



## Full Length Research Article

### PROCTOR OF MECONIUM STAINED AMNIOTIC FLUID COMPLICATIONS ON PERINATAL OUTCOME

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#### ABSTRACT

**Objective:** To investigate the correlation of the presence of meconium in amniotic fluid with perinatal outcome.

**Methods:** Out of 1983 deliveries, 99 women were found to have meconium on spontaneous or artificial rupture membrane. For all the patients the following items have been checked: 5 minutes APGAR score and neonatal complications like the need for admission in NICU, need to CPR procedure and neonatal death and root of the delivery.

**Results:** The result of the present study has shown a significant correlation between APGAR score and meconium density on amniotic fluid. One neonates of thin meconium, and 6 neonates of thick meconium had APGAR scores below 6. Need of CPR significantly increased in MSAF group (16.1%) in comparison to the group with a clear amniotic fluid (109%). However, neonatal death did not differ between the two groups. Cesarean delivery showed significant difference as follows: 25% MSAF in compared to 13.7% in a clear amniotic fluid group. Admission in NICU increased in MSAF group (1051%) while in clear amniotic fluid group it was 0.42%.

**Conclusion:** The significance of meconium in amniotic is a widely debated subject. Traditionally meconium has been considered as a sign of fetal distress which occurs due to hypoxia. However, it is now believed to happen to normally maturing gastro intestinal tract. Although in a global sense it is still considered as a marker for adverse perinatal outcomes. The presence of thick meconium is associated with increased in perinatal morbidity and hence its presence should not be over looked.

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#### INTRODUCTION

Throughout this century, obstetric teaching includes the concept that meconium passage is a potential warning of fetal asphyxia. The incidence of meconium stained amniotic fluid is 1-18%. In the past, meconium stained liquor was considered as a sign of fetal distress. However, it is now acknowledged that the majority of cases meconium passage is a manifestation of a maturing gastrointestinal tract or it is a result of vagal stimulation of umbilical cord compression. Although intestinal meconium appears very early in gestation meconium, stained amniotic fluid rarely occurs before 38 weeks gestational age.

An association among meconium stained liquor, fetal compromise and perinatal morbidity is well known. However, most of the infants with meconium in liquor do not have lower

APGAR, more acidosis or clinical illness than infants born with clear amniotic fluid. Thus the neonatal outcome in meconium stained liquor is generally comparable to deliveries with clear amniotic fluid, when the fetal heart rate is normal. Perinatal morbidity is increased in newborns with abnormal fetal heart rate. Hence the presence of meconium in liquor calls for continuous fetal heart rate monitoring/ fetal blood sampling (Macfarlain *et al.*, 1988; Davis, 1985). Meconium aspiration syndrome (MAS) occurs in approximately 35% of live births with meconium stained liquor. 1 Aspiration of the meconium into fetal or neonatal lungs is associated with clinical disease ranging from mild respiratory distress to severe respiratory compromise and causes significant increase in perinatal morbidity and mortality. 5 Thus this study was done with an objective of investigating the correlation with the presence of meconium in amniotic fluid with perinatal outcome.

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## MATERIAL AND METHODS

A prospective study was undertaken in a tertiary-care teaching hospital for a period of one year. All laboring women with singleton pregnancy at term with cephalic presentation were found to have meconium on either spontaneous or artificial rupture of membranes, were enrolled in the study. The written and informed consent was provided to them before the experiment started. Patient particulars were noted down with regard to obstetric history. The cervical dilatation and the fetal heart rate pattern were also recorded. Meconium was graded as "thin" if there was a very light green staining of amniotic fluid and "thick" if the fluid was viscous, tenacious and contained a large amount of particulate material. The mode of delivery and the neonatal APGAR score at 5 minutes were recorded. Laryngoscopic examination was done with depressed babies. If meconium was present below the vocal cord, then endotracheal suctioning was done. The neonate was followed up during their stay in the hospital. Comparison of proportions was done using the chi square test. Mean and standard deviations were calculated using standard methodologies. P-values of less than 0.05 was considered statistically significant. Institutional Ethical Committee approval was taken.

## RESULTS

During the study period of one year, the total number of delivery was 1983 cases and the number of MSAF was 99 (4.92%) and among these 99 neonates, 65 cases had thick meconium (65.65%) and 34 cases had thin meconium (34.34%) (table1). Mean maternal age in MSAF was 26.3 years while in the clear amniotic fluid group it was 26.3. The mean gestational age in MSAF was 40+- 1.5 weeks and in the clear amniotic fluid group it was 39.5+-1.8.

**Table 1. Incidence of meconium stained amniotic fluid**

Total number of deliveries	1983
Total number of live births	1960
Total number of meconium-stained-amniotic fluid	99

The neonatal APGAR at 5 minutes was less than 6 in 6 neonates with thick meconium and one neonate with thin meconium (p 0.041) (Table2).

**Table 2. Correlation of APGAR score, consistency of meconium stained**

APGAR SCORE	Thin meconium	Thick meconium
70-10	33 (35.9%)	59(64.1%)
<=6	1(14.3%)	6(85.7)

The root of delivery in MSAF group included normal vaginal delivery (NVD) in 61 cases and cesarean in 38 cases, and among C/S group, 34 cases (89.5%) had thick meconium amniotic fluid compared to 4 cases in thin MSAF group (16.5%) but rate of delivery did not have any correlation to APGAR score (Table3).

**Table3. mood of delivery in relation to nature of meconium**

Made of delivery	Thick meconium	Thin meconium
Cesarean	34 (89.5%)	4 (10.5%)
Vaccum	4 (44.4%)	5 (55.6%)
Normal vaginal delivery	25 (48.10)	26(51.90)

**Table 4. Correlation between CPR and nature of meconium**

CPR	THINMECO	THICK
+	32 (38.6%)	51 (61.40%)
+	2 (12.50%)	14 (87.5%)

CPR procedure was needed in about 16 cases of MSAF (16.20%) which was 14 cases in a thick meconium group (87.50%) and just 2 cases in a thin meconium group (p=0. 04) (Table4). Neonatal admission in the NICU due to meconium aspiration syndrome was 2 cases that were developed with respiratory distress, needs to mechanical ventilation and abnormal chest x-ray findings coincided to meconium aspiration syndrome we had just 1 case of neonatal death at the delivery room in meconium stained group due to hypoxia, acidosis and cardiac failure.

## DISCUSSION

The incidence of MSAF in our study was (6.9%) which was compatible to other studies. Meconium aspiration pneumonia is a common neonatal problem associated with MSAF. Aspiration of meconium can lead to increased perinatal morbidity and mortality despite the fact that meconium is sterile. Most study show correlation between meconium, low APGAR, acidosis, however some shows no linkage. In the current study a significant correlation was found between thick meconium and low APGAR scores and a need for the CPR procedure which is consistent with the findings of Yecler *et al.* (1994). Cesarean delivery was significantly increased in thick meconium group (89.5%) which is similar to the results of a study conducted by Ziadeh *et al.* (Cleary, 1998), but neonatal morbidity did not differ between the group with MSAF and clear amniotic fluid which is inconsistent with the study of Alexander *et al* (Berkuset *et al.*, 1996). and Suplya *et al.* (Suprig *et al.*, 2014). Thus thick meconium is more often associated with fetal hypoxia than thin meconium. Previous studies have shown that operation interventions are more common in meconium stained liquor. These high incidences of operative interventions were to expedite the process of delivery. Studies have shown the meconium stained liquor presence cannot be an indication for cesarean delivery, but need strict fetal heart monitoring for better perinatal outcome. Thus, it is clear that the consistency of thick meconium versus thin meconium has a significant effect on the perinatal out come.

## Conclusion

Based on the result of this study it is evident that meconium staining is a commonly observed phenomenon. Since the presence of thick meconium is associated with increased perinatal morbidity and mortality, its presence should not be overlooked. The presence of meconium becomes more significant when it is associated with fetal heart rate abnormalities. The Meconium aspiration syndrome is a significant cause of perinatal morbidity and mortality, which can be reduced by early detection, prompt delivery and neonatal resuscitation.

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