidae, and 30% were multigravidae, with a majority of them with a period of gestation between 37-38 weeks. The most common indication for induction in the study was preeclampsia followed by PROM, and the most common method of Induction being PGE2 gel. Out of 200 cases, 54 had LSCS (27%), and 146 had a vaginal delivery. In contrast, out of 54 LSCS, 44 cases were primigravida compared to multigravida, which was only ten, and the most common indication for LSCS was failed induction in the present study.Induction in nulliparous women with an unfavorable cervix has a high rate of labor arrest and substantially increased risk of cesarean delivery. They had significantly longer latent, early active phase, and increased risk of cesarean delivery

CONCLUSION: Induction of labor is associated with a significant risk of cesarean delivery in nulliparous women.The decision to undertakeinduction of laborneeds to be clear and clinically justified. This may aid efforts to reduce the primary cesarean delivery rate among nulliparous women.

I. INTRODUCTION:

Induction of labor is one of the most common procedures duringpregnancy. Data from the National Centre for Health Statistics for the lastdecade indicates that labor induction has increased gradually from9% to 20%. Explanations for an increase in the rate of inductionare multifactorial and complex. Indications for induction of labor have essentially not changed. Whenconcern for the mother's well-being arises, primary indications for labor inductioninclude active medical disorders, post-dated and prolongedruptured membranes. The indication is also justified when the fetus is at risk.Induction is associated withincreased complications, which include an increase of chorioamnionitis and increased Caesarean delivery.An increase in Caesarean delivery rates associated with induction can be due tothe uterus not prepared for labor, especially in circumstances of theunripe cervix. The advantage of labor inductionmust be weighed against the potential maternal or fetal risks associated with theprocedure.As induction has both advantages and disadvantages, there is a need tostudy the progress of labor, maternal and fetal outcomes of induction labor.

II. MATERIALS AND METHODS:

A hospital based study to be conducted on 200 patients attending the department of obstetrics &gynaecology, Narayana medical college and hospital, nellore over a period of two years.The study group will comprise of randomly selected 200 patients fulfilling the the inclusion and

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exclusion criteria . Medical and obstetric indicatios as well as the outcome of induction are recorded for each parturient.The data will be analysed to assess the success rate of induction of labour,fetal outcome and the risk of caesarean delivery associated with induction of labour.The results will be subjected to appropriate statistical analysis. The data will be tabulated and analyzed.

Inclusion criteria-Term gestation, Singleton pregnancy, Cephalic presentation, Live fetus
Exclusion criteria-Fetalmacrosomia,Multifetal gestation, Anomalous baby, Malpresentation, Intrauterine fetal death, Contracted pelvis, Eclampsia, Placenta previa, Abruptio placentae, Active genital herpes infection, Cervical cancer, Cardiac disease in pregnancy.

III. RESULTS AND OBSERVATIONS:

TABLE NO. 1: PERIOD OF GESTATION

Period of Gestation (POG)	Gravida					
	Primi		Multi		Total	
	No. of Patient	%	No. of Patient	%	No. of Patient	%
37 – 38	83	59.3	18	30.0	101	50.5
38.1 - 39.0	21	15.0	17	28.3	38	19.0
39.1 - 40.0	36	25.7	25	41.7	61	30.5
Total	**140**	**100.0**	**60**	**100.0**	**200**	**100.0**
Chi-square	X^2 Value = 14.567 df = 2; p =0.001 (Highly significant) (p<0.001)					

TABLE NO. 2: INDICATION FOR INDUCTION

Indication	Number of patients
Preeclampsia	**67**
PROM	**35**
RH NEG	**25**
OLIGO	**26**
IUGR	**19**
GDM	**17**
Chronic HTN	**11**

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TABLE NO. 3: METHOD OF INDUCTION

Method of Induction	No. of Patients	%
PGE2	82	41.0
PGE2 +FOL	48	24.0
Misoprostol	32	16.0
Oxytocin	38	19.0
Total	200	100.0

TABLE NO.4: MODE OF DELIVERY

Mode of Delivery	Gravida					
	Primi		Multi		Total	
	No. of Patient	%	No. of Patient	%	No. of Patient	%
NVD	90	64.3	41	68.3	131	65.5
Instrumental	6	4.3	9	15.0	15	7.5
LSCS	44	31.4	10	16.7	54	27.0
Total	140	100.0	60	100.0	200	100.0
Chi-square	X^2 Value = 9.923 df = 2; p =0.007; significant (p<0.05)					

TABLE NO.5: INDICATION FOR LSCS

Indication for LSCS	Gravida					
	Primi		Multi		Total	
	No. of Patient	%	No. of Patient	%	No. of Patient	%
Failed indication	19	43.2	4	40.0	23	42.6
Meconium	10	22.7	2	20.0	12	22.2
Fetal distress	8	18.2	3	30.0	11	20.4
Arrest of Dilatation	4	9.1	0	.0	4	7.4
DTA	3	6.8	1	10.0	4	7.4
Total	**44**	**100.0**	**10**	**100.0**	**54**	**100.0**
Chi-square	X^2 Value = 1.626 df = 4; p =0.804 (Not significant) (p>0.05)					

TABLE NO 6: DURATION OF LABOUR

	Gravida	N	Mean ± SD.	t-value	Sig
LATENT	Primi	140	10.55 ± 2.083	4.643** (0.000)	P<0.001
	Multi	60	9.13 ± 1.685		

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ACTIVE	Primi	102	4.61 ± 1.268	4.152** (0.000)	P<0.001
	Multi	52	3.78 ± 0.982		

TABLE NO. 7: NEONATAL OUTCOME

NEONATAL OUTCOME	NUMBER	
HEALTHY BABIES	177	
MECONIUM ASPIRATION	12	
ASPHYXIA	11	

IV. DISCUSSION:

The induction of labor requires the interventionof a skilled birth attendant to prevent undue morbidity andmortality.In the present study, 200 women were selected to induce labor according to the inclusion and exclusion criteria.Term pregnancies (37 to 40 weeks) were included in the study, and the labor was induced. In the present study, most primigravida, i.e., 54%, the gestational age was around 38 weeks, whereas, in multigravida, it was 30% and statistically significant. Malindogl et al. studied indications for induction and describe the characteristics and delivery outcome in medical compared to non-medical/elective inductions.[1]Vaginal misoprostol reduced failure to achieve vaginal delivery within 24 hours than vaginal and cervical PGE2 but increased uterine contractile abnormalities. Likewise, vaginal misoprostol reduced cesarean deliveries compared with IV oxytocin but increased uterine hyperstimulation. Mechanical methods for induction of labor were associated with reduced uterine hyperstimulation rates compared with vaginal PGE2 and vaginal misoprostol. Still, they were also associated with increased risk for maternal and neonatal infectious complications.oxytocin with and without amniotomy did not appear to have significant benefits compared with vaginal PGE2.[2]In the current study, the majority of cases were around 4 to 5 score.In the study by Johnson DP andcolleagues23, among 2647 (36.3%) patients who underwent induction, the cesarean delivery rate was 31.5% among patients whose Bishop score was < 5 at induction versus18.1% for patients with a score ≥ 5.[3]Vrouenraets et al. 18 reported that a bishop score of 5 or less was the predominant riskfactor for cesarean delivery. Variables with increased risk for cesarean delivery includedmaternal age of 30 years or older, body mass index of 31 or higher.[4]In our study, pre-eclampsia (33.5%) was the most common indication for induction followed by PROM (17.5%),RH negative pregnancy (12.5%),oligohydromnios (13%) ,IUGR (9.5%) ,GDM (8.5%),chronic hypertension(5.5%).postdated and postterm pregnancy is not included in the current study.In

the American College of Obstetricians and Gynecologists' study, commonindications included premature rupture of membranes, gestational hypertension, non-reassuring fetal status, post-dated pregnancy, and various medical conditions such aschronic hypertension and diabetes. [5]In the present study, the induction method used dinoprostone gel, oxytocin, foleys with cerviprime gel, and tablet misoprostol. Out of 200 cases, 54 had LSCS, 131 had a vaginal delivery, and15 had instrumental delivery. The risk of LSCS is significantly higher in primigravida and is statistically significant asp <.001In the present study, the mean latent phase of labor in primigravida is 10.55 hours and 9.13 hours in multigravida. The difference in duration of labor wasfound to be statistically significant ($p < 0.001$). The mean active phase of labor in primigravida was 4.6 hours and 3.7 hours in multigravida. So,the total duration of labor is more in primi compared to multigravida and is statistically significant.In their study, Alexander JM and coleagues24 concluded that admission to deliverywas more prolonged (5.7 compared with 11.1 hours) and more likely to extend beyond 10 hours inthe induction group. Simon CE, Grobman WA27 observed that among a total of 397nulliparous women, 32% of whom underwent cervical ripening, only eight women(2%) never achieved active phase of labor before cesarean and the overall cesarean ratewas 26%. Cesarean delivery rate was more significant in women with a prolonged latent phase of labor,although only after 18 hrs did a majority of induced labor result in cesarean.[6]In the present study, most babies were around 2.8kgs, and the difference in weights among primi and multigravida is not significant.In our study, the most common maternal complication was postpartum hemorrhage (9 cases), followed by prolonged labor, fever, and hyperstimulation.In the study by Vrouenraets et al. 18, in medical and elective induction groups,more newborns required neonatal care, more mothers needed a blood transfusion, andmaternal hospital stay was longer.There were 10 cases of prolonged labor, 1 case ofhyperstimulation, 1 case of PPH. 2 cases were controlled by PGF2 alphaadministration. Blood transfusion was done in 2 cases.

V. CONCLUSION:

Induction of labor is safe and beneficial in high-risk pregnancies when the benefits of early delivery outweigh the risk of continuation, but this is not without attendant complications and failures, which can be significantly reduced with proper selection of patients, good preparation, as well as adequate fetomaternal monitoring to ensure a favorable obstetric outcome of a healthymother and baby which are the targets of the safemotherhood initiative. There is no evidence that repeated cycles of cervicalripening are advantageous in terms of successful inductionand the lack of changes of the bishop score at the endof cervical ripening is not synonymous with failed induction.Induction of labor is associated with a significant risk of cesarean delivery in nulliparous women.The decision to undertakeinduction of laborneeds to be clear and clinically justified. This may aid efforts to reduce the primary cesarean delivery rate among nulliparous women.

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