



ROLE OF INTRAPARTUM AMNIOINFUSION IN MECONIUM STAINED LIQUOR.

Gynaecology

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ABSTRACT

Incidence of meconium stained amniotic Fluid ranges from 7-22% and is an alarming sign of fetal compromise. It is associated with poor perinatal outcome. Intrapartum amnioinfusion has been a method to reduce the risk of meconium aspiration. **Aims and Objectives:** To determine the fetal outcome in meconium stained liquor. **Material and methods:** This is a Prospective Case Control Study which was conducted in Department of Obstetrics and Gynaecology, National Institute of Medical Sciences and Research, Jaipur in the study period of 18 months. A total of 242 patients were included in the study and Were randomly divided into 2 groups and were compared for fetal outcome. **Results:** Amnioinfusion group(study group) had higher incidence of vaginal delivery and better neonatal outcome. **Conclusion:** Intrapartum amnioinfusion decreases rate of caesarean section and meconium aspiration syndrome.

KEYWORDS

Amnioinfusion, meconium stained amniotic fluid, meconium aspiration syndrome.

INTRODUCTION:

Alteration in fetal heart rate [mostly bradycardia] has been described as fetal distress and meconium staining of liquor is regarded as a sign of fetal distress. There are certain risk factors [both maternal and fetal] which contribute to meconium stained amniotic fluid. Maternal conditions include – Gestational diabetes mellitus, Hypertension, Pre-eclampsia, Eclampsia, Cardiopulmonary diseases, Post term pregnancy. Fetal conditions include- Oligohydramnios, Intrauterine growth restriction and poor biophysical profile¹. Meconium stained amniotic fluid seen in 7-22% of term births and when this meconium is aspirated into the lungs of the fetus, it can result in severe respiratory distress and meconium aspiration syndrome². Thick meconium increases the risk of meconium aspiration and hence, the methods aiming at converting it into thin meconium are presumed to have improved the neonatal outcome^{3,4}. Amnioinfusion is one such procedure, where in normal saline is infused into uterine cavity to dilute meconium to improve the neonatal outcome and avoid the cesarean section for fetal distress. It was first recommended by Miyazaki and Taylor in 1983. It is a cheap procedure, simple to perform and does not require any complicated skill.

AIMS & OBJECTIVES

Present study was conducted in department of obstetrics and gynaecology National Institute of Medical Sciences and research university from January 2019- June 2020 with following objective:

1. To determine the fetal outcome in meconium stained liquor.

INCLUSION CRITERIA :-

1. Live singleton pregnancy
2. Gestational age > 37 weeks
3. Vertex presentation
4. Ruptured membranes
5. Cervical dilatation > 3cm
6. No loss of fetal heart rate variability or late deceleration

EXCLUSION CRITERIA :-

1. Severe fetal bradycardia & cord prolapsed
2. Chorioamnionitis
3. Fetal presentation other than vertex
4. APH, pre eclampsia, diabetes mellitus, cardiac disease
5. Multiple gestation & polyhydramnios
6. Congenital fetal anomaly
7. Previous cesarean section
8. Bad Obstetric History
9. Hepatitis B or C, Active genital herpes.

METHODOLOGY:

Type of study – Prospective Case Control Study.

Duration of study : January 2019- June 2020.

Sample size : A Total of 242 patients were taken, meeting the inclusion criteria.

METHOD :

Detailed history & clinical examination was done. Pelvic examination was done to know the cervical dilatation, presenting part, station of the head & to rule out cord prolapse. Patient was informed about the presence of meconium stained liquor and the possibility of fetal distress. Written informed consent was taken. The patients were randomized into 2 groups in 1:1 ratio. Patients in both the groups received prophylactic antibiotics. The study group received transverse amnioinfusion while the control group did not. In the study group, Amnioinfusion was given through the rubber catheter inserted transverse over the fetal head. For the 1st hour, infusion was given @600ml and then 100ml/hr till delivery. During the infusion, continuous fetal monitoring was done with CTG and uterine activity by palpation. Patients were kept nil per oral, hydration maintained with IV fluids and mother was kept in left lateral position. In both the groups, oropharyngeal suctioning was done in newborns. To know the presence of meconium below the vocal cords, direct laryngoscopy and tracheal suctioning was done in all the babies. All the babies were attended by neonatologist, who did not know about the study protocol. All the patients were given full trial of labor and cesarean section was done if there was an obstetrics indication including fetal distress. Outcomes were analysed with regards to fetal heart tracings, method of delivery, birth weight, APGAR score at 5 mins, NICU admission, & those who had meconium aspiration syndrome confirmed by chest x ray.

STATISTICAL ANALYSIS:

Results were analysed with paired and non paired t-test, Chi square test, whichever applicable. A p value of < 0.05 was considered significant.

RESULTS:- During this study 242 patients with meconium stained amniotic fluid were divided into two groups.

Table -1: Distribution According To Maternal Characteristics:-

Parity	Control group(n=121)	Study group (n=121)
Nullipara	52 (51.23%)	65(53.71%)
Primipara	33(27.27%)	34(28.09%)
Parity>2	26(21.48%)	22(18.18%)

In amnioinfusion (study) group, 65 patients were nullipara where as 52 patients in control group were nullipara.

Table-2: Distribution According To Cervical Dilatation:-

Mean Cervical dilation	Control group(n=121)	Study group(n=121)
	4.15+/- 0.14	4.26+/- 0.11

Mean cervical dilatation in both the groups was 4 cm.

Table-3:-distribution According To Meconium Staining Of Liquor:-

	Control group(n=121)	Study group(n=121)	P- Value
Grade 1 (translucent)	30(24.79%)	21(17.35%)	0.15
Grade 2 (opalescent)	78(64.46%)	90(74.38%)	0.09
Grade 3 (opaque)	13(10.74%)	10(8.26%)	0.51

In study group, 21 patients had grade 1 meconium stained liquor, 90 had Grade 2 and 10 had Grade 3, where as Control group had Grade 1 in 30, Grade 2 in 78 and Grade 3 in 13.

Table 4:- Distribution According To Mode Of Delivery:-

Mode of delivery	Control group(n=121)	Study group(n=121)	P- value
Vaginal delivery including instrumental	42 (34.71%)	101 (83.47%)	<0.00001
Cesarean section	79 (65.28%)	20 (16.52%)	

In the study group, 101 patients delivered vaginally (including instrumental delivery) . 20 patients delivered by cesarean section in the study group . In control group , only 42 patients delivered vaginally . This difference was statistically significant (p=0.00001)

Table 5:- Comparison Of Neonatal Outcome:- 1 minute APGAR score :-

	Control group(n=121)	Study group(n=121)	P-Value
<7	36 (29.75%)	12 (2.91%)	0.000109
>7	85 (70.24%)	109 (70.08%)	

Meconium below the level of vocal cords was present in 4 neonates in the study

<7	1 (0.82%)	0	
>7	120 (99.17)	121	
Respiratory distress	16(13.22%)	7 (5.78%)	0.048
Meconium below the level of vocal cords	12 (9.91%)	4 (3.30%)	0.038
Meconium aspiration syndrome	15(12.39%)	6 (4.95%)	0.039
Perinatal death	0	0	

group and 12 neonates in control group. In the study group, 6 neonates developed Meconium aspiration syndrome compared to 15 neonates in control group.

Table 6:- Comparison Of Maternal Complications:-

	Control group(n=121)	Study group(n=121)	P- value
Puerperal pyrexia	3 (2.47%)	2 (1.65%)	0.65

Puerperal pyrexia was seen in 2 women in study group and in 3 women in control group which was not statistically significant.

DISCUSSION :

Meconium stained liquor during labor causes anxiety to patient as well as the health care provider. Passage of meconium may be either due to fetal hypoxia or increased vagal activity from cord compression. The meconium stained amniotic fluid is still an important cause of perinatal morbidity & mortality. Amnioinfusion aimed at diluting the meconium to decrease the incidence of meconium aspiration syndrome and hence improve the neonatal outcome. The two groups were matched for parity, cervical dilatation at the time of admission and grade of meconium stained liquor.

In our study almost half of the patients in both study group and control group were nullipara (53.71% & 51.23% respectively). Mean cervical dilatation was 4.15 in control and 4.26 in study group. Grade 2 meconium stained liquor was seen in 64.46% of patients in control group & 74.38% in study group. In our study, the rate of cesarean section was significantly less (p = <0.00001). Similarly in a study by Bhatia-et-al, the cesarean section was 14% in study group compared to control group (68%)⁵.

In our study, 1 minute APGAR score <7 was seen in 29.7% of infants in control group v/s 9.9% in study group infants, which is a significant

difference with p = 0.0001. no significant difference was seen in 5 min APGAR score <7 Yellayi-et-al and Wenstrom-et-al had similar results in their study^{6,7}.

In our study, respiratory distress was significantly lower in study group (P=0.04). these findings were consistent with those of bansal-et-al. The incidence of meconium aspiration syndrome in control group was 12.3% v/s 4.9% in study group. Similar results were seen in studies conducted by bansal-et-al and Rathorea-et-al^{8,9}.

Puerperal pyrexia Was more in control group compared to study group. Neeta B and similar findings of maternal pyrexia in the study conducted by her⁸.

CONCLUSION:

This study was done to determine the role of amnioinfusion in prevention of meconium aspiration syndrome. There is decreased rate of caesarean section in study group (amnioinfusion group). Presence of meconium below the level of vocal cord is also decreased and Apgar score after birth is improved in study group. Incidence of meconium aspiration syndrome is also less. So, Amnioinfusion has a definitive role in improving the neonatal outcome in meconium stained liquor.

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