Orignal Article

Indian Journal of Maternal-Fetal & Neonatal Medicine
Volume 6 Number 2, July - December 2019
DOI: http://dx.doi.org/10.21088/ijmfnm.2347.999X.6219.2

Feto-Maternal Outcome with Meconium Stained Liquor: A Clinical Study from Medical College of Ambala

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Received on 20.08.2019,
Accepted on 12.10.2019

Abstract

Introduction: Incidence of meconium stained amniotic fluid (MASF) is about 10–15% of all pregnancies which isrelated with maturation of the fetal Gastrointestinal Tract (GIT) but may also be associated with unfavorable neonatal outcome. *Objectives:* Aim of our study was to study the fetomaternal outcome in cases with meconium stained amniotic fluid. *Materials and Methods:* The present study was conducted in Maharishi Markandeshwer Medical College & Research Center, Ambala. Total 100 cases with MSAF fulfilling the inclusion criteria were included in the study. All the parameters were analyzed to identify the various fetomaternal outcome. *Results:* we found that the incidence of MSAF was 10.8%, thin MSAF was seen in 74% cases andthick MSAF in remaining 26%. MSAF was present frequently in primigravidas and with increase ingestational 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 most common 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:* As the incidence of perinatal morbidity and mortality is more in cases with meconium stained amniotic fluid, henceforth the patients with meconium staining of amniotic fluid needs to be monitored vigorously with timely interventions and proper neonatal resuscitation.

Keywords: MSAF-Meconium Stained Amniotic Fluid; LSCS; Fetal Gastrointestinal Tract (GIT).

How to cite this article:

Simmanjit Kaur, Sachin Singh Yadav, Harsharan. Feto-Maternal Outcome with Meconium Stained Liquor: A Clinical Study from Medical College of Ambala. Indian J Matern Fetal Neonatal Med. 2019;5(2):95-100.

Introduction

Assessment of Fetal well being has traditionally been evaluated on the basis of FHR patterns, fetal movements and colour of the amniotic fluid.[1] The presence of meconium-stained amniotic fluid(MSAF) during labor has been long considered the predictor of adverse fetal outcomes such as meconiumaspiration syndrome and perinatal asphyxia, which leads to perinatal and neonatal

morbidity and mortality.[2] The incidence of Meconium staining of amniotic fluid (MSAF) is present in Almost 10-15% of all pregnancies andis comparatively common in term births particularly in postdated deliveries.[3] The etio-pathogenesis of MSAF is poorly understood.[4] Passage of meconium normally occurs within 24–48 hours after birth. In utero passage of meconiumby the fetus represents the GI tract maturation but pathologically it has been associated to fetalhypoxia in which there occurs relaxation of the anal sphincter and increased peristalsis due tovagal stimulation. Hence passage of meconium in utero may simply symbolize the normally developed fetal gastro intestinal tract (GIT) as in postdated pregnancies. Meconium passage is infrequent before 34 weeks of gestation and incidence raises steadily beyond 37 weeks of gestation. According to Royal College of Obstetricians and Gynecologists (RCOG) intrapartum care guideline, meconium stained amniotic fluid is classified as significant MSL and non-significant MSL. Non-significant MSL is defined as a thin yellow orgreenish tinged fluid; containing non-particulate meconium whereas significant MSL is explained as dark green

or black amniotic fluid that is thick and tenacious and consists lumps of meconium.[5] Factors such as placental insufficiency, maternal hypertension, pre-eclampsia, oligohydramnios ormaternal drug abuse (tobacco, cocaine) might leads to in- utero passage of meconium.[6] So the existence of MSAF in other circumstances is a indicator of fetal distress and may be associated with unfavorable fetaland neonatal outcome.[7,8]

The strong association 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.[9] 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.[10,11] There have been Conflicting consequences reported inlabours, complicated by meconium staining of the amniotic fluid, fluctuating with degree of meconium staining.[12,13] However, in vast majority of cases, no major problem occurs in infants born through MSAF.[14] Presence of meconium below the vocal cords is termed as meconium aspiration syndrome (MAS).[15] Meconium aspiration syndrome occurs all over the world about 5–10.5% of neonates with MSAF; which accounts around 12% of neonatal mortality (as much as 40% case fatality rate for the neonate and around 2% of perinatal mortality). Furthermore, the rates of severe mental retardation and cerebral palsy are significantly greater among infants born with MSAF.[16,17]

Materials & Methods

The present study was conducted among patients delivering in department of Obstetrics & Gynaecology of Maharishi Markandeshwer Medical College & Research Center, Ambala over a period of 10 months. Total 100 cases were included in the studywho were fulfilling the inclusion criteria and gave consent to participate in the study. Approval from institutional ethical committee was taken

Study duration: 1 Jan 2017 to 31 Oct 2017

Study design: Cross-sectional observational study

Inclusion criteria

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

Exclusion criteria

1. Preterm labour
2. Congenitally anomalies
3. Multiple gestations
4. Intrauterine fetal death
5. Breech presentation

After taking informed consent from patient sfulfilling inclusion criteria detailed history was taken, followed by thorough 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.

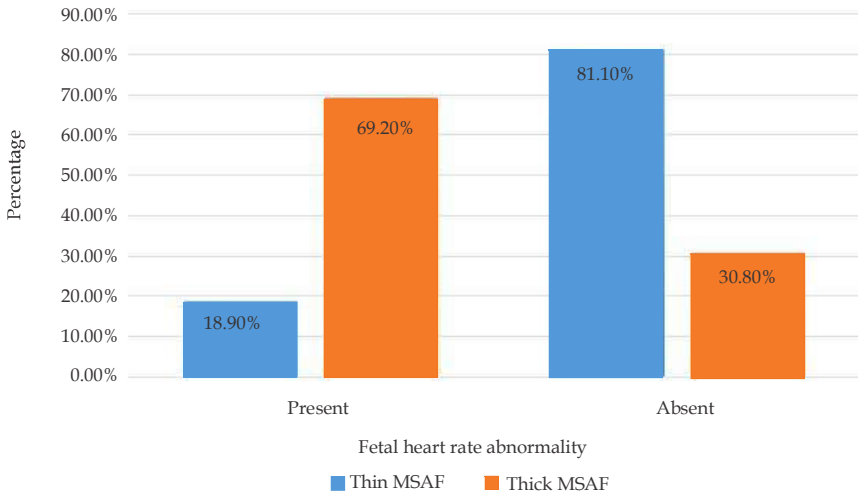
Results

During the study period 2512 deliveries took place in our institute out of which 272 i.e., 10.8% had MSAF out of which 100 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 100 cases with MSAF 74% cases had thin meconium and 26% had thick meconium. As depicted in Figure 1 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 2) but the observed difference cannot be considered significant ($p > 0.05$)

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%



p-value <0.001

Fig. 1: Abnormal fetal heart

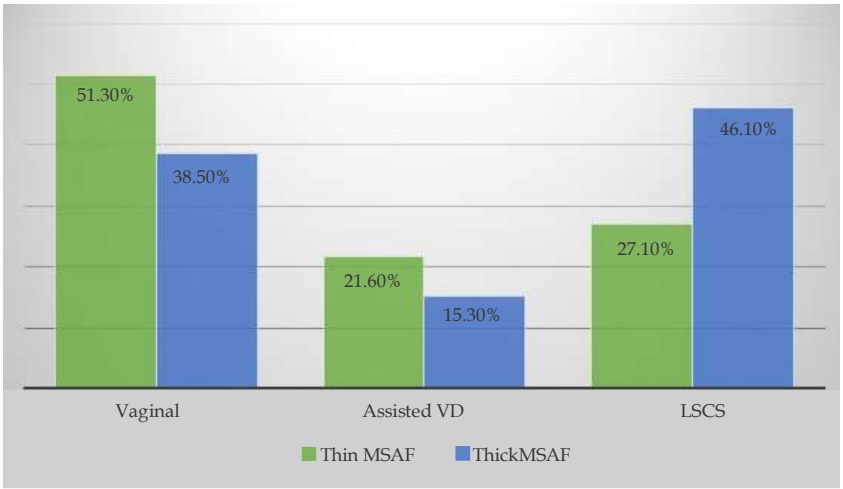


Fig. 2: Mode of delivery in cases of MSAF

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 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%

Discussion

In the present study the incidence of MSAF was 10.8% which is slightly higher than the study done by Nirmala *et al*.[18] 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 iscommon in nulliparous females.[19] 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.[20] 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 100 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*.[21,22]

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%

p-value 0.445

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*.[19] and Naqui *et al*.[23] also shows increased incidence of caesarean section in cases with meconium stained amniotic fluid.

In the group with thin MSAF the Apgar score ofless 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*.[24] and

Naqui *et al*.[23] also found similar results while Becker *et al*.[19] 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 be Naqui *et al*.[23] and Patil *et al*.[25] The incidence of postpartum complications arealso increased in the group with thick MSAF as aresult of increased operative interventions.

Conclusion

We conclude that 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 to achieve the best outcome; the patients with meconium staining of amniotic fluid require to be monitored vigorously with timely interventions and proper neonatal resuscitation.

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