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Study Of Intrapartum Amnioinfusion For Meconium Stained Liquor

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Abstract
Background*: 1.7 to 35.8% of deliveries complicated by meconium aspiration syndromes. meconium stained fluid is aspirated by the fetus before or during birth, meconium can obstruct the airways, cause inflammation, interfere with surfactant function and cause respiratory difficulties resulting in meconium aspiration syndrome (MAS). Transcervical infusion of saline into amniotic cavity or amnioinfusion has been proposed as a method to reduce the risk of the meconium aspiration syndrome.*
Methods*: The study was conducted in Department of Obstetrics and gynecology in S.N.Medical college,jodhpur. It was a prospective comparative evaluation of two groups of 100 women one group receiving amnioinfusion for meconium stained amniotic fluid and one receiving standard care (control. Both groups were compared in terms of fetal outcome. Data so obtained was subjected to statistical analysis using statistical package for Social Science Version 15.0.*
Results*: About 44% patients in study group and 49% in control group had moderate meconium stained amniotic fluid where as 56% patients in study group and 51% patients in control group had thick meconuim stained amniotic fluid. Fetal heart rate abnormalities occurred in 20% in the study group and 39% cases in the control group.. Mode of delivery. a. In the ammioinfusion group (86%) had a vaginal delivery as compared to only 78% of control group patients. b. The incidence of caesarean section was 14% vs 22% in the study and control group. Analyzing primigravida and multigravida separately caesarean section for fetal distress was required in 12 of primigravida in the study group and 17% in the control group and in 2% and 5% of multigravida respectively*
Conclusions*: The findings in present study indicates that aminoinfusion in a well-equipped tertiary care unit reduces the rate of caesarean section significantly while at the same time influences the neonatal outcome in terms of better Apgar score, reduced need of resuscitative measures and reduced neonatal morbidity.*
Keywords*: Amnioinfusion, Meconium aspiration syndrome, Fetal outcome.*

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I. Introduction

Meconium is a viscous green fluid and consists of gastrointestinal secretions, bile, mucous, desquamated fetal cells, langue, vernix, blood and amniotic fluid. The dark greenish black appearance is caused by pigments especially biliverdin. Meconium aspiration syndrome complicates 1.7 to 35.8% of deliveries[1-4]. Meconium aspiration- The passage of meconium is not a risk to the foetus, but aspiration of meconium into the fetal lung is associated with clinical disease ranging from mild respiratory distress to severe respiratory compromise and occurs in 1/3rd cases. Meconium aspiration is defined as the presence of meconium below vocal cords and occurs in 10-40% of live births with meconium stained amniotic fluid. Amnioinfusion was described by Miyazaki and Taylor in 1983[5].With the above facts in mind this study has been planned to evaluate the significance of meconium staining during labor and to find out the role of amnioinfusion on fetal outcome. The present study was carried out with following objectives. 1. To evaluate intrapartum transcervical amnioinfusion as a therapeutic intervention in thick meconium stained amniotic fluid. a. To reduce the incidence of caesarean section. b. To prevent meconium aspiration syndrome.

II. Methods :

The study was conducted in Department of Obstetrics and gynecology in S.N.Medical college,jodhpur. 200 patients with pregnancy at or beyond 37 weeks with a single live fetus in cephalic presentation and moderate to thick meconium stained amniotic fluid was included in the study. It was a prospective comparative evaluation of two groups of 100 women one group receiving amnioinfusion for meconium stained amniotic fluid and one receiving standard care (control). Inclusion criteria

- Gestational age ≥37 weeks
- Single live fetus

- Cephalic presentation
- Moderate to thick meconium stained liquor with normal cardiotocography

Age in years	Study Group (A)		Control Group (B)	
	No.	%	No.	%
18-20	3	3	5	5
20-24	51	51	57	57
25-29	36	36	27	27
30-34	8	8	8	8
35 & above	2	2	3	3
Total	100	100	100	100
P value	0.5697 (Not significant)			

Exclusion criteria

- Major medical or obstetrical complication
- Known fetal malformation

Procedure

In the study group after explaining the procedure to the patient and getting her consent, under all aseptic precautions the amnioinfusion catheter (Ryles tube No.16) was inserted transvaginally and passed above the baby's head with one end inside the uterine cavity and the other end outside connected outside to an intravenous tube. 500 ml of normal saline at room temperature was infused over 30-45 minutes until the meconium was washed out and the returning amniotic fluid was clear. In most patients 1 litre was transfused over 45 minutes. Antibiotic was given if indicated. The control group did not receive any intrapartum amnioinfusion.

Following information was noted. • Vigorous / non vigorous baby • Apgar scores at 1 and 5 minutes • Admission to NICU • Presence of meconium aspiration syndrome and perinatal mortality • Caesarean section rate

III. Results

In this study a total of 200 women with moderate and thick meconium stained amniotic fluid were studied and divided into two groups. 100 in each group. Group A received amnioinfusion Group B did not receive amnioinfusion and standard care was given.

Table 1 Age Distribution

90% in the study group and 89% in the control group were below 30 group of age.

Table 2 Obstetric Index

Obstetric B Index	Study Group A		Control Group B	
	No.	%	No.	%
Primi	55	55	52	52
Multi	45	45	48	48
Total	100	100	100	100
'p'value	0.767 (Not significant)			

The two groups were similar in the distribution of gravidity. In Group A: 55% of the patients were primigravidas and 45% were multigravidas. In Group B: 52% of the patients were primigravidas and 48% were multigravidas.

Table 3 Cervical Dilatation

Cervical Dilatation in cms	Study Group A		Control Group B	
	No.	%	No.	%
3-5 cms	66	66	53	53
6-8 cms	34	34	47	47
Total	100	100	100	100

P value	0.5421(Not significant)

66% patient in group A and 53% patients in group B were having cervical dilation of 3-5 cm on inclusion.

Table 4 Degree of Meconium

Degree of Meconium	Study Group A		Control Group B	
	No.	%	No.	%
moderate	44	44	49	49
thick	56	56	51	51
Total	100	100	100	100
P value	0.5612 (Not significant)			

44% patients in study group and 49% patients in control group had moderate meconium stained amniotic fluid. Whereas 56% patients in study group and 51% patients in control group had thick meconium stained amniotic fluid.

Table 5 Fetal heart rate abnormalities in Labour

FHR Abnormalities in labour	Study Group A		Control Group B	
	No.	%	No.	%
Present	20	20	39	39
Absent	80	80	61	61
P value	0.0038 (Significant)			

FHR abnormalities (tachycardia / Bradycardia) were less common in A group 20% compared to 39% in group B.

Table 6 Mode of Delivery

Mode of Delivery	Study Group A				Control Group B			
	Primi	Multi	Total	%	Primi	Multi	Total	%
Vaginal	39	47	86	86	37	41	78	78
LSCS	12	2	14	14	17	5	22	22
P value	0.0349 (Significant)							

Majority of the patients delivered by labour natural in both groups. 86% in study group vs 78% in the control group. p. Caesarean section was done for 14% in study group and 22% in control group.

Table 7 Apgar Score

Apgar Score	Study Group (A)		Control Group (B)	
	No.	%	No.	%
1 Minute 0-6 7-10	 18 82	 18 82	 43 57	 43 57
'p'	0.0002 (Significant)			
5 Minutes 0-6 7-10	 9 91	 9 91	 16 84	 16 84
'p'	0.0022 (Significant)			

In the study group, the low apgar score (0-6) at 1 minute was seen in 18% neonates in study group compared to 43% in control group Similarly the low apgar score at 5 minute was seen in 9% neonates in study group compared to 16% neonates in control group.

Table 8 Meconium aspiration syndrome

Meconium aspiration syndrome	Study group A		Control group B	
	No.	%	No.	%
Present	4	4	23	23
Absent	96	96	77	77

p=0.024(Significant)

Table 9: Neonatal death

	Study group A		Control group B	
	No.	%	No.	%
No Neonatal death	1	1	7	7

p=0.556

Table 10: Outcome of the Study

Out come	Study Group A		Control Group B		P Value
	No.	%	No.	%	
Caesarean section	12	12	17	17	0.0349
FHR abnormalities	20	20	39	39	0.0038
Low Apgar 1 minute 5 minute	 18 9	 18 9	 43 16	 43 16	 0.0002 0.0022
Meconium aspiration syndrome	32	32	11	11	0.024
Perinatal mortality	1	1	7	7	0.556

IV. Discussion

The purpose of this study was to evaluate the possible effects of amnioinfusion in improving fetal outcome .200 patients admitted in the labour with moderate and thick meconium stained amniotic fluid, who met the criteria laid under inclusion categories were taken for this prospective comparative study

Majority (90%) of cases in both groups (90%) in study group and(89% in control group were between 18-30 yrs.

About half of the population in the study group were primigravida and the other half were multigravida, Primi to multi ratio in group A being 55:45 Group B 52:48.

The differences in the mode of delivery in both groups was significant . The incidence of caesarean section was 14% in group A compared to caesarean section 22% in group B. There is reduced incidence of caesarean section for fetal distress in study group A compared to group B (14% vs 22%). This coincides with the studies by Pierce et al[6] who showed lower incidence of caesarean section in the amnioinfusion group (19.7% vs 24.3%)

The incidence of Fetal Heart Rate abnormalities was 20% in study group and 80% in control group. The caesarean section rates for fetal distress in study group was 14% and 22% in control group Decreased caesarean section for fetal distress was reported by several authors. WuB et al[7] (1991) reported significant reduction rates in caesarean section for fetal distress. Macri CJ & Schrimmer et[8] al and (2/85 of amnioinfused vs 17/85 of control)

The incidence of meconium aspiration syndrome was 4% in the study group compared to 23% in the non transfused group. Hence there is a decreased incidence of meconium aspiration syndrome in the amnioinfusion group. Similarly Das et al[9] reported 4% in amnioinfused group and 18% in the con trol group. The low apgar score at 1 minute in the study group was 18% and incontrol it was 43%. Significantly fewer 1 minute up apgar scores <7, wasreported by several author. This coincides with the study by Das et al12% of amnioinfused vs 47% of control) Wenstrom (11/36 ofamnioinfused vs 23/44 of control) and Ilagan et al (6/38 of amnioinfusedvs 13/40 of control) also reported low 1 minutes apgar scores. The low apgar score in 5min was 9% in study group vs 16% in the control group. Mohamed et al in (CRAMP) reported (9/324 of amnioinfused vs 27/336 of control). Das et al (4% of amnioinfused vs 23% of control),

In this study there is a trend towards reduced perinatal morality in amnioinfusion group 1% compared to control group 7% (1% vs 7%). Das et al reported similar perinatal mortality rate of 1% in study group and 8.4% in control group.

V. Conclusion

Intra partum Amnioinfusion in moderate and thick meconium stained amniotic fluid resulted in Reduced incidence of FHR abnormalities (20%) compared to 39% who did not receive amnioinfusion. Reduction in caesarean section rate 14% of amnioinfused vs 22% of controlSignificant reduction in meconium aspiration syndrome 4% of amnioinfused vs 23% of control. Significant improvement in low 1 minute apgar and 5 minute apgar scores 18% of amnioinfused vs 43% of control and 9% of amnioinfused vs 16% of control. Significant reduction in perinatal mortality 1% of amnioinfused vs 7% of control . Intrapartum transcervical ammioinfusion is a safe simple and inexpensive technique that Reduces fetal heart rate abnormalities, Reduces operative interventions for fetal distress , Decreases the rate of caesarean delivery , Improves neonatal outcomes by preventing meconium aspiration syndrome , Decreases perinatal mortality . The presence of thick meconium is associated with increased perinatal morbidity and mortality. Meconium aspiration syndrome is a significant cause of perinatal mortality which can be reduced by amnioinfusion. In developing countries with limited intrapartum facilities amnioinfusion for thick meconium stained amniotic fluid improves perinatal outcome and decreases the caesarean section rates.

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