



Meconium Stained Liquor, An Obstetrician's Dilemma- A Clinical Study of Fetomaternal Outcome

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Abstract

Introduction: Meconium stained amniotic fluid (MSAF) is seen in 10-15% of all pregnancies. It is associated with maturation of the fetal Gastrointestinal Tract (GIT) but may also be associated with adverse neonatal outcome.

Objectives: The present study aims at studying the fetomaternal outcome in cases with meconium stained amniotic fluid.

Material and Methods: The present study was conducted in Rejshree Medical Research Institute Bareilly. Total 50 cases with MSAF fulfilling the inclusion criteria were included in the study. Various parameters were studied to know the fetomaternal outcome.

Result: In the present study the incidence of MSAF was 10.8%, thin MSAF was seen in 74% cases and thick MSAF in remaining 26%. MSAF was seen more commonly in primigravidas and with increase in gestational age. The incidence of abnormal FHR pattern was common in the thick meconium group (69.2%) as compared to thin meconium group (18.9%). The commonest mode of delivery in cases with thin MSAF was normal vaginal delivery (51.5%) while in cases with thick MSAF was by lower segment caesarean section (LSCS) (61.5%). The incidence of NICU admission in thin MSAF group was 18.9% while in thick MSAF 46.1% required NICU admission.

Conclusion: Since the incidence of perinatal morbidity and mortality is more in cases with meconium stained amniotic fluid, so the cases with meconium staining of amniotic fluid should be monitored more vigorously with timely interventions and proper neonatal resuscitation.

Keywords: MSAF-Meconium stained amniotic fluid, LSCS., fetal Gastrointestinal Tract (GIT).

Introduction

Almost 10-15% of all pregnancies have Meconium staining of amniotic fluid (MSAF) and is relatively common in term births especially in post dated deliveries^[1]. The etiology and

pathogenesis of MSAF is poorly understood.^[2] passage of meconium in utero may simply denote the normal matured gastrointestinal as in post dated pregnancies. Meconium passage is rare before 34 weeks of gestation and incidence

increases steadily beyond 37 weeks of gestation. Factors such as placental insufficiency, maternal hypertension, pre-eclampsia, oligohydramnios or maternal drug abuse (tobacco, cocaine) result in In utero passage of meconium.^[3] so the existence of MSAF in other circumstances is a marker of fetal distress and may be associated with adverse fetal and neonatal outcome^[4,5]. The strong relationship of stillborn infants, abnormal FHR tracings, neonatal encephalopathy, respiratory distress (Meconium aspiration syndrome, MAS) and abnormal neurological outcome with presence of MSAF has been testified in the literature.^[6]

Various indicators of fetal distress are associated with the existence of MSAF as meconium stained new-borns have lower scalp pH and lower umbilical cord artery pH in comparison with infants born with clear amniotic fluid.^[7,8] Conflicting consequences have been described in labours, complicated by meconium staining of the amniotic fluid, fluctuating with degree of meconium staining.^[9,10] However, in vast majority of cases, no major problem occurs in infants born through MSAF.

Passage of meconium normally occurs within 24-48 hours after birth. In utero passage of meconium by the fetus represents the GI tract maturation but pathologically it has been associated to fetal hypoxia in which there occurs relaxation of the anal sphincter and increased peristalsis due to vagal stimulation. The incidence of MSAF is 1-18%.^[11] Presence of meconium below the vocal cords is termed as meconium aspiration syndrome (MAS) and was noted in 5% of infants and more than 4% of MAS infants died accounting for 2% of all perinatal deaths.^[12]

Material & Methods

The present study was conducted in Rajshree Medical Research Institute over a period of ten months. Total 50 cases were included in the study who were fulfilling the inclusion criteria were willing to participate in the study. Approval from institutional ethical committee was taken

Study duration: - 15sept 2015 to 14 June 2016

Study design: cross sectional observational study

Inclusion Criteria

1. Term pregnancies (>37 completed weeks)
2. Cephalic presentation
3. Singleton pregnancies

Exclusion Criteria

1. Preterm labour
2. Pregnancy with congenital anomalies of the fetus
3. Multiple gestation
4. Intrauterine fetal death
5. Breech presentation

After taking informed consent from patients fulfilling inclusion criteria detailed history was taken, followed by obstetrical examination, patients were managed as per standard institutional protocol. obstetrical & neonatal outcomes were entered as per predesigned Performa. All collected data was tabulated and appropriate statistical tests were applied. P value <0.05 was taken as statistically significant.

Results

During the study period 1256 deliveries took place in our institute out of which 136 i.e 10.8% had MSAF out of which 50 were included. MSAF was seen more commonly in primigravidas (56 %), The incidence of MSAF was seen to increase with increase in gestational age i.e 14% in 37-38 weeks age group, 38% in 39-40 weeks and it increases upto 48% in 41-42 weeks pregnancy. (table 1)

Amongst 50 cases with MSAF 74% cases had thin meconium and 26% had thick meconium. As depicted in figure I fetal heart rate abnormalities were observed more commonly in the group with thick meconium group i.e 69.2% while in the thin meconium group abnormalities present in 18.9% cases. This difference was highly significant (p value <0.0001) In cases with thin meconium stained liquor the commonest mode of delivery was normal vaginal delivery (51.5%) followed by LSCS (27.1%) followed by assisted vaginal delivery in 21.6% cases. While in cases with thick MSAF the commonest mode of delivery was by

LSCS (61.5%) followed by assisted vaginal delivery. in 23.1% followed by normal vaginal delivery (15.4%). (figure) but the observed difference cannot be considered significant ($p > 0.05$)

Table 2 illustrates that in the group with thin MSAF the Apgar score of less than 5 at 1 minute was seen in 35.1% cases while in 64.9% cases the Apgar score was more than 5. While the Apgar score of less than 5 at 5 minutes was seen in only in 18.9% cases and more than 5 in 81.1% case. On the contrary in the group with thick MSAF Apgar score at one minute was less than 5 in 46.2% cases and more than 5 in 53.8% cases. On assessing the Apgar score at 5 minute 38.4% cases had Apgar score of less than 5 while 61.6% cases had Apgar score more than 5. cases with thin MSAF 18.9% required NICU admission which amongst cases with thick MSAF 46.1% required NICU admission. On comparing the perinatal outcome in both the groups in the cases with thin MSAF the morbidity was 18.9% while in the thick MSAF group morbidity was as high as 61.5%. The morbidities were in the form of respiratory distress 62%, seizures 25%, sepsis 1%. Only one mortality was observed in the thick MSAF group the cause of which was meconium pneumonitis developing pulmonary hypertension.

Out of cases undergoing lower segment caesarean section 3 cases had wound infection out of which in one case had to undergo resuturing . All the cases were from the thick meconium group. This can be explained due to increased operative interference in the thick meconium group.

Table 1: distribution as per gestational age

Gest age(in wks)	No. of cases	Percentage
37-38 wks	7	14%
39-40 wks	19	38%
41-42 wks	24	48%

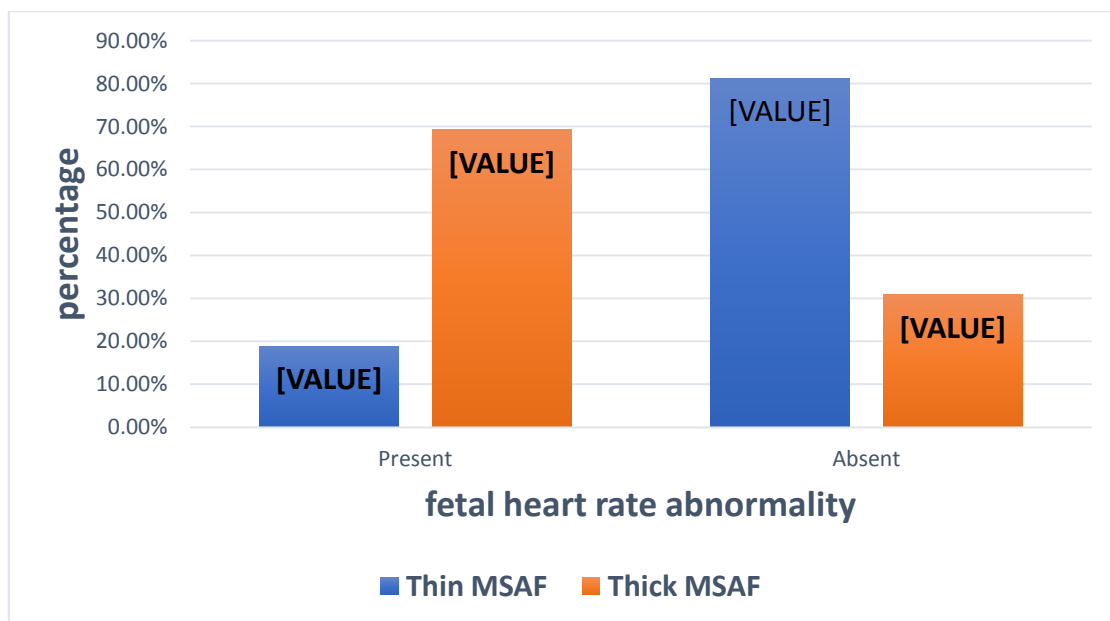
Table 2: Apgar scores in 1 and 5 minutes

	Thin MSAF		Thick MSAF	
	No.	Percentage	No.	Percentage
At 1 minute				
<5	13	35.1%	6	46.2%
>5	24	64.9%	7	53.8%
At 5 minute				
<5	7	18.9%	5	38.4%
>5	30	81.1%	8	61.6%

Table 3: incidence of MSAF in earlier studies

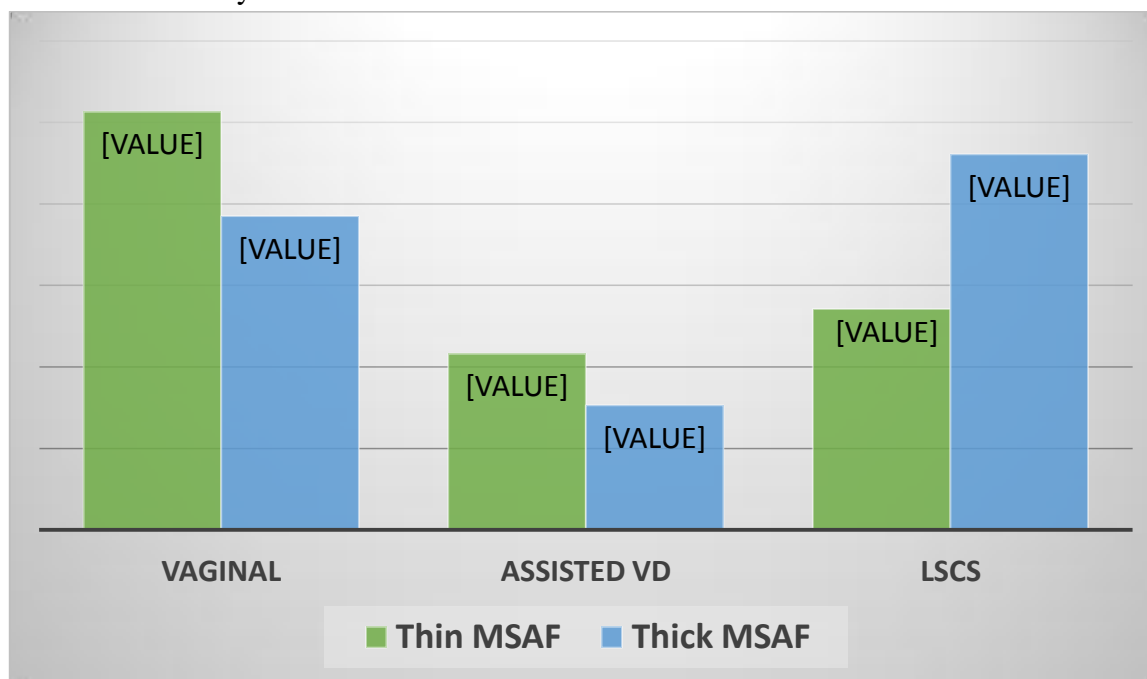
Nirmala et al ¹²	7.89%
Haribhaskar ¹³	11.2%
Sauda et al ¹⁴	11.9%
Present study	10.8%

Figure I: abnormal fetal heart



P value <0.001

Figure II: Mode of delivery in cases of MSAF



P value 0.445

Discussion

In the present study the incidence of MSAF was 10.8% which is slightly higher than the study done by Nirmala et al^[13] and is similar to other studies.(table 3) The incidence of MSAF was more commonly seen in primigravidas than multigravidas which is similar to study done by Becker et al which shows that meconium is common in nulliparous females.^[16]In our study the incidence of MSAF increased with increase in gestational age which is similar to study done by Fisher et al in 2012^[17].

On dividing the cases into thick and thin meconium group, thin meconium was seen in 74% cases and thick meconium in remaining 26% cases out of total 50 cases with MSAF. The incidence of abnormal FHR pattern was observed more commonly in the thick meconium group (69.2%) as compared to thin meconium group (7%). These findings are similar to that of Gupta et al and Odongo et al^[18,19]

In cases with thin meconium stained liquor the commonest mode of delivery was normal vaginal delivery (51.5%) followed by LSCS (27.1%) followed by assisted vaginal delivery in 21.6% cases. While in cases with thick MSAF the commonest mode of delivery was by LSCS

(61.5%) followed by assisted vaginal delivery in 23.1% followed by normal vaginal delivery (15.4%). In a study done by Becker et al^[16] and Naqui et al^[20] also shows increased incidence of caesarean section in cases with meconium stained amniotic fluid.

In the group with thin MSAF the Apgar score of less than 5 at 1 minute was seen in 35.1% cases while in 64.9% cases the Apgar score was more than 5. On assessing the Apgar score at 5 minute 38.4% cases had Apgar score of less than 5 while 61.6% cases had Apgar score more than 5.Wong et al^[21] and Naqui et al^[20] also found similar results while Becker et al^[16] found no statistically significant difference between two groups. On comparing the perinatal outcome in both the groups in the cases with thin MSAF the morbidity was 18.9% while in the thick MSAF group morbidity was as high as 61.5%.The morbidities were in the form of respiratory distress 62%, seizures 25%, sepsis 1%.Only one mortality was observed in the thick MSAF group the cause of which was meconium pneumonitis developing pulmonary hypertension. Increased perinatal morbidity and mortality was also observed in studies done by Naqui et al^[20] and Patil et al.^[22] The incidence of postpartum complications are

also increased in the group with thick MSAF as a result of increased operative interventions.

Conclusion

To conclude the incidence of FHR abnormalities, operative interventions, NICU admissions, perinatal morbidity and mortality and maternal morbidities are higher in the group with thick MSAF as compared with thin MSAF. So, the cases with meconium staining of amniotic fluid should be monitored more vigorously with timely interventions and proper neonatal resuscitation.

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