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Clinical Study of Meconium Stained Liquor in Labour Induced with Misoprostol and Its Significance on Fetal Outcome

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Abstract: ***BACKGROUND &OBJECTIVES:*** *induction of labour constitutes initiating effective uterinecontractions which will help in cervical dilatation and delivery of the baby before onset of spontaneous labour. This study evaluates the incidence of MSL and fetal outcome in labours induced with misoprostol vaginally.*

Methods: *It consists of 300 women who were randomly selected and with gestational age between 37-42weeks. These woman were divided into two groups. 1st group consists of 100 women who were admitted for induction of labour. 2nd group consists of 200 women who were admitted with spontaneous onset of labour.This study was conducted at Dr.PSIMS&Rf in dept. of obstetrics and gynaecology. Data collected and analysed.*

Results:*Group – I consists 100, induced with 25µg Misoprostol per vaginally repeated every 4thhrly to a maximum of 4 does till effective uterine contractions occurred /Cx dilatation of 4 cm reached.nGroup – II consists of 200 women who had spontaneous onset of labour without induction.Average no. of Misoprostol required in Group – I was 2.05 ± 1.1 doses.Average induction delivery interval in Misoprostol group was 13.48± 2.5 hours.Incidence of meconium stained liquor in Group – I was 25 %, were as in Group –II was 10.0%. There was no statistically significance in both groups. Caesarean section rate was 6 % in Group – I, 3%in Group - II There were more number of outlet forceps 8 (8%) in Group – I, than in Group –II8 (4%).*

Additional oxytocin was required in 39% in Group – I, 16.5% in Group - II.Tachysystole was observed in 4 cases, hyperstimulation in 4 cases in Group – I, where as Group – II tachysystole was observed in 2 cases and hyperstimulation in one case.Low APGAR was found in 8 cases in Group – I, 6 cases in Group – II, 10 babies were admitted to NICU from Group –I, 8 babies from Group – II. Among those 2 from Group – I, 1 baby from Group – II were died in the neonatal period.

Keywords:*Induction of labour, misoprostol, meconium.*

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I. Introduction

Ideally a pregnancy should reach till completion of term or atleast till 37 weeks for the baby to survive once it comes out of mother's womb.

Situations often arise in obstetrics where it becomes necessary to interrupt a pregnancy in the interest of the mother and / or the baby.

Ultimate goal is to have safe and timely delivery so that there is minimal risk to mother and baby. This is where induction of labour comes in to picture.

Induction of labour constitutes initiating effective uterine contractions which will help in cervical dilatation and eventually ending in delivery of baby per vaginum before the onset of spontaneous labour.

A number of clinical conditions often pose potential risks to the mother and the baby if pregnancy is continued, and so induction of labour is indicated or opted for. In some situations induction of labour is done for patients or obstetricians convenience.However, induction of labour is not completely free of risks. One has to keep in mind the potential risks such as failure of induction ending in caesarean section, possibilities of preterm delivery and risks of hyperstimulation leading to fetal hypoxia and even death. Hence the need for safer and effective means of inducing labour. Various methods have been in use for ages, out of which ARM, Stripping, Oxytocin have been in use. Prostaglandins have the advantage of ripening the cervix before the onset of labour pains.This study was aimed at finding out the induction and delivery interval and incidence of meconium stained liquor and it's significance on the neonatal outcome.

PATIENT ANDMETHODS

This study was conducted at Dr.PSIMS&Rf,chinaoutpally from July 2012 to June 2014

STUDY DESIGN
Prospective Randomized controlled trial.
STUDY POPULATION
It consists of 300 women who were randomly selected and with gestational age between 37-42weeks. These woman were divided into two groups.
1st group consists of 100 women who were admitted for induction of labour.
2nd group consists of 200 women who were admitted with spontaneous onset of labour.

SELECTION CRITERIA
INCLUSION CRITERIA:
Singleton foetusin vertex presentation.
Gestational age between 37-42weeks.
Primi / Multi Gravida(Upto 3rd Gravida).

EXCLUSION CRITERIA:
Contraindication for vaginal delivery like CPD/Contracted pelvis.
Malpresentations.
Previous Caesarean Section, Myomectomy.
Hypertensive Disorders complicating pregnancy.
Oligohydramnios.
PROM ,Chorioamnionitis
Medical Disorders complicating pregnancy..
Antepartum Haemorrhage.
Contraindications for use of Prostaglandins like Asthma, Glaucoma.

II. Methodology

Women who were taken as the part of study were subjected to basic clinical examination to confirm the gestational age, to know the lie, presentation and position of the fetus, to assess liquor, FHR pattern.
Pervaginal examination was done for each patient to assess the cervical status and Bishop's score was assigned to each.
Pelvic assessment was done to rule out contracted pelvis and CPD.
Women with Bishop's score less than 6 were included in the study.
1st group women had received 25µg of Misoprostol placed digitally in the posterior fornix of vagina.
2nd group women, with spontaneous onset of labour, were not given Misoprostol and progress oflabour was observed.used.In the case of Oxytocin use, a minimum of 4hours interval was maintained from the last dose of Misoprostol. After the baby was delivered, APGAR at 1 min, 5 min and 10 min was recorded. Babies with MSL and any other complication were shifted to NICU for observation of condition till the time of discharge and further managment.

III. Results and observations

DEMOGRAPHIC CHARACTERSTICS

Table. 1 Group – I (n = 100 cases)

AGE	No.of Cases	Percentage(%)
<20 years	8	8
20-30 years	92	92

Group – II (n –200 cases)

AGE	No.of Cases	Percentage(%)
<20 years	20	10
20-30 years	180	90

X^2 =0.63,p = 0.43;NS

In both the groups most of the women were between 20-30 years and both the group were comparable in age groups

Table. 2 Group – I (n = 100)

Parity	No. of Cases	Percentage(%)
Primi	56	56
Multigravida	44	44

Group – II (n – 200)

Parity	No. of Cases	Percentage(%)
Primi	110	55
Multigravida	90	45

X^2= 0.05, p = 0.81; NS

In both the groups' primigravida constitute major group and statistically there was no significant difference in study group from control group. So, both the groups were comparable with respect to parity.

Table. 3: Induction – Delivery Interval

Group = 1

Time in hours	Primi n (%)	Multigravida n (%)
<12 hours	8(15.4)	28(66.6)
12-18 hours	28(53.8)	12(28.6)
> 18 hours	16(30.7)	4 (4.76)
Total	52	42

X^2 =27.65, p =< 0.001; S

Statistical analysis was done for this comparative study and the p value obtained was <0.001 which showed the significance of values.The average time from induction to vaginal delivery was 16.2 hours in primi, 10.17 hours in multigravida.

Table. 4: Additional Augmentation agent used

Group = 1

Parity	Oxytocin used	
	Yes (%)	No (%)
Primi	30(53)	26 (47)
Multigravida	9 (20)	35 (80)
Total	39(39.0)	61(61.0)

X^2 = 22.7, p =< 0.001; S

More number of primigravida required oxytocin supplementation than multigravida.

Group = 2

Parity	Oxytocin used		Total (%)
	Yes (%)	No (%)	
Primi	23 (20.9)	87 (79.1)	110 (100)
Multigravida	10(11.1)	80(88.9)	90 (100)
Total	33(16.5)	167(83.5)	200(100)

X^2 = 6.9, p =< 0.008; S

In control group also more number of primigravida required oxytocin than multigravida.

Primigravida in Gr – IVs Gr – II

Group	Oxytocin used		Total (%)
	Yes (%)	No (%)	
Gr – I	30 (53.6)	26 (46.4)	56(100)
Gr – II	23 (20.9)	87(79.1)	110(100)
Total	53 (31.9)	113(68.1)	166(100)

X^2 = 36.4, p =< 0.001; S

When primigravida of both the groups were comparedit was inGroup – I, more number of women required oxytocin compared to Group – II.

Multigravida in Gr – I Vs Gr – II

Group	Oxytocin used		Total (%)
	Yes (%)	No (%)	
Gr – I	9(20.5)	35 (79.5)	44(100)
Gr – II	10 (11.1)	80(88.9)	90(100)
Total	19(14.2)	115 (85.8)	134(100)

X^2 = 4.24, p =< 0.03; S

When multigravida of both the groups were compared, it was again in Group – I more number of women required oxytocin than Group – II.To conclude it was in the induced group either primi / multi number of women required oxytocin than non- induced group.

Table. 5: Number of Doses of Misoprostol (25 µg)

No. of Doses	Primi	Multigravida
1	5(11.9)	18(42.85)
2	21(40.38)	22(52.38)
3	24(46.2)	2(4.76)
4	2(3.84)	Nil

X^2 =61.9, p =< 0.001; S

The average no. of doses of Misoprostol required for vaginal delivery in case of primigravida was 2.43, where as in case of multigravida was 1.7 doses which was statistically significant.

Table. 6: Incidence of Meconium stained liquor

Group –I

Type of Meconium stained liquor	Primi (%) n = 56	Multigravida (%) n = 44	Total (%) n= 100
Thin	7(12.5)	4 (9.1)	11 (110)
Thick	11(19.6)	3 (6.81)	14 (14.0)
Total	18(32.14)	7 (15.9)	25 (25)

X^2 =0.90, p =< 0.34; NS

There was no statistically significant difference in the incidence of MSL in primis multigravida in induced group.

Group - II

Type of Meconium stained liquor	Primi (%) n = 110	Multigravida (%) n =90	Total (%) n= 200
Thin	7 (6.4)	2(2.22)	9(4.5)
Thick	8(7.3)	3 (3.3)	11 (5.5)
Total	15(13.63)	5(5,5)	20(10.0)

X^2 =0.50, p =< 0.47NS;

There was no statistically significant difference in the incidence of MSL in primiVs multigravida in non-induced group.Meconium stained liquor in primigravida in two groups

Group	Nature of Meconium stained Liquor	
	Thin	Thick
Gr – I (56)	7(12.5)	11(19.6)
Gr – II (110)	7(6.4)	8(7.3)

X^2 =0.41, p =< 0.65; NS

When primigravida of both the groups were compared there was no statistically significant in incidence of meconium stained liquor..though it appears that incidence of MSL was more in induced group,statistically it was non significant as the P-value is 0.52. Meconium stained liquor in multigravida in two groups

Group	Nature of Meconium stained Liquor	
	Thin	Thick
Gr – I (56)	4(9.1)	3(5.4)
Gr – II (110)	2(1.82)	3(3.3)

p =< 0.42; NS

Here also ,there was no statistically significant increase in the incidence of MSL in induced group multigravida**Vs**non-induced group multigravida

Table. 7: Mode of Delivery

Group – I

Mode of Delivery	Primigravida	Multigravida (%)
SPVD	46(82.1)	40(90.9)
Outlet forceps	6(11.2)	2(4.5)
Caesarean section	4(7.2)	2(4.54)

X^2 =5.10, p =< 0.078; NS

(SPVD = Spontaneous Vaginal Delivery)Indications for outlet forceps were: Poor maternal efforts, MSL,fetal distress.Indications for caesarean section werefetal distress, failure to progress, failed induction. Statistically there was no significant difference in the mode of delivery in primiVs multigravida in study group.

Group – II

Mode of Delivery	Primigravida	Multigravida (%)
SPVD	101(91.8)	85(94.4)
Outlet forceps	4(3.63)	4(4.44)
Caesarean section	5(4.54)	1(1.11)

X^2 =4.02, p =< 0.013; NS

Indications for outlet forceps were MSL, fetal distress, poor maternal forces.
Indications for caesarean section were failure to progress, fetaldistresswith thick MSL.
Statistically no significant difference noted in the mode of delivery in primiVs multigravida.

Primi gravid in study group Vs control Group

Mode of Delivery	Study group (%)	Control Group (%)
SPVD	46(82.14)	101(91.8)
Outlet forceps	6(11.2)	4(3.63)
Caesarean section	4(7.14)	5(4.54)
Total	**56(100%)**	**110(100%)**

X^2 =8.69, p =< 0.012; S

There was statistically significant difference in mode of delivery among primigravida of group – I Vs Group – II. Primigravida of induction group had more number of instrumental and caesarean deliveries.

Multigravida in study group Vs control group

Mode of Delivery	Study group (%)	Control Group (%)
SPVD	40(90.9)	85(94.4)
Outlet forceps	2 (4.5)	4(4.44)
Caesarean section	2(4.54)	1(1.11)
Total	**44(100%)**	**90(100%)**

X^2 =0.47, p =< 0.49; NS

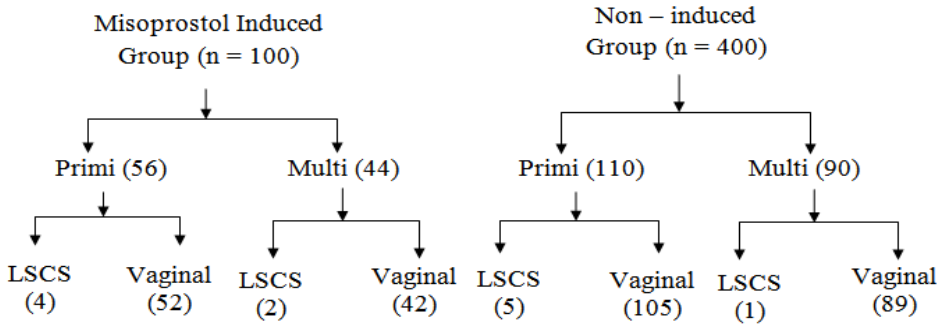
No significant difference noted in mode of delivery in multigravida of Group – I Vs Group –II.
Finally to conclude, in the induced group primigravida had more number of instrumental and caesarean deliveries.

Table. 8: Neonatal complications

Complication	Group – I (%) n= 100	Group – II (%) n = 200	Statistical Significance
APGAR at 5 mts<7	8(8)	6(3)	X^2 = 7.49 p = 0.006;S
Admission to NICU	10(10)	8(4)	X^2 = 8.49 p = 0.003;S
Neonatal deaths	2(2)	1(0.5)	Fisher's value 0.22; NS

Majority of the babies were admitted to NICU in view of MSL and the other reasons being low APGAR and delayed cry.There was statistically significant difference in the outcome of neonates in Gr – I Vs Gr – II. This increase in neonatal morbidity in induced group was because of increase in fetal distress because of not only MSL but also associated uterine contraction abnormalities and abnormal fetal heart rate pattern.There was no statistically significant difference in the neonatal mortality but both the groups.This could be explained by improvement in intrapartum monitoring and neonatal facilities.There is significant difference in the neonatal morbidity in induced group Vs non-induced group.There is a wide variation in the induction delivery interval between different trials. Variations in the dose of drugs used, dosing interval and giving of oxytocin augmentation might have all contributed to this difference.

FLOW DIAGRAM DEPICTING THE OUTCOME



IV. Conclusion

Induction of labour is not with out risk. It is having its own demerits. Both maternal morbidity i.e. no. of outlet forceps and caesarean section rate and neonatal morbidity i.e. no. of meconium aspiration, low APGAR, admission to NICU are more with induction though mortality is not high. Induced labour needs vigilant monitoring facilities for emergency caesarean section and neonatology facilities.

So, before induction of labour indication for induction should be confirmed, various methods of induction available their risks and benefits should be informed to the patients,and informed written consent should be taken and then only induction should be considered.

Misoprostol, 25 µg kept p/v every 4th hourly have very low side effects compared to higher doses used in various trails though they are higher compared to spontaneous labour group.

Misoprostol is effective priming and labour inducing agent which fulfills almost all the criteria of ideal inducing agent, but still needs further research for dosage adjustment, to decide the interval between dosage and maximum number of doses that can be used with safety and to compare the side effects with various modes of induction. The ultimate aim is find our "the ideal" induction agent.

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