

Role of Intrapartum Amnioinfusion in Meconium Stained Liquor

Dr B. Varalakshmi¹ Dr. M.Mallika²

¹(Associate professor, Department of Obstetrics & Gynaecology, Govt Medical college, Ananthapuram, Andhra Pradesh, India)

²(Assistant professor, Department of Obstetrics & Gynaecology, Govt Medical college, Ananthapuram, Andhra Pradesh, India)

Corresponding author: Dr. M.MALLIKA²

Abstract:

Aims and objectives

To evaluate the efficacy of intrapartum transcervical amniotic infusion in meconium stained amniotic fluid and to see its effect on perinatal morbidity and mortality.

Materials and Methods

The present study is conducted in the department of Obstetrics & Gynaecology, Government General Hospital, Ananthapuram for a period of 1 year i.e., from March 2019 to March 2020. This is a prospective case-control study.

Patients who were admitted in labour room in active labor were taken into study. Informed consent was taken about amnioinfusion. 100 women in active labor with meconium stained liquor after ARM were selected, out of which 50 patients in the study group were given amnioinfusion and the rest were taken as a control group without amnioinfusion.

Results

In the present study, the rate of Caesarean section was significantly low in the study group (4%) when compared to control group (24%). 4% of babies in the study group had low APGAR scores at 5min <7, compared to 20% in the control group (P value <0.01) which is statistically significant. Amnioinfusion significantly reduced the incidence of meconium below the vocal cords and meconium aspiration syndrome. There was no neonatal mortality in the study group compared to 4% in the control group. There were no maternal complications with amnioinfusion.

Conclusion

In present study cesarean section rate in the amnioinfusion group was significantly less when compared to control group. Therefore transcervical intrapartum amnioinfusion is an effective, simple, safe and possible measure in cases of MSL complicating labour. In MSL group, AI improved the outcome by decreasing the severity of MAS and respiratory distress, operative interference and improved APGAR score.

Key Words: Meconium stained liquor(MSL), Amnioinfusion(AI), Meconium aspiration syndrome(MAS).

Date of Submission: 29-12-2020

Date of Acceptance: 10-01-2021

I. Introduction

Amnioinfusion is the infusion of crystalloid solution in the amniotic cavity¹. At first, it was used to eliminate variable decelerations in labor². Subsequently, amnioinfusion has been also used successfully to prevent intrapartum thick meconium aspiration^{3,4}.

Meconium stained liquor has been associated with poor perinatal outcomes, including low APGAR scores, meconium aspiration syndrome, increased rates of chorioamnionitis, increased incidence of neonatal intensive care admissions, increased risk of operative interference and higher rates of perinatal death⁵.

Presence of meconium stained liquor is seen in 12-16% of deliveries. In utero, the passage of meconium may simply represent normal gastrointestinal maturation or it may indicate an acute or chronic hypoxic event, thereby making it a warning sign of a fetal compromise⁶.

Meconium aspiration syndrome occurs in about 5% of deliveries with meconium-stained amniotic fluid and death occurs in about 12% of infants with MAS. The prevalence increases to 10% or more after 38 weeks, reaching 22% in patients at a gestational age of 42 weeks, and 44% in babies who deliver 1 to 2 weeks later. Amnioinfusion is used as a method to reduce the risk of MAS.

Potential mechanisms include - dilution of meconium, thus reducing its mechanical and inflammatory effects and cushioning of the umbilical cord, thus correcting recurrent umbilical cord compression, that leads to fetal acidemia (a condition predisposing to the MAS)⁷ .

II. Aims and Objectives

To evaluate the efficacy of intrapartum transcervical amniotic infusion in meconium stained amniotic fluid and to see its effect on perinatal morbidity and mortality.

III. Materials and Methods

The present study is conducted in the department of Obstetrics & Gynaecology, Government General Hospital, Ananthapuram for 1 yr i.e., from March 2019 to March 2020. This was a prospective case-control study.

Patients who were admitted in labour room in active labor were taken into study. Informed consent was taken about amnioinfusion. 100 women in active labor with meconium stained liquor after ARM were selected, out of which 50 patients in the study group were given amnioinfusion and the rest were taken as a control group without amnioinfusion.

Inclusion Criteria:-

The antenatal women found to have Meconium stained liquor at the time of artificial rupture of membranes

- Singleton with cephalic presentation
- Term gestation
- Fully effaced and cervical dilatation 3 to 5cms.

Exclusion Criteria:-

- Multiple pregnancies
- Malpresentation
- PROM
- Preterm labour
- Polyhydramnios
- Cord prolapse
- Medical disorders complicating pregnancy
- IUGR
- Antepartum hemorrhage
- Fetal congenital anomalies
- Contracted pelvis
- Previous cesarean section and history of myomectomy

Methods:-

The patients who were in active labor were admitted in the labour room. A detailed history was taken. clinical, obstetric examination and per vaginal examination was done for cervical and pelvic assessment. Appropriate investigations such as complete blood picture, blood grouping and typing, CUE , viral screening , ultrasound for AFI , fetal biometry and placental position and baseline cardiotocography were done in all cases. Informed consent was taken.

In the study group, amnioinfusion was given. Under strict aseptic precautions, one end of sterile IV infusion set was connected to the normal saline bottle, transcervically above the fetal head and 500ml NS at room temperature was infused within 30 minutes at a rate of 17ml / min. Uterine palpation at 15 min interval to assess uterine hypertony. Prophylactic antibiotic was given to all cases and controls. Fetal heart rate was closely monitored with intermittent auscultation and CTG tracing and the progress of labour was monitored with partogram.

The mode of delivery depends on labor progress and CTG status. After delivery of the baby, birth weight and APGAR score at 1min, 5 min noted. Signs of respiratory distress are noted in both categories. Laryngoscopic examination of vocal cords for meconium staining and Nasogastric aspiration done with an infant feeding tube, if meconium aspiration is suspected. Babies with low APGAR, respiratory distress and signs of meconium aspiration were handed over to the pediatrician for further management. Mothers were followed up in the postpartum period for any evidence of puerperal infection.

IV. Observations and Results

Patients with MSL were divided into study and control groups. Each group had 50 patients. Amnioinfusion(AI) was given to the study group.

In the study group, 54% were primigravida and 46% were multigravidae. In control group, 34% were primigravida and 66% were multigravida. Mean age in the study group is 22 + 1.8 years and control group is 21.38+ 2.79 years.

Table No.1 -Parity

	STUDY GROUP	CONTROL GROUP
PRIMI	27 (54%)	23 (46%)
MULTI	17 (34%)	33 (66%)

Amnioinfusion was started at cervical dilatation ranging from 3 to 5cms after ARM. Majority of the cases were in between 3 to 4cms of dilation in both groups (84 %vs 72%). Mean cervical dilatation is 3.62 + 0.72 cms in study group and 3.72 + 0.73cms in control group. Almost all cases were given syntocinon augmentation and labor progress was monitored by partogram.

Table No 2 -Cervical Dilatations in Cm When MSL Detected

	STUDY GROUP	CONTROL GROUP
3cm	22(44%)	20(40%)
4cm	20(40%)	16(32%)
5cm	8(16%)	14(28%)

In study group, 42% cases delivered within 3 hrs, 46% cases within 4hrs and 12% delivered in 5 hrs. Amnioinfusion to delivery interval range is from 3 to 5hrs with mean interval of 3.7 + 0.67hrs whereas in control group, 44% cases delivered within 3 hrs, 44% cases within 4hrs and 12 % cases delivered in 5 hr. Amnioinfusion to delivery interval is ranging from 3 to 5 hrs with a mean interval of 3.68 + 0.68 hrs. Majority of cases delivered in 4hrs in both study and control groups (88% vs 88%), statistically insignificant.

Table No 3- Amnioinfusion- Delivery Interval (Hours)

	STUDY GROUP	CONTROL GROUP
3 Hours	21(42%)	22(44%)
4 hours	23(46%)	22(44%)
5 hours	6(12%)	6(12%)

In study group, 76% cases had Normal Vaginal Delivery, 20% Cases delivered by Outlet forceps & 2% by LSCS. But in control group, 58% cases had Normal Vaginal Delivery 18% cases by Outlet forceps delivery & 24% by LSCS. Operative interference in the study group was 4% compared to 24% in the control group P value is <0.003 which is significant. The indication for EMLSCS in both the groups was fetal distress.

Table No4- Mode of Delivery

	STUDY GROUP	CONTROL GROUP
NVD	38(76%)	29(58%)
OUTLET	10(20%)	9(18%)
LSCS	2(4%)	12(24%)

96% of babies in the study group were born with good APGAR scores but in the control group, 80% of babies had good APGAR score. 4 % of babies in the study group had low APGAR scores at 5min <7 , compared to 20% in the control group (P value <0.01) which is statistically significant.

Table No 5- MSL - APGAR Score (5minutes)

	STUDY GROUP	CONTROL GROUP
<7	2(4%)	48(96%)
>7	10(20%)	40(80%)

In 2% of the study group and 18 % of the control group, meconium was detected below vocal cords (P value < 0.007) which is significant.

Meconium Aspiration Syndrome in study group is 2% compared to 16% in control group (P value <0.01) which is significant.

NICU admissions in study group are 2% and control group are 18%.(P value< 0.07)which is significant. There was no neonatal mortality in the study group, compared to 4 % in the control group.

Table No 6-Perinatal Outcome

	STUDY GROUP	CONTROL GROUP
ALIVE	50(100%)	48(96%)
DEAD	0(0%)	2(4%)

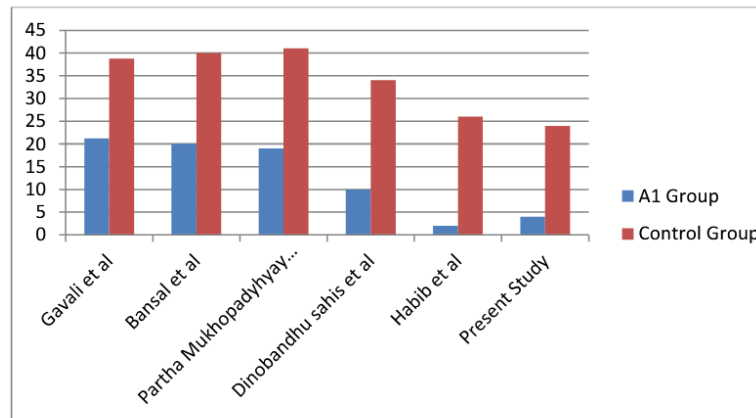
V. Discussion

Amnioinfusion is used in meconium stained liquor to get good perinatal outcome and the results are compared with the following studies. The present study was done in the dept. of OBG, govt medical college, ananthapuram evaluating the usefulness of AI in labor complicated by meconium stained liquor.

**Table 7: AI in MSL:
Mode of delivery: EMLSCS rates in various studies**

STUDY	Incidence in Percentages	
	AI Group	Control Group
Gavali et al (2017)	21.25	38.75
Bansal et al	20	40
Partha Mukhopadhyay et al	19	41
Dinobandhu Sahis et al	10	34
Habib et al	02	26
Present study	04	24

The overall cesarean section rates were reduced in all studies.



The incidence of operative interference in the study group was 4% compared to 24% in the control group (P value <0.003) which is significant. The overall cesarean section rates were reduced in all studies. Amnioinfusion during labour in cases with thick meconium stained liquor was associated with a significant decrease in the incidence of low APGAR scores.

Table 8. AI in MSL: Incidence of low APGAR scores in at 5 min (< 5) various studies

STUDY	Incidence in Percentages	
	AI Group	Control Group
Gupta prachi et al (2016)	2.86	05.71
Bansal et al (2013)	04	04
Dinobandhu Sahis et al(2013)	02	04
Habib et al (2012)	04	08
William et al(2005)	2.7	03
Present study	04	20

The incidence of low APGAR scores at 5min <7 in the study group was 4 % compared to 20% in the control group (P value <0.01) which is significant. The incidence of low APGAR scores in the present study is correlating with the low incidence in studies of Gupta Prachi, dinobandhu sahis and William et al

Meconium below Vocal Cords

Table 9: AI in MSL: cases with Meconium below vocal cords in various studies

STUDY	Incidence in Percentages	
	AI Group	Control Group
U G Gavali et al	8.75	23.75
Gupta prachi et al	20	45.71
Bansal et al	12	36
Dinobandhu sahis et al	12	42
Habib et al	06	32
Present study	02	18

The incidence of Meconium below vocal cords is 2 % study group The incidence of meconium below the vocal cords is 2% in MSL study group compared to 18% in the control group (P value 0.007) which is significant

Low incidence of Meconium below vocal cords in the present study is comparable with findings of Gavali et al and Habib et al.

Meconium Aspiration Syndrome

MAS occurred in 2% of the study group. This low rate in the study group is comparable to other AI groups of various studies. The incidence of Meconium Aspiration Syndrome in MSL study group is 2% compared to 16% in the control group (P value <0.01) which is significant.

Table 10. AI in MSL: Meconium aspiration syndrome in various studies

STUDY	Incidence in Percentages	
	AI Group	Control Group
U G Gavali et al	05	16.25
Gupta prachi et al	8.57	28.57
Bansal et al	06	10
Dinobandhu sahis et al	04	20
Habib et al	00	08
Present study	02	12

Neonatal Mortality in MSL

There was no neonatal mortality in the study group. These findings are comparable with the study of Gupta Prachi et al, Bansal et al, Dinobandhu shahis et al

Table 11: AI in MSL: neonatal mortality in various studies

STUDY	Incidence in Percentages	
	AI Group	Control Group
Gupta prachi et al	0	0
Bansal et al	0	0
Partha Mukhopadhyay et al	02	03
Dinobandhu sahis et al	0	02
Habib et al	01	8.42
Present study	0	04

There was no neonatal mortality in MSL study group compared to 4 % in the control group. There is less neonatal mortality rate in the amnioinfusion group, in all studies, indicates AI is useful in decreasing the severity of MAS, fetal distress.

VI. Conclusion

In present study cesarean section rate in the amnioinfusion group was significantly less when compared to control group. Therefore Transcervical intrapartum amnioinfusion is an effective, simple, safe and possible measure in cases of MSL complicating labour. In MSL group, AI improved the outcome by decreasing the severity of MAS and respiratory distress, operative interference and improved APGAR score.

Bibliography

- [1]. Cunningham FG, Gant NF, Leveno KJ, Gilstrap LC, Hauth JC, Wenstrom KD. Williams obstetrics. 21st ed. England, Appleton & Lange Simon & Schuster Business and Professional Group, 2001.
- [2]. Miyazaki FS, Taylor NA. Saline amnioinfusion for relief of variable or prolonged deceleration. Am J Obstet Gynecol 1983;146:670-678.
- [3]. Hofmeyr GJ. Amnioinfusion for meconium-stained liquor in labor. Cochrane Database Syst Rev 2000;2:CD 000014.
- [4]. Pierce J, Gaudier FL, Sanchez-Ramos L. Intrapartum amnioinfusion for meconium stained fluid: meta-analysis of prospective clinical trials. Obstet Gynecol 2000;96:861-866.

- [5]. Ahanya SN, Lakshmanan J, Morgan BL, Ross MG. Meconium passage in utero: mechanisms, consequences, and management. *Obstet Gynecol Surv* 2005Jan;60(1):45-56.
- [6]. Prachi G, Reena P, Priya BK, Swati T, Ruchi S, Sarita M. Study of Perinatal Outcome of Amnio infusion during Labor in Meconium Stained Amniotic Fluid
- [7]. Fraser WD, Hofmeyr J, Lede R, Faron G, Alexander S, Goffinet F, Ohlsson A, Goulet C, Turcot-Lemay L, Prendiville W, Marcoux S. Amnioinfusion for the prevention of the meconium aspiration syndrome. *New England Journal of Medicine*. 2005 Sep 1;353(9):909-17.

Dr B. VARALAKSHMI , et. al. "Role of Intrapartum Amnioinfusion in Meconium Stained Liquor."
IOSR Journal of Dental and Medical Sciences (IOSR-JDMS), 20(01), 2021, pp. 30-35.