



RESEARCH ARTICLE

INDUCTION OF LABOR AND ITS FETOMATERNAL OUTCOME

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Abstract

Induction of labor is opted for benefits of expeditious delivery to outweigh the risks of continuing the pregnancy.

Aims and Objectives: To study the indications and methods of induction of labor & to correlate Feto-Maternal outcome.

Materials & Methods: The present study was conducted on 150 pregnant women. It is a prospective observational study, conducted from April 2021 to September 2021. Patient details with Indication, examination, pre-induction Modified Bishop's score, Partogram, were noted of 150 pregnant women and the results were analyzed. Electronic fetal heart rate monitoring was done in all except Intra-uterine Fetal Demise (IUFD) cases. Methods used were Dinoprostone, misoprostol, mechanical dilatation using foley's catheter; single or in combination with each other. SPSS version 23.0 was used for statistical analysis, statistical significance was set as $p < 0.05$.

Result: Common indications for induction were Past-dated pregnancy, followed by Gestational- Hypertensive disorders, Oligoamnios, Pre-labor rupture of membranes respectively. Among the 150 mothers, 113(75.3%) delivered vaginally and 37(24.6%) underwent LSCS. Dinoprostone gel was the dominant method used. Mechanical dilatation with Dinoprostone for induction of labor had a better outcome and less rate of failed induction. 4 mothers in this study were diagnosed with IUFD and induced with Mechanical Dilatation followed by Dinoprostone, all delivered vaginally. NICU admissions were required in 21.7%, 25%, 22% of the mothers who were induced with Dinoprostone, Misoprostol and Mechanical Dilatation respectively.

Conclusion: Most common indication for induction is Past dated pregnancy. Most common method used is Dinoprostone alone. Perinatal Morbidity was more with Misoprostol. No maternal and Perinatal mortality.

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Introduction:-

Induction of labor is defined as a process of artificially stimulating the uterus to start the labor.¹ Since ancient times, numerous bizarre and even dangerous techniques have been employed in an effort to induce labour.² It is usually performed by administering oxytocin or prostaglandins or mechanical methods to the pregnant women or by manually rupturing the amniotic membrane.

Purified oxytocin was isolated and synthetic oxytocin is manufactured in 1953. Dinoprostone was synthesized in Harvard university.² Over the past several decades the incidence of labor induction for shortening the duration of pregnancy has continued to rise. In developed countries, the proportion of infants delivered at term following induction of labor can be as high as 1 in 4 deliveries.³

Various professional societies have recommended the use of induction of labor in circumstances in which the risks of waiting for the onset of spontaneous labor are greater than the risks associated with shortening the duration of pregnancy by induction.⁴ These circumstances generally include gestational age of 41 weeks or more pre-labor rupture of amniotic membrane, hypertensive disorders, maternal medical complications foetal death, foetal growth restriction, chorioamnionitis, multiple pregnancy.

During the induction of labor the women has restricted mobility and the procedure itself can be discomfort to her.⁵ The likelihood of success is indicated by universally accepted scoring system known as modified bishop's score which determines the favorability of cervix.⁶ In addition, this process may be associated with increased risks of complications like bleeding, caesarean section, uterine tachysystole and uterine rupture.⁷ To avoid potential risks associated with procedure, the women and the baby need to be monitored closely.

Materials & Methods:-

This was a Prospective Observational study done from April 2021 to October 2021 at Government Victoria Hospital for Women & children, Department of Obstetrics and Gynaecology, Andhra Medical College, Visakhapatnam.

Antenatal women attending labor room, meeting all the inclusion criteria were taken up for the study. These women were explained about the indication of the procedure and possible benefits, complications and informed consent was taken. After noting all the necessary details the procedure was started.

Induction methods-

Single or in Combination were included. Monitoring is done by Cardiotocography and WHO modified Partograph. In cases where the pregnant women had inadequate uterine contractions, augmentation was done with oxytocin. Methods analyzed are mode of delivery, the induction delivery interval, any complication, NICU admissions needed.

Inclusion Criteria:⁸

1. Singleton pregnancy
2. Cephalic presentation
3. Term or pre term gestation
4. Gestational hypertension, Gestational diabetes mellitus.
5. Intra uterine growth restriction
6. Oligoamnios, Polyamnios
7. Anomalous babies,
8. Intra uterine fetal demise

Exclusion Criteria:⁸

1. Multiple gestation
2. Mal presentation
3. Severe oligohydroamnios
4. Previous uterine scar
5. Those who did not give consent for the study.

Results:-**Table 1a & 1b:-** Demographic distribution (Age & Gravida respectively).

Age	Total of 150	Percent
19-20	13	8.7
21-25	108	72
26-30	28	18.7
31-35	1	0.7

Gravida	Total of 150	Percent
Primi	111	74
G2	37	24.7
G3	2	1.3

Table 2:- According to the method of induction:

Method of induction	150 mothers	Percent
Dinoprostone	69	46
Misoprostol	31	20.7
Mechanical dilation	18	12
Mechanical dilation + Dinoprostone	12	8
Mechanical dilation+ Misoprostol	12	8
Dinoprostone+ Misoprostol	8	5.3

Table 3:- According to the Indication:

Indication	Total of 150 patients	Percent
Past dates	59	39.3
pre-eclampsia	25	16.7
PROM	23	15.3
Oligoamnios	23	15.3
IUGR	6	4.0
IUD	4	2.7
GDM	5	3.3
Polyamnios	2	1.3
Anamolous baby	2	1.3

Table 4:- According to the mode of Delivery.

Mode of delivery	Total 150	Percent
NVD	115	76.7
LSCS	35	23.3

Table 5:- According to NICU admissions.

NICU Admission	Total 150	Percent
Yes	35	23.3
No	115	76.7

Table 6:- Correlation of the Method of Induction & Gravida.

Method of Induction	G1	G2	G3
Dinoprostone	53(76.8%)	16(23.2%)	0
Misoprostol	22(71%)	9(29%)	0
Mechanical dilation	11(61.1%)	6(33.3%)	1
Mechanical dilation+ Dinoprostone	10(83.3%)	1(8.3%)	1
Mechanical dilation+ Misoprostol	9(75%)	3(25%)	0
Dinoprostone+ Misoprostol	6(75%)	2(25%)	0

Table 7:- Correlation of Mode of delivery & Method of Induction.

Method of Induction	NVD	LSCS	Total
Dinoprostone	56(81.2%)	13(18.8%)	69
Misoprostol	26(83.9%)	5(16.1%)	31
Mechanical dilation	10(55.6%)	8(44.4%)	18
Mechanical dilation+ Dinoprostone	9(75%)	3(25%)	12
Mechanical dilation+ Misoprostol	7(58.3%)	5(41.7%)	12
Dinoprostone+ Misoprostol	7(87.5%)	1(23.3%)	8
Total	115(76.7%)	35(23.3%)	150

Table 8:- Correlation of Indication of C-Section & Method.

Method of Induction	Indication for LSCS		Total
	Failed induction	Fetal distress	
Dinoprostone	7(53.8%)	6(46.2%)	13
Misoprostol	5(100%)	0	5
Mechanical dilation	4(50%)	4(50%)	8
Mechanical dilation+ Dinoprostone	2(66.7%)	1(33.3%)	3
Mechanical dilation+ Misoprostol	2(40%)	3(60%)	5
Dinoprostone+ Misoprostol	1(100%)	0	1

Table 9:- Correlation of Method of Induction & Induction Delivery interval:

Method of induction	N	Mean duration in hours	Std.deviation
Dinoprostone	69	22.45	8.692
Misoprostol	31	17.81	4.301
Mechanical dilation	18	25.67	7.919
Mechanical dilation+ Dinoprostone	12	26.08	8.969
Mechanical dilation+ Misoprostol	12	27.83	6.013
Dinoprostone+ Misoprostol	8	25.25	5.339

Table 10:- Correlation of method of Induction & NICU admissions required.

	NICU admissions		Total
	Yes	No	
Dinoprostone	17(24.6%)	52(75.4%)	69
Misoprostol	7(22.6%)	24(77.4%)	31
Mechanical dilation	5(27.8%)	13(72.2%)	18
Mechanical dilation+ Dinoprostone	2(16.7%)	10(83.3%)	12
Mechanical dilation+ Misoprostol	4(33.3%)	8(66.7%)	12
Dinoprostone+ Misoprostol	0	8(100%)	8

Discussion:-

There is always a controversial scenario regarding the indication for labor & as to which method should be opted.⁹ In our study, the most common indication for induction of labor was Past-dated pregnancy. In our study, most of the induced age group was in between 21-25 years of age which is 72%, with Primigravida being 74%. Only 23.3% i.e., 35 pregnant women underwent LSCS after induction of labor; the rest 76.7% of the pregnant women delivered vaginally. This observation is similar to recent study by Acharya T¹⁰ where the C-section rate was 33.2% & in contrast to the study done by Shrada P¹¹ in which the C-section rate is 41%. In our study, majority of women were induced with Dinoprostone gel with success rate of 81.2%, 18.8% underwent Caesarean section. The results were similar to study conducted by MaggiC.¹² All the pregnant women with confirmed Intra-uterine Fetal Demise, are induced with Mechanical dilatation followed by Dinoprostone gel; all the 4 of them delivered vaginally.

In this study, we observed that Sublingual Misoprostol as a method of induction is opted primarily in pregnant women with Pre-labor rupture of membranes (74.2%); and 83.9% of these women had vaginal delivery. There are only few cases of Maternal Morbidity, the complication being mild to moderate degrees of Post Partum

hemorrhage i.e., in 2.6% of the total cases. We have observed that the rate of NICU admissions is highest i.e., 33.3% in the combination method of Mechanical Dilatation with Foleys Catheter & Misoprostol. But as only 12 participants are included in this method, larger population need to be taken to study.

Conclusion:-

In our study, Most common indication is Past-Dated pregnancy. Most common Method of Induction used is Dinoprostone gel. Caesarean section rate is < 25% and mostly due to fetal distress.

In our study combination methods had a longer induction- delivery interval (27.8 hours); while this interval is much shorter with Misoprostol (17.81 hours).

Mechanical Dilatation followed by Dinoprostone is the preferred method for Intrauterine fetal demise. No maternal and perinatal mortality were observed in our study.

Induction of Labor is safe with less maternal morbidity & good Feto-maternal outcome.

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