Scholars Journal of Applied Medical Sciences (SJAMS) **ISSN 2320-6691 (Online)**
Sch. J. App. Med. Sci., 2016; 4(6C):2048-2051 **ISSN 2347-954X (Print)**

(An International Publisher for Academic and Scientific Resources)
www.saspublishers.com DOI: 10.36347/sjams.2016.v04i06.036

Original Research Article

Study of Perinatal Outcome of Amnioinfusion during Labor in Meconium Stained Amniotic Fluid

Gupta Prachi[1], Pant Reena[2], Banerjee Krishna Priya[3], Trivedi Swati[4], Singh Ruchi[5], Mahala Sarita[6]
[1]Final year Resident, [2]Professor, [3]Professor and Unit Head,[4, 5, 6]Final year Resident, Department of Obstetrics and Gynecology, S.M.S. Medical College, Jaipur (Rajasthan), India

***Corresponding author**
Dr. Prachi Gupta
Email: guptap1991@gmail.com

Abstract: The study was undertaken to assess and compare the perinatal outcome in women with meconium stained amniotic fluid with or without transcervical intrapartum amnioinfusion. In this hospital based interventional randomized study, study group (35 cases) received transcervical amnio infusion while control group (35 cases) did not receive amnio infusion. FHR monitoring was done using cardiotocography. Apgar score at 1 minute showed significant difference in study group and controls (Apgar <7/10- 28.57% v/s 54.28%, p- value<0.05). On the contrary Apgar score at 5 minute did not show significant difference (2.86% v/s 14.29%, p-value>0.05). Meconium below the vocal cards was seen in significantly fewer cases in study group (20%) compared to controls (45.71%). Meconium aspiration syndrome (MAS) was developed and endotracheal intubation was required in more cases (8.57%) in controls compared to Study group (28.57%) (p<0.05). Two neonates died in the control group due to meconium aspiration syndrome. Thus concluding that amnio infusion of normal saline in meconium stained liquor improves the fetal outcome.
Keywords:amnioinfusion, meconium stained amniotic fluid, meconium aspiration syndrome, cardiotocography, Apgar score

INTRODUCTION

Meconium is the name given to substances which have accumulated in the fetal bowel during intrauterine life. Fetal bowel contents consist of various products of secretion, such as glycerophospholipids; from the lungs, desquamated fetal cells; lanugo; scalp hair and the vernix [1].

Although 69% of newborns pass meconium by 12 hours of age, many infants pass meconium prior to birth as well. [2] Presence of meconium stained amniotic fluid is seen in 12-16% of deliveries [3].In utero, passage of meconium may simply represent the normal gastrointestinal maturation or it may indicate an acute or chronic hypoxic event, thereby making it a warning sign of a fetal compromise [4].

Meconium aspiration syndrome (MAS) is defined as respiratory distress that develops shortly after birth, due to mechanical obstruction and chemical inflammation as a result of aspiration of meconium into lower respiratory tract of neonate with radiographic evidence of aspiration pneumonitis and presence of meconium stained amniotic fluid [5].MAS occur in about 5% of deliveries with meconium-stained amniotic fluid [6] and death occurs in about 12% of infants with MAS [7].

Amnio infusion or transcervical infusion of saline into the amniotic cavity is used as a method to reduce the risk of the meconium aspiration syndrome [8]. 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 lead to fetal acidemia (a condition predisposing to the meconium aspiration syndrome) [9].

METHODS

This hospital based interventional randomized study was conducted in the Department of Obstetrics & Gynaecology, SMS Medical College, and Jaipur during 2014-15. After taking written informed consent, seventy women with gestation of more than 37 weeks, singleton live fetus, cephalic presentation, in labor with meconium stained amniotic fluid were selected. Women with Cephalopelvic disproportion, antepartum haemorrhage, previous cesarean section or previous

uterine surgery, chorioamnionitis, fetal malformations, hemoglobin <8g%, blood pressure>140/ 90 mmHg, diabetes mellitus, associated medical complications, or having indications of immediate delivery such as cord prolapse or severe fetal heart rate abnormalities suggestive of fetal distress were excluded.

Thirty- five women were given saline amnio infusion and formed the study group. The other 35 were not given amnio infusion and formed the control group. The study was approved by the Institutional Ethical Committee.

Amnio infusion was carried out with a sterile nasogastric tube inserted through the cervix into the uterine cavity just above the fetal head. A bolus of 600 ml of sterile saline, at room temperature, was infused under the force of gravity at a rate of 20 ml/min over a period of 30 min. More fluid was infused at the same rate till the returning fluid became clear or upto a maximum of 1,000 ml.

Control group received conventional treatment, which included provisional preparation for cesarean section, oxygen by mask, lateral positioning, hydration, and decreasing or discontinuing oxytocin. The labor was monitored by using routine partograph. The fetal heart rate was monitored by using CTG machine. If fetal distress was diagnosed, the parturient was taken for cesarean section otherwise vaginal delivery was conducted.

Outcome Measures-

Perinatal outcomes were assessed by following parameters:- Apgar score of the baby at 1 minute and 5 minute, presence or absence of meconium aspiration, confirmed by the presence of meconium below the vocal cords on laryngoscopic examination, NICU admission, development of meconium aspiration syndrome, birth asphyxia, perinatal deathor other complications.

RESULTS

Apgar score at 1 minute showed significant difference in Study group and controls (Apgar <7/10- 28.57% v/s 54.28%, p- value<0.05). (Table-1).

On the contrary Apgar score at 5 minute did not show significant difference (2.86% v/s 14.29%, p-value>0.05). (Table-2)

Table-1: Distribution of Cases According to 1 Minute Apgar score

APGAR Score	Study Group		Control Group		Statistical Analysis
	No.	%	No.	%	
<4/10	1	2.86	2	5.71	p = 1
4-6/10	9	25.71	17	48.57	χ^2 = 3.916, d.f = 1, p<.05(0.04), Sig
≥7/10	25	71.43	16	45.72	χ^2 = 4.76, d.f. = 1, p<.05(0.02), Sig
Total	**35**	**100.00**	**35**	**100.00**	

Table-2: Distribution of Cases According to 5 Minute Apgar score

APGAR Score	Study Group		Control Group		Statistical Analysis
	No.	%	No.	%	
<4/10	0	0.00	0	0.00	p = 1
4-6/10	1	2.86	5	14.29	χ^2 = 1.64, d.f. = 1, p>.05(0.2), NS
≥7/10	34	97.14	30	85.71	χ^2 = 1.64, d.f. = 1, p>.05(0.2), NS
Total	**35**	**100.00**	**35**	**100.00**	

Meconium below the vocal cards was seen in significantly fewer cases in Study group (20%) compared to controls (45.71%) (P-value<0.05). Similarly MAS was developed and endotracheal intubation was required in more cases (8.57%) in controls compared to Study group (28.57%) (p<0.05). No perinatal death occurred in Study group compared to 2 cases (5.71%) in Control group due to MAS (chemical pneumonitis). More neonates were admitted to NICU in control group (57.14%) compared to Study group (25.71%) (p-value<0.05). (Table-3)

Table-3: Distribution of Cases According to Neonatal Morbidity

Neonatal Morbidity		Study Group		Control Group		Statistical Analysis
		No.	%	No.	%	
Birth Asphyxia	Mild	6	17.14	9	25.71	
	Moderate	2	5.71	4	11.42	
	Severe	0	0.00	0	0.00	
	Total	8	22.86	13	37.14	χ^2 = 1.7, d.f. = 1, p>.05(0.19), NS
Meconium Below Vocal Cords		7	20.00	16	45.71	χ^2 = 5.24, d.f. = 1, p<.05(0.022), Sig
Meconium Aspiration Syndrome		3	8.57	10	28.57	χ^2 = 4.62, d.f. = 1, p<.05(0.03), Sig
Endotracheal Intubation Required		3	8.57	10	28.57	χ^2 = 4.62, d.f. = 1, p<.05(0.03), Sig
Perinatal Death		0	0.00	2	5.71	χ^2 = 0.51, d.f. = 1, p>.05(0.47), NS
NICU Admission		9	25.71	20	57.14	χ^2 = 7.12, d.f. = 1, p<.05(0.007), Sig

DISCUSSION

The presence of meconium in amniotic fluid in vertex presentation has been thought to be a signal of fetal distress. Meconium has been related to inflated perinatal morbidity and death, particularly once meconium aspiration syndrome has set in. Amnio infusion during labour for potential or suspected cord compression has been proposed as a rational approach for prevention and treatment of problems that are associated with intrapartum meconium passage. The application of amnio infusion to the management of MSAF is logical for two reasons. First, it corrects concurrent oligohydramnios and may dilute thick meconium so that the toxic effects of aspiration, should it occur, are diminished. Second, diminished vagal stimulation due to cord compression after amnio infusion probably reduces further meconium passage and removes a stimulus for fetal gasping. In this study an attempt has been made to assess the role of amnio infusion in pregnant women, in active phase of labor with meconium stained amniotic fluid.

Our study results showed significant difference for Apgar score at 1 minute in Study group and controls (Apgar <7/10- 28.57% v/s 54.28%, p- value<0.05). There was significant improvement in Apgar score at one minute in amnio infusion group suggesting a lesser need for immediate neonatal intervention for which equipment and trained personnel are often lacking in developing countries. A similar significant result was also reported in studies of Bansal N *et al.;* [10] and Dinobandhu Sahis *et al.;*[11]. On the contrary Apgar score at 5 minute did not show significant difference (2.86% v/s 14.29%, p-value>0.05).

There was statistically significant decrease in the incidence of MAS in study group than controls (8.57% vs. 28.57%, p <0.05). Decrease in incidence of MAS in the study group must be due to decreased meconium below the level of vocal cords, decreased fetal gasping, and active resuscitation of the neonate after birth. In our study, more neonates were admitted to NICU in control group (57.14%) compared to Study group (25.71%) (P-value<0.05). Meconium below the vocal cards was seen in significantly fewer cases in Study group (20%) compared to controls (45.71%) (P-value<0.05). There was no perinatal death in the study group but two (5.7%) death in the control group due to chemical pneumonitis (MAS). The results were comparable to the study done by Dinobandhu Sahis *et al.;* [11] and Bhatia P *et al.;*[9].

CONCLUSION

This study concludes that amnio infusion of normal saline in meconium stained liquor improves the fetal outcome; but, it is in no way a substitute to electronic fetal monitoring. Therefore, amnio infusion being straightforward to use, value effective, logical and safe, might be habitually incorporated within the management protocol of fetal distress with meconium stained liquor and will lead to better fetal outcome.

REFERENCES

1. Cunningham FG, Leveno KJ, Bloom SL, Spongy CY, Dashe JS, Hoffman BL, *et al.;*Embryogenesis & Fetal Morphological Development. Williams Obstet, 24th ed. McGraw Hill Education 2014; 141.
2. Wood CL; Meconium stained amniotic fluid. J Nurse Midwifery. 1994; 39(2): 106S-109S.
3. Maymon E, Chaim W, Furman B, Ghezzi F, Vardi IS, Mazor M; Meconium stained amniotic fluid in very low risk pregnancies at term gestation. Eur J Obstet Gynecol Reprod Biol. 1998; 80(2):169-73.
4. Mundhra R, Agarwal M; Fetal Outcome in Meconium Stained Deliveries. Journal of Clinical and Diagnostic Research. 2013; 7(12): 2874-2876.

5. Klinger MC, Kruse J; Meconium aspiration syndrome: pathophysiology and prevention. J Am Board Fam Med. 1999; 12(6).
6. Wiswell TE, Bent RC; Meconium staining and the meconium aspiration syndrome. Unresolved issues. Pediatr Clin North Am. 1993; 40: 955-81.
7. Cleary GM, Wiswell TE; Meconium-stained amniotic fluid and the meconium aspiration syndrome. An update. Pediatr Clin North Am. 1998; 45: 511-29.
8. Wenstrom KD, Parsons MT; The prevention of meconium aspiration in labor using amnioinfusion. Obstet Gynecol. 1989; 73: 647-51.
9. Bhatia P, Reena K, Nangia S; Role of Intrapartum Transcervical Amnioinfusion in Patients with Meconium-Stained Amniotic Fluid. The Journal of Obstetrics and Gynecology of India, 2013; 63(1): 59-63.
10. Bansal N, Gupta V, Nanda A, Chaudhary P, Tandon A, Behl N; Intrapartum Amnioinfusion in Meconium-Stained Liquor : A Case–Control Study. The Journal of Obstetrics and Gynecology of India. 2013; 63(3): 164–167.
11. Sahis D, Das S, Sarkar S, Char D, Saha TK; Intrapartum Amnioinfusion in Meconium–stained Amniotic fluid: A Case Control study. IOSR Journal of Dental and Medical Sciences, 2013; 10(6):04-07.