OPEN ACCESS
Scholars International Journal of Obstetrics and Gynecology
Abbreviated Key Title: Sch Int J Obstet Gynec
ISSN 2616-8235 (Print) |ISSN 2617-3492 (Online)
Scholars Middle East Publishers, Dubai, United Arab Emirates
Journal homepage: https://saudijournals.com

Original Research Article

Transcervical Amnioinfusion in Meconium Stained Amniotic Fluid in the Pregnant Women at Labour and Foetomaternal Outcome Attending Labour Ward of Rajshahi Medical College Hospital

Dr. Rawshan Akhtar[1*], Dr. Md. Zillur Rahman[2], Dr. Nazmun Nahar[1], Dr. Afroza Khatun[1], Dr. Nasim Parvej[3], Dr. Anika Ahmed[4], Dr. Saklayen Ferdous[5]

[1]Assistant Professor, Department of Obstetrics and Gynecology, Rajshahi Medical College Hospital, Rajshahi, Bangladesh
[2]Associate Professor, North Bengal Medical College, Sirajganj, Bangladesh
[3]Medical Officer, Upazilla Health Complex, Mohonpur, Rajshahi, Bangladesh
[4]Medical Officer, Upazilla Health Complex, Paba, Rajshahi, Bangladesh
[5]EMO, Mohammad Ali Hospital, Bagura, Bangladesh

DOI: 10.36348/sijog.2022.v05i11.006 | **Received:** 08.10.2022 | **Accepted:** 20.11.2022 | **Published:** 30.11.2022

***Corresponding author:** Dr. Rawshan Akhtar
Assistant Professor, Department of Obstetrics and Gynecology, Rajshahi Medical College Hospital, Rajshahi, Bangladesh
E-mail ID: ahmedsagor876@gmail.com

Abstract

Background: Amniotic fluid is the fluid present in amniotic sac which surrounds the foetus, provides nutrition and maintains temperature of the foetus. Physically it allows the foetus to move and prevents it from injury. Functionally it enables foetal breathing mobility that prevents pulmonary hypoplasia and exercises digestive tract by swallowing amniotic fluid. ***Objective:*** The objective of the study was to explore the role of amnioinfusion in intrapartum management of meconium stained amniotic fluid in the pregnant women at labor and foetomaternal outcome of the patients attending labor ward of Rajshahi Medical College Hospital. ***Methods:*** This experimental randomized control trial study carried out in the Department of Obstetrics and Gynecology of Rajshahi Medical College Hospital, Rajshahi from July, 2012 to June, 2014. Sample size was 100 and randomly allocated into equally two halves as study group and control group. Purposive sampling technique was followed. ***Results:*** In this study the age of the study group up to 30 years was 38(47.5%), control group 42(52.5%) and total 80(80.0%). On the other hand, in >30 year's study group was 12(60.0%), control group 8(40.0%) and total 20(20.0%) respectively. and that of control group was 26.24 (±4.75) years. The mean age of the study group was 27.44 ± 5.59, control group was 26.24 ± 4.75 and total was 26.84 ±5.18 years. The mean weight of the study group was 66.84 (±3.25) kg and in the control group 62.64(±2.84) kg. In this study, 96.0% of the respondents had normal vaginal delivery and among them, 52.1% were in the study group and 47.9% in the control group. On the other hand, only 4% of the respondents had lower segment caesarean section and all of them were in the control group. The mean gestational age at delivery of the respondents in the study group was 39.88 ± 0.78 weeks and in the control group 39.84 ± 0.75 weeks. ***Conclusion:*** In this study Tran's cervical amnioinfusion gave positive result by providing reducing picture of operative delivery in study group. There was significant difference in respiratory distress in the baby having lower percentage in the study group. A large scale study should be carried out to make the result of this study a reliable one.

Keywords: Transcortical amnioinfusion, Foetus, Pulmonary hypoplasia, Intrapartum management, Meconium stained.

INTRODUCTION

Amniotic fluid is the fluid present in amniotic sac which surrounds the foetus, provides nutrition and maintains temperature of the foetus. Physically it allows the foetus to move and prevents it from injury. Functionally it enables foetal breathing mobility that prevents pulmonary hypoplasia and exercises digestive tract by swallowing amniotic fluid. It also plays a role in homeostasis by maintaining amnion integrity, protecting from umbilical cord compression and fighting against intra-amniotic infections. Meconium is the first intestinal secretion from the foetus, which is a viscous, dark green substance, composed of intestinal epithelial cells, mucus, intestinal secretions such as bile,

intestinal mucosal cells and solid elements of swallowed amniotic fluid [3]. Meconium passage is usually secondary to foetal hypoxia. Once meconium is passed, it contaminates amniotic fluid and exposed foetus to meconium. Intrauterine foetal distress can cause passage of meconium into the amniotic fluid and further leading to Mcconium Aspiration Syndrome (MAS). Many studies showed that meconium stained amniotic fluid is associated with increased rate of foetal distress, increased operative delivery, increased perinatal morbidity and mortality [4-6]. Meconium aspiration syndrome is caused by obstruction of bronchioles, chemical pneumonitis and is thought to be one of the major complications in the full term neonates [7]. Amnioinfusion is instillation of ringer lactate or normal saline into the amniotic cavity either Trans abdominally or transcervically. Transcervical amnioinfusion is instillation of fluid through cervix during labour once membrane ruptures. Once meconium stained amniotic fluid is detected during labor, especially in moderate to thick meconium, amnioinfusion is done [11]. Amnioinfusion dilutes and washes away thick meconium and increase amniotic fluid index and thereby improves obstetric and neonatal outcome and decrease operative delivery [13] This study was conducted to evaluate the role of transcervica! amnioinfusion in intrapartum management of meconium stained amniotic fluid and might provide important information regarding beneficial effects of trans cervical amnioinfusion for better foetal outcome.

OBJECTIVES

General Objective

The objective of the study was to explore the role of transcervical amnioinfusion in the management of mcconium stained liqour in the pregnant women at labor.

Specific Objectives

- To assess the effect of amnioinfusion in correcting foetal distress.
- To find out neonatal outcome in amnioinfusion group.
- To find out neonatal outcome in non-amnioinfusion group.
- To compare the mode of delivery in both groups.

METHODOLOGY

This was a randomized control trial experimental study was carried out in the Department of Obstetrics of Rajshahi Medical College Hospital, Rajshahi from July, 2012 to June, 2014. All the pregnant women with labor pain attending labor ward after 37 weeks of pregnancy were recruited as study population. The sample size of this study was 100 (study group 50 and control 50). Purposive sampling technique was followed. All the collected data and relevant measurement were recorded in a pre-designed data sheet. Baseline information on some selected socio-demographic and biological characteristics of the responding mothers was collected. The patients at term in labor with meconium stained amniotic fluid were randomized receive either transccrvical intrapartuni amnio-in fusion with normal saline or routine obstetric care. Informed written consent all the patients were taken All patients given a single dose of broad spectrum antibiotic intravenously. Rubber Folcy 's catheter was introduced between foetal head und dilating cervix (>6 cm) into amniotic cavity and 500 ml of normal saline was infused over 30 minutes followed by continuous infusion of normal saline at 3 ml per minute. Throughout the procedure continuous monitoring of foetal heart was done, patients were monitored for pulse/ blood pressure / temperate every 30 minutes and both mothers and neonates were observed for 5-7 days postnatal.

Exclusion Criteria

Mal presentation, multiple gestation, cord prolapse Ante Parlini hemorrhage patients were excluded from this study.

Data Analysis

Data were analyzed by SPSS version 23.0. Variables of descriptive were explained with mean and standard deviation. By applying relevant statistical tests at appropriate probability level (p=0.05 or p=0.01) statistical significance was found. The study was approved by the Ethical Review Committee (ERC) of Rajshahi Medical College Hospital.

RESULTS

Table 1: Distribution of respondents by age (N=100)

Age group (In years)	Respondents		
	Study group, n (%)	Control group, n (%)	Total, No (%)
Up to 30 yrs.	38(47.5)	42(52.5)	80(80.0)
> 30 yrs.	12(60.0)	8(40.0)	20(20.0)
Mean ±SD	27.44 ± 5.59	26.24 ± 4.75	26.84 ±5.18

Table 1 showed that in the age group 30 years or below, 38(47.5%) of the respondents belong to study group, 42(52.5%) in the control group and 80(80.0%) of the total respondents. On the other hand, in the age group more than 30 years, 12(60.0%) of the respondents belong to study group, 8(40.0%) and 20(20.0%) in the control group respectively. The mean age of the respondents in the study group was 27.44(±5.59) years, in the control group 26.24(±4.75) years and in total 26.84(±5.18) years.

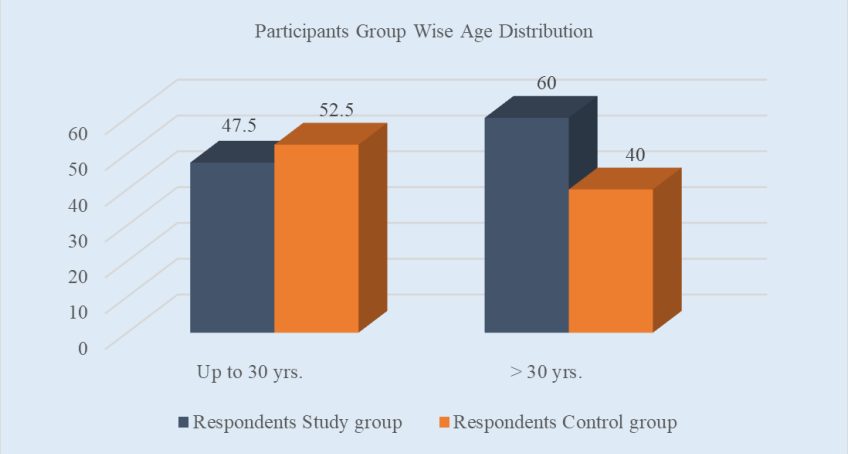

Figure I: Bar chart showed respondents group wise age distribution (N=100)

Table 2: Distribution of respondents by gravida (N=100)

Gravida	Respondents		
	Study group, n (%)	**Control group, n (%)**	**Total No (%)**
Primi	30(60.0)	20(40.0))	50(50.0)
2^{nd} - 3^{rd}	18(37.5)	30(62.5)	48(48.0)
4^{th}+	2(100.0)	0(0.0)	2(2.0)
Mean ±SD	1.56 ±0.82	1.88 ±0.83	1.72 ±.0.83

Table 2 showed in primi gravida were 30(60%), 20(40%) in study group control group and 50(50%) in total respectively, 2^{nd} and 3^{rd} gravida were18 (37.5%), 30(62.5%) and in study group control group and 48(48%) in total respondents. The mean gravida of the respondents in the study group was 1.56(±0.82). In the control group 1.88(±0.83) and in total 1.72(±0.83).

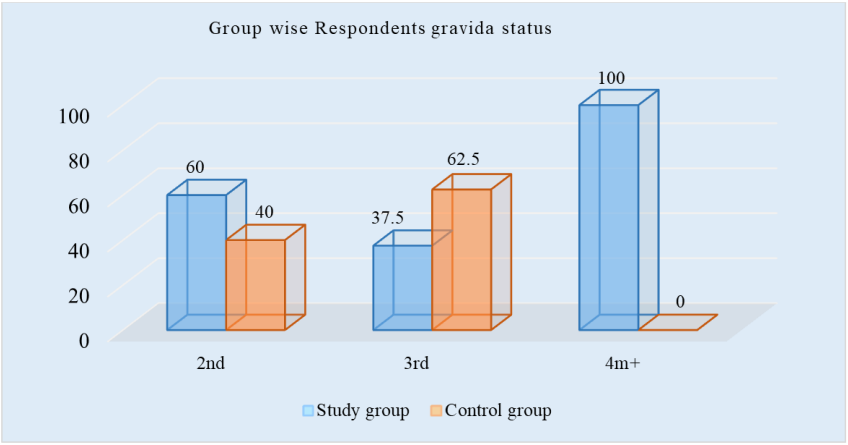

Figure II: Bar chart showed group wise respondents gravida status (N=100)

Table 3: Distribution of respondents by parity status (N=100)

Parity	Respondents		
	Study group, n (%)	**Control group, n (%)**	**Total N (%)**
1	12(33.3)	24(66.7)	36(85.7)
2-3	4 (66.7)	2 (33.3)	6(14.3)
Total	**16(38.1)**	**26(61.9)**	**42(100.0)**
Mean ±SD	0.40 ±0.64	0.56 ±0.58	0.48 ±0.61

Table 3 showed that among the respondents, single para was 12(33.3%), 24(66.7%) and 36(85.7%) in control group and in total respectively, 2-3 para were 4(66.7%), 2(33.3%) and 6(14.3%) in study and control groups. The mean parity of the respondents in the study group was 0.40 (±0.64), control group 0.56 (±0.58) and in total 0.48 (±0.61).

Table 4: Distribution of respondents by their weight (N=100)

Weight of the respondents	Respondents		
	Study group, n (%)	Control group, n (%)	Total N (%)
<49 kg	0(0.0)	4(100.0)	4(4.0)
50 -69 kg	40(46.5)	46(53.5)	86(86.0)
70+ kg	10(100)	0(0.0)	10(10.0)
Mean ±SD	66.84 ±3.25	62.64 ±2. 84	64.74 ±3. 69

Table 4 showed that 86(86.0%) of the respondents had weight between 50-69 kg and among them, 40(46.5%) were in the study group and 46(53.5%) in the control group. On the other hand, 10(10%) of the respondents had weight 70 kg or more and all of them were in the study group. Only 4 respondents in the control group had weight 49 kg or less. The mean weight of the respondents in the study group was 66.84(±3.25) kg, in the control group 62.64(±2.84) kg and in total 64.74(±3.69) kg.

Table 5: Distribution of Respondents by mode of delivery (N=100)

	Respondents		
Mode of delivery	Study group, n (%)	Control group, n (%)	Total N (%)
NVD	44(49.0)	46(51.0)	90(90.0)
LSCD	6(60.0)	4(40.0)	10(10.0)

Table 5 showed that 90(90%) of the respondents had normal vaginal delivery (NVD) among them, 44(49%) were in the study group and 46(51%) in the control group. On the other hand, in lower segment caesarean delivery (LSCD) in total 10(10%), 6(60%) was study group and 4(40%) was in control group respectively.

Table 6: Distribution of respondents by gestational age (N=100)

Gestational age	Respondents		
	Study group, n (%)	Control group, n (%)	Total N (%)
<37 weeks	0(0.0)	0(0.0)	0(0.0)
38 - 40 weeks	38(48.7)	40(51.3)	78(78.0)
41+ weeks	12(54.5)	10(45.5)	22(22.0)
X±SD	39. 88 ±0.78	39.84 ±0.75	39.86 ± 0.76

Table 6 showed that 78(78.0%) of the respondent's gestational age at labor between 38 to 40 weeks and among them, 38(48.7%) were in the study group and 40(51.3%) the control group. On the other hand, 22(22%) of the respondents gestational age at 41 weeks or more and among them 12(54.5%) were in the study group and 10(45.5%) in the control group. The mean gestational age at delivery of the respondents in the study group was 39.88 ± 0.78 weeks, in the control group 39.84 ± 0.75 weeks and in total 39.84 ± 0.76 weeks.

Table 7: Distribution of respondents by PIH (N=100)

PIH	Respondents		
	Study group, n (%)	Control group, n (%)	Total N (%)
No	16(32.0)	34 (68.0)	50(50.0)
Yes	34(68.0)	16(32.0)	50(50.0)

Table 7 showed that 50(50.0%) of the respondents had no history of pregnancy induced hypertension and among, them, 16(32.0%) were in the study group and 34(68%) in the control group. On the other hand, another 50(50%) of the respondents had history of PIH and among them 34(68.0%) were in the study group and 16(32.0%) in the control group.

Table 8: Distribution of respondents by way of membrane rupture (N=100)

Rupture of membrane	Respondents		
	Study group, n (%)	Control group, n (%)	Total N (%)
Spontaneous	22(47.8)	24(52.2)	46(46.0)
Induced	28(51.9)	26(48.1)	54(54.0)
Total	**50(50.0)**	**50(50.0)**	**100(100.0)**

Table 8 showed that 46(46.0%) of the respondents had spontaneous rupture of membrane and among them, 22(47.8%) were in the study group and 24(52.2% in the control group. On the other hand, 54(54%) of the respondents had induced rupture of membrane, among them 28(51.9%) were in the study group and 26(48.1%) in the control group.

Table 9: Distribution of respondents by type of in conium (N=100)

Type of mcconium	Respondents		
	Study group, n (%)	Control group, n (%)	Total N (%)
Thick (Moderately)	30(65.2)	16(34.8)	46(46.0)
Thin	20(37.0)	34(63.0)	54(54.0)
Total	**50(50.0)**	**50(50.0)**	**100(100.0)**

Table 9 showed that 46(46.0%) of the respondents had history of thick mcconi among them, 30(65.2%) were in the study group and 16(34.8%) in the control group. On the other hand, 54(54%) of the respondents had history of thin meconium and among them, 20(37%) were in the study group and 34(63.0%) in the control group.

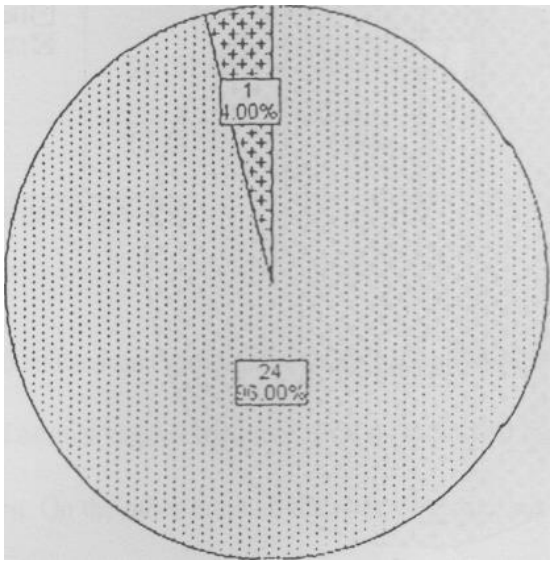

Figure III: Distribution of the respondents by anaemic condition

Figure no III showed that among the study group, majority (96%) % of the respondents had no anaemia and only 4% of the respondents had mild anaemi stribution of the respondents (study group) by anaemic condition.

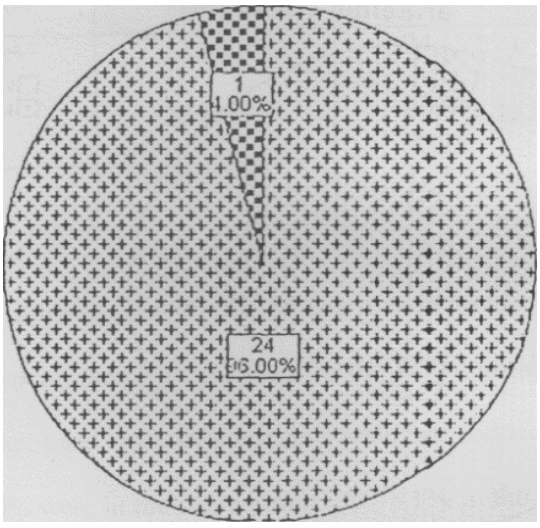

Figure IV: Distribution of the respondents (study group) by anaemic condition

Figure IV showed that among the control group, majority (96%) % of the respondents had no anaemia and only 4% of the respondents had mild anaemia, which \vas similar with that of study group.

Table 10: Relationship between amnio-infusion and mode of delivery (N=100)

Amnio-infusion	Mode of delivery			
	NVD, n (%)	Forceps, n (%)	LSCS, n (%)	Total N (%)
Given	36(72.0)	8(16.0)	6(12.0)	50(50.0)
Not given	26(52.0)	8(16.0)	16(32.0)	50(50.0)
Total	**62(62.0)**	**16(16.0)**	**22(22.0)**	**100(100)**

Table10 showed that among the study group, 36(72%) of the participants had normal vaginal delivery, 8(16%) of them had forceps delivery and 6(12%) had caesarean section. On the other hand, in the control group, 26(52%) of the participants had normal vagina! delivery, 8(16%) of them had forceps delivery and 16(32%) had caesarean section. It was observed that the percentage of normal vaginal delivery was more in the study group and percentage of caesarean section was more in the control group but the association was not found statistically significant (p>0.05).

Table 11: Relationship between amnio-infusion and foetal heart rate (N=100)

Ammo-infusion	FUR			
	<100/m, n (%)	100-160/m, n (%)	>160/m, n (%)	Total, N (%)
Given	2(4.0)	32(64.0)	16(32.0)	50(50.0)
Not given	00(0.0)	18(36.0)	32(64.0)	50(50.0)
Total	**2(2.0)**	**50(50.0)**	**48(48.0)**	**100(100.0)**

Table 11 showed that among the study group, 64% of the respondents' baby had normal heart rate i.e.; 100- 160/m, 32% of them had increased heart rate i.e.; >160/m and 4% had decreased heart rate i.e.; <100/m. On the other hand, in the control group, 36% of the respondents' baby had normal heart rate i.e.; 100-160/m, 64% of them had increased heart rate i.e.; >160/m and no one had decreased heart rate i.e.; <100/m. It was observed that the percentage of normal heart rate of the baby was more in the study group and percentage of increased heart rate which indicated foetal distress was more in the control group but the association was found statistically just insignificant (p = 0.06).

Table 12: Relationship between amnio-infusion and AI'GAR score at 1 minute (N=100)

Amnio-infusion	APGAR score at 1 minute		
	Up to 6, n (%)	7- 10, n (%)	Total, N (%)
Given	10(20.0)	40 (80.0)	50(50.0)
Not Given	40 (80.0)	10(20.0)	50(50.0)
Total	**50(50.0)**	**50 (50)**	**100(100)**

Table12 showed that among the study group, 80% of the respondents' babies had apgar score 7 or more at 1 minute, which indicated healthy status of the baby and 20% had apgar score 6 or less at 1 minute, which indicated foetal depression. On the other hand, in the control group, only 20% of the respondents' babies had apgar score 7 or more, which indicated healthy status of the baby and majority 80% had apgar score 6 or less at 1 minute, which indicated foetal distress. It was observed that the percentage of normal apgar score of the baby was more in the study group and percentage of lower apgar score which indicated foetal distress was more in the control group and the association was found statistical ly highly significant (p < 0.001).

Table 13: Relationship bctv, veil amiiio-infusion and APGAR score at 5 minute (N=100)

Amnio-infusion	APGAR score at 5 minute		
	Up to 6, n (%)	7- 10, n (%)	Total, N (%)
Given	0(0.0)	50(100.0)	50 (50.0)
Not given	4(8.0)	46(92.0)	50(50.0)
Total	**4(4.0)**	**96(96.0)**	**100(100.0)**

Table 13 showed that among the study group, 100% of the respondent’s babies had apgar score 7 or more at 5 minutes, which indicated healthy status of the baby and none of the baby had apgar score 6 or less at 5 minutes, which indicated foetal depression. On the other hand, in the control group, only 92% of the respondents' babies had apgar score 7 or more, which indicated healthy status of the baby and only 8% had apgar score 6 or less at 5 minutes, which indicated foetal distress. It was observed that the percentage of

normal apgar score of the baby was more in the study group and percentage of lower apgar score which indicated foetal distress was more in the control group but the association was not statistically significant (p > 0.05).

Table 14: Relationship between amnio-infusion and intconiuin aspiration syndrome (N=100)

Amnio-infusion	MAS		
	Yes, n (%)	No, n (%)	Total, N (%)
Given	2(4.0)	48(96.0)	50 (50.0)
Not given	6(12.0)	44(88.0)	50(50.0)
Total	**8(8.0)**	**92(92.0)**	**100(100)**

Table 14 showed that among the study group, 96% of the respondents' babies had no mcconium aspiration syndrome and only 4% had mcconium aspiration syndrome. On the other hand, in the control group, 88% of the respondents' babies had no meconium aspiration syndrome and only 12% had meconium aspiration syndrome. It was observed that the percentage of meconium aspiration syndrome was less (only 4%) in the study group and percentage of meconium aspiration syndrome was more (12%) in the control group but the association was not found statistically significant (p > 0.05).

Table 15: Amino-infusion until respiratory distress (N=100)

Amnio-infusion	Foetal distress		
	Yes, n (%)	No, n (%)	Total, N (%)
Given	8(16.0)	42(84.0)	50(50.0)
Not given	24(48.0)	26(52.0)	50(50.0)
Total	**32(32.0)**	**68(68.0)**	**100(100.0)**

Table 15 showed that among the study group, 84% of the respondents' babies had no respiratory distress and 16% had foetal distress. On the other hand, in the control group, 52% of the respondents' babies had no respiratory distress and 48% had respiratory distress. It was observing<1 that the percentage of respiratory distress of the baby was less (only 16%) in the study groupand percentage of respiratory distress of the baby was more (48%) in the control group and the association was found statistically significant (p< 0.05).

DISCUSSION

In this study the mean age of the study population was 27.44±5.59 years and that of control group was 26.24 ±4.75 years. Primi gravida were 60% and 40% in study group and control group, 2nd and 3rd gravida was 37.5% and 62.5% in the same responding groups as above, the mean gravida status of the respondents in the study group was 1.56(±0.82) and in the control group 1.88(±0.83). Among the respondents, single para was 33.3% and 66.7% in study group and control group, parity status of 2-3 were 66.7% and 33.3% in the same responding groups as above. The mean parity status of the respondents in the study group was 0.40(±0.64) and in the control group 0.56(±0.58). The mean weight of the respondents in the study group was 66.84(±3.25) kg and in the control group 62.64(±2.84) kg. In this study, 96.0% of the respondents had normal vaginal delivery and among them, 52.1% were in the study group and 47.9% in the control group. On the other hand, only 4% of the respondents had lower segment caesarean section and all of them were in the control group. The mean gestational age at delivery of the respondents in the study group was 39.88±0.78 weeks and in the control group 39.84±0.75 weeks. This study showed that 50% of the respondents had history of PIH and among them 68.0% were in the study group and 32.0% in the control group. About 46.0% of the respondents had spontaneous rupture of membrane and among them, 47.8% were in the study group and 52.2% in the control group. On the other hand, 54% of the respondents had induced rupture of membrane and among them 51.9% were in the study group and 48.1% in the control group. Off all the patients, 46.0% of the respondents had history of thick meconium and among them, 65.2% were in the study group and 34.8% in the control group. On the other hand, 54% of the respondents had history of thin meconium and among them, 37.0% were in the study group and 63.0% in the control group. In a study 43% of the women had significant cardiotocograph (CTG) abnormality and 72% of these had interventional delivery [15]. The differences in the mode of delivery between the two groups were significant. 60% and 40% delivered vaginally in group A and B respectively. Forceps delivery was 6% in group A as compared to only 3% in group B. As compared to 33% in group A, abnormal CTG pattern was a motivating factor in group B for greater use of LSCS viz. 57%. When continuous electronic fetal monitoring was being done [16]. Ina study, the cesarean section rate in MSA receiving amnioinfusion was 12% and instrumental delivery rate was 18% [17]. In a met analysis 42% of patients with MSAF receiving amnioinfusion with CTG monitoring needed: cesarean section as against only 10.4% without CTG monitoring [18]. This study showed that among the study group, 72% of the ‘respondents had normal vaginal delivery, 16% of them had forceps delivery and

12% had caesarean section. On the other hand, in the control group, whose amnioinfusion on had not given, 52% of the respondents had normal vaginal delivery, 16% of them had forceps delivery and 32% had caesarean section. It was observed that the percentage of normal vaginal delivery was more in the study group and percentage of caesarean section was more in the control group but the association was not found statistically significant. It was observed that the percentage of normal heart rate of the baby was more in the study group and percentage of increased heart rate which indicated foetal distress was more in the control group but the association was found statistically just insignificant. It was also observed that the percentage of normal apgar score of the baby was more in the study group and percentage of lower apgar score which indicated foctal distress was more in the control group and the association was found statistically highly significant. But there was no association between amnioinfusion and meconium aspiration syndrome in several other studies the presence of meconium in the amniotic fluid of the foetus. With increased perinatal morbidity and death, especially when meconium aspiration syndrome is present, meconium has been associated [19-21]. Meconium aspiration syndrome develops when mechanical obstruction and chemical inflammation occur as a result of aspiration of meconium into the lower respiratory tract of the foctus or the neonate. With a mortality rate of 25% and it account for 2% of all perinatal death, the syndrome is defined as respiratory distress- in a neonate with meconium aspiration [21]. The presence of meconium is associated with a higher incidence of abnormal labor, foctal distress, delivery by caesarean section, and low apgar score which showed the similarity with the present study [20]. In a study of 238 births with meconium-stained fluid found meconium below the cords more commonly in the presence of thick meconium [7]. This finding agrees with the theory that the greater the concentration of the meconium in the amniotic fluid, the more meconium was passed Trans tracheally. Meconium aspiration syndrome may occur within minutes of birth is fatal in up to 40% of cases. Eight to ten initial attempt at reducing morbidity and mortality with meconium aspiration syndrome focused on the "combined approach" of [22]. Their protocol called for nasopharyngeal and oropharyngeal suctioning by the obstetrician before delivery of the thorax, followed by suctioning of the trachea under laryngoscope visualization by the pediatrician. Their data indicated significant reduction in the incident of meconium aspiration syndrome with the use of this protocol and rapidly became the standard of care in obstetrics. In a subsequent investigation demonstrated that the Dele and tracheal suctioning reduced the severity but not the incidence of meconium aspiration syndrome [23]. As a way of diluting meconium to decrease the incidence of meconium aspiration syndrome, intrapartum amnioinfusion was initially proposed [24]. In the incidence of meconium below the cords in patients receiving amnioinfusion, these investigators showed a significant reduction in the incidence of meconium below the cords. Since this initial report two ether prospective randomized trials and one retrospective review [15] have also demonstrated a significant reduction [25]. In the incidence of caesarean section for fetal distress, these studies also record a significant reduction [26]. Amnioinfusion of rare events such as cord prolapse or maternal complications is not without risk is a beneficial method and very safe. In the United States in a review of 186 academic departments, in which 22,000 amnioinfusions were performed annually, 49 centers reported complications including uterine hypertonia, fetal heart rate abnormality, uterine rupture and maternal cardiac or pulmonary failure [25]. Two maternal deaths have been reported associated with amniotic fluid embolus [27]. Several authors have reported the occurrence of excessive uterine contractions or unusually rapid labor progress associated with amnioinfusion [27,28]. With stimulation of prostaglandin release, we have put forward the hypothesis that excessive uterine activity in some cases be related to extra amniotic placement of amnioinfusion catheter. May be to reduction of caesarean sections performed it is possible at least some of the apparent benefits of amnioinfusion because of persistent variable fetal heart rate decelerations, rather than a primary beneficial effect on foctal condition. Therefore, for failure to adhere to the allocated treatment, no poof evidence available of the effectiveness of amnioinfusion in caesarean section where it is not usually performed for persistent early or variable foetal heart rate decelerations alone. Furthermore, the results of previous studies need to be interpreted with care because of the small numbers observed, with relatively large proportions excluded [29].

REFERENCES

1. Katz, V. L., & Bowes Jr, W. A. (1992). Meconium aspiration syndrome: reflections on a murky subject. *American journal of obstetrics and gynecology*, *166*(1), 171-183.
2. Usher, R. H., Boyd, M. E., McLean, F. H., & Kramer, M. S. (1988). Assessment of fetal risk in postdate pregnancies. *American journal of obstetrics and gynecology*, *158*(2), 259-264.
3. Ziadeh, S. M., & Sunna, E. (2000). Obstetric and perinatal outcome of pregnancies with term labour and meconium-stained amniotic fluid. *Archives of gynecology and obstetrics*, *264*(2), 84-87.
4. Ramin, K. D., Leveno, K. J., Kelly, M. A., & Carmody, T. J. (1996). Amniotic fluid meconium: a fetal environmental hazard. *Obstetrics & Gynecology*, *87*(2), 181-184.
5. Fenton, A. N., & Steer, C. M. (1962). Fetal distress. *Am J Obstet Gynccol*, 83, 354-362.
6. Berkus, M. D., Langer, O., Samueloff, A., Xenakis, E. M., Field, N. T., & Ridgway, L. E. (1994).

Meconium-stained amniotic fluid: increased risk for adverse neonatal outcome. *Obstetrics & Gynecology*, 84(1), 115-120. Pyrne, D. L., & Gau, G. (1987). In utero meconium aspiration: an unpreventable cause of neonatal death. *Br J Obstet Gynaecol*, 94, 813-814.

7. Davis, R. O., Philips III, J. B., Harris Jr, B. A., Wilson, E. R., & Huddleston, J. F. (1985). Fatal meconium aspiration syndrome occurring despite airway management considered appropriate. *American journal of obstetrics and gynecology*, *151*(6), 731-736.
8. Xu, H., Hofmeyr, J., Roy, C., & Fraser, W. (2007). Intrapartum amniomtusion for mecon stained amniotic Nuid: a systematic review of randomised controlled trials. *BIOG on International Journal of Obstetrics & Gynaecology*, 14(4), 383.
9. Uden, S., Bilton, D., Nathan, L., Hunt, L. P., Main, C., & Braganza, J. M. (1990). Antioxidant therapy for recurrent pancreatitis: placebo-controlled trial. *Alimentary pharmacology & therapeutics*, *4*(4), 357-371. doi: 10.1111/j.1365-2036. 1990.tb00482. x. PMID: 2103755.
10. Khamissa, F. (2012). Amniotic fluid. *Dr. Faiza Khamissa's Blog.*
11. Malhotra, B. N., & Agarwal, N. (2002). Ammioinfusion current status. *Asian Journal of Obs and Gynae Practice*, 6(1), 22-25.
12. Ho, A. M. H., Karmakar, M. K., Contardi, L. H., Ng, S. S., & Hewson, J. R. (2001). Excessive use of normal saline in managing traumatized patients in shock: a preventable contributor to acidosis. *Journal of Trauma and Acute Care Surgery*, *51*(1), 173-177.
13. Robson, S. C., Crawford, R. A., Spencer, J. A., & Lee, A. (1992). Intrapartum amniotic fluid index and its relationship fetal distress. *American journal of obstetrics and gynecology*, *166*(1), 78-82.
14. Hofmeyr, G. J. (2009). What (not) to do before delivery? Prevention of fetal meconium release and its consequences. *Early human development*, *85*(10), 611-615.
15. Swami, A. C. V., Sundari, N., & Sheela, H. A. (20010. Meconium stained amniotic fluid = fetal and neonatal outcome. *Asian J Obstet and Gynecol Practice*, 6, 39-43.
16. Sasikala, A., Raghavan, S., Mishra, N., Khatoon, S., Bupathy, A., & Rani, R. (1995). Perinatal outcome in relation to mode of delivery in meconium stained amniotic fluid. *The Indian Journal of Pediatrics*, *62*(1), 63-67.
17. Puertas, A., Carrillo, M. P., Cañizares, J. M., Miño, M., & Malde, J. (2001). Meconium concentration and amniotic fluid index influence the outcome of amnioinfusion. *Minerva Ginecologica*, *53*(5), 321-330.
18. Graham, K. M. (1998). The collaborative randomised amnioin fusion for meconium proje, (CRAMP): 1. South Africa and 2. Zimbabwe. *Br JObset Gynecol*, 105, 1238-9.
19. Woods, J. R. Jr., & Dolkart, L. A. (1989). 'Significance of amniotic Nuid meconium. In: Crea. RK, Resnik R, eds. Maternal fetal medicine: principles and practice', Philadelphia. WB Saunders, p.404.
20. Mitchell, J., Schulman, H., & Fleisher, A. (1985). Meconium aspiration and foetal acidosis. *Obstet Gynecol*, 65, 352-355.
21. Meis, P. J., Hall III, M., Marshall, J. R., & Hobel, C. J. (1978). Meconium passage: a new classification for risk assessment during labor. *American Journal of Obstetrics and Gynecology*, *131*(5), 509-513.
22. Carson, B. S., Losey, R. W., Bowes Jr, W. A., & Simmons, M. A. (1976). Combined obstetric and pediatric approach to prevent meconium aspiration syndrome. *American journal of obstetrics and gynecology*, *126*(6), 712-715.
23. Falciglia, H. S. (1988). Failure to prevent meconium aspiration syndrome. *Obstetrics and gynecology*, *71*(3 Pt 1), 349-353.
24. Wenstrom, K. D., & Parsons, M. T. (1989). The prevention of meconium aspiration in labor using amnioinfusion. *Obstetrics and Gynecology*, *73*(4), 647-651.
25. Macri, C. J., Schrimmer, D. B., Leung, A., Greenspoon, J. S., & Paul, R. H. (1992). Prophylactic amnioinfusion improves outcome of pregnancy complicated by thick meconium and oligohydramnios. *American Journal of Obstetrics and Gynecology*, *167*(1), 117-121.
26. Carson, J. L., Duff, A., Poses, R. M., Berlin, J. A., Spence, R. K., Trout, R., ... & Strom, B. L. (1996). Effect of anaemia and cardiovascular disease on surgical mortality and morbidity. *The Lancet*, *348*(9034), 1055-1060. http://dx.doi.org/10.1016/S0140-6736(96)04330-9
27. Uhing, M. R., Bhat, R., Philobos, M., & Raju, T. N. (1993). Value of amnioinfusion in reducing meconium aspiration syndrome. *American journal of perinatology*, *10*(01), 43-45.
28. Maher, J. E., Wenstrom, K. D., Hauth, J. C., & Meis, P. J. (1994). Amniotic fluid embolism after saline amnioinfusion: two cases and review of the literature. *Obstetrics and Gynecology*, *83*(5 Pt 2), 851-854.
29. Dibble, L. A., & Elliott, J. P. (1992). Possible amniotic fluid embolism associated with amnioinfusion. *Journal of Maternal-Fetal Medicine*, *1*(5), 263-266.