

Meconium stained liquor and its incidence at different periods of gestation and the fetal outcome

Mayuri Verma¹, Archana Vikram^{2*}

Department of Obstetrics and Gynaecology, Yenepoya Medical College and Hospital, Deralakatte, Mangalore, Karnataka, INDIA.
Email: mayuriverma21@gmail.com

Abstract

Background: Incidence of Meconium-stained amniotic fluid are different across different gestational age, and overall risk of adverse outcomes in meconium stained amniotic fluid is not grave. **Objectives:** To estimate the rates of meconium-stained amniotic fluid (AF) and adverse outcome in relation to gestational age and to determine if Meconium stained amniotic fluid could be correlated with Apgar scores to predict the neonatal outcome. **Materials and Methods:** This is a prospective observational study carried out in department of Obstetrics and Gynaecology at Yenepoya Medical College and Hospital, Mangalore, over a period of 1 year. Total 80 cases were included in the study with thin or thick meconium stained liquor during labour. The data was collected on predetermined proforma and analysed using descriptive methods. **Results:** Among 80 cases, 28 had thick Meconium stained liquor (MSL) and 52 had thin MSL. Primigravida constituted 70%, 44% had thin MSL and 26% had thick MSL. Majority of the patients were 20-30 yrs of age 57.25%. Mean period of gestation was 39.4 weeks with 63.75% postdated patients. 71.25% patients had spontaneous labour. 63.75% patients delivered by LSCS, 8.75% patients had instrumental delivery and 27.5% delivered normally. APGAR score was < 7 for 45% of babies at 1st minute and 13.75% had APGAR score < 7 at 5th minute. MAS was seen in 28.6% of thick and 3.8% patients of thin MSL. **Conclusion:** Meconium stained amniotic fluid complicates both maternal and fetal health status. Period of gestation is directly proportion to Meconium stained amniotic fluid irrespective of labour. It increases the incidence of operative vaginal deliveries as well as Caesarean sections. It causes neonatal complications like low Apgar scores, admission to NICU, RDS and Meconium aspiration syndrome.

Key Words: Meconium.

*Address for Correspondence:

Dr. Archana Vikram Department of Obstetrics and Gynaecology, Yenepoya Medical College and Hospital, Deralakatte, Mangalore, Karnataka, INDIA. - 575018

Email: mayuriverma21@gmail.com

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INTRODUCTION

Meconium stained amniotic fluid is a routinely observed emergency in obstetric practice associated with poor perinatal outcomes, including low Apgar scores, meconium aspiration syndrome, increased rates of

chorioamnionitis, increased incidence of neonatal intensive care admissions, and higher rates of perinatal death. Meconium staining of the amniotic fluid occurs in approximately 12% of pregnancies^{1, 4}. Studies have demonstrated that the incidence of Meconiumstained amniotic fluid rises with increasing gestational age^{1,4}. This may be simply an effect of fetal gut maturity or it may be a reaction to hypoxic stress. Fetal hypoxia precipitates vasoconstriction in the fetal gutleading to hyperperistalsis, sphincter relaxation and passage of Meconium. This occurs more often as pregnancy advances and is a stimulus for fetal passage of meconium². Hence, labourcomplicated by Meconiumstained amniotic fluid are typically considered high risk, with a lower threshold for caesarean delivery or other interventions.

MATERIALS AND METHODS

This is a prospective observational study carried out in department of Obstetrics and Gynaecology at Yenepoya Medical College and Hospital, Mangalore, over a period of 1 year from Jan 2017 to Dec 2017. Study was conducted in the Labour Ward of Yenepoya Medical College and Hospital.

Inclusion Criteria

- Patients with meconium stained amniotic fluid.
- Singleton pregnancy
- Cephalic presentation

Exclusion Criteria

- Clear liquor
- Multiple pregnancy
- Malpresentation
- Maternal co-morbidity like: GDM, Pre-eclampsia
- Anomalous uterus

Consent for the study was obtained from these patients and the data was recorded. These patients were closely monitored until delivery with continuous CTG. Fetal distress was documented based on CTG changes. Patients were augmented with oxytocin when required. Delivery was expedited in presence of abnormal FHR and decision was made for normal delivery, instrumental delivery or LSCS based on cervical dilatation. Paediatricians attending the delivery examined the neonates immediately after delivery. Fetal outcomes like low birth weight, low Apgar scores, birth asphyxia or Meconium aspiration syndrome were documented. The neonates who required observation were admitted to NICU. Total 80 cases with meconium stained liquor were included in the study and divided into 2 groups based on thin or thick meconium staining.

RESULTS

Among 80 patients with meconium stained amniotic fluid, 52 patients had thin meconium liquor and 28 had thick meconium liquor. Primigravida comprised 70% of all the patients having meconium stained liquor, being majority in both thin and thick meconium group.

Table 1:

	Thin meconium n(%)	Thick meconium n(%)
Primigravida	35 (67.3)	21 (75)
Multigravida	14(26.9)	7 (25)
Grand multigravida	3(5.8)	0
Total	52	28

Table 2: Most of the patients with meconium stained liquor were at 20-30 yrs of age.

Maternal age (yrs)	Thin meconium n(%)	Thick meconium n(%)
<20	16 (30.8)	5 (17.8)
20-30	27 (51.9)	19 (67.8)
31-40	4 (7.7)	3 (5.8)
>40	5 (9.6)	1 (3.6)

Meconium stained liquor was mainly seen in higher gestational age, especially post dated pregnancies. Among 80 patients with meconium stained amniotic fluid, 51(63.75%) patients were post dated. 64.3% of thick and 63.4% of thin meconium stained liquor cases were post dated pregnancies.

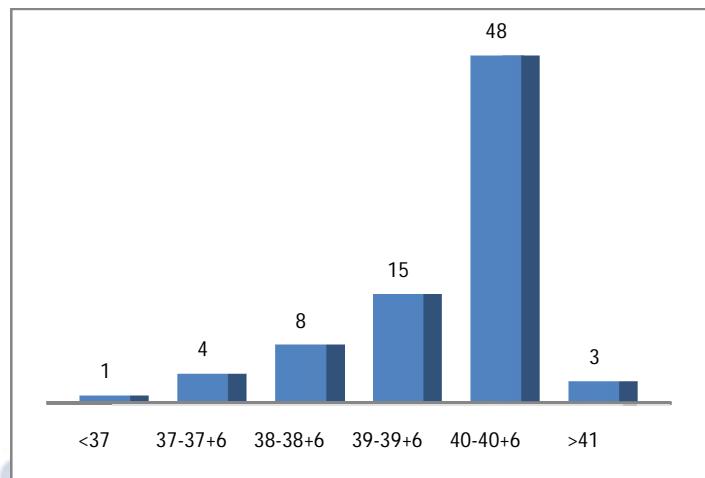


Figure 1: Patients with MSL at different period of gestation

Table 3:

Period of gestation (wks)	Thin meconium n(%)	Thick meconium n(%)
<37	0	1 (3.6)
37-37+6	3 (5.7)	1 (3.6)
38-38+6	7 (13.4)	2 (7.1)
39-39+6	9 (17.3)	6 (21.4)
40-40+6	31 (59.6)	17 (60.7)
>41	2 (3.8)	1 (3.6)

Fetal distress was observed in 9(17.3%) patients with thin meconium stained liquor and early action had been taken. Among the 28 patients with thick meconium, fetal distress was observed among 17 (60.7%) patients. 10 patients had no sign of fetal distress but were in early labour therefore underwent emergency LSCS whereas 1 patient was in active phase of labour and had an instrumental delivery. Incidence of LSCS was markedly higher in thick meconium group and incidence of vaginal delivery was markedly lower. Out of 28 patients with thick meconium only 1 had an instrumental vaginal delivery whereas, among the 52 thin meconium patients, 6 had instrumental vaginal delivery and 22 had normal vaginal delivery.

Table 4:

Mode of delivery	Thin meconium n(%)	Thick meconium n(%)
FTND	22 (42.3)	0
Instrumental delivery	6 (11.5)	1 (3.6)
LSCS	24 (46.2)	27 (96.4)

Low birth weight neonates were observed more frequently in patients with meconium stained amniotic fluid, especially with thick meconium stained.

Table 5:

Birth weight (kg)	Thin meconium n (%)	Thick meconium n (%)
<2.5	24 (46.1)	16 (57.2)
2.5-3.5	21 (40.4)	9 (32.1)
>3.5	7 (13.5)	3 (10.7)

Apgar score <7 at 1st and 5th minute of birth, NICU admission of the neonate and Meconium aspiration syndrome (MAS) were more frequently observed in patients with meconium stained liquor.

Table 6:

	Thin meconium n(%)	Thick meconium n(%)
Apgar <7 at 1 st minute	19 (36.5)	17 (60.7)
Apgar <7 at 5 th minute	7 (13.5)	4 (14.3)
NICU admission	19 (36.5)	17 (60.7)
MAS	2 (3.8)	8 (28.6)

DISCUSSION

In our study the average age group was 21-30years. Rajlaxmi³ *et al* and Rokade⁵ *et al* had similar results. Nulliparity itself may lead to an increased risk of obstetric complications. The duration of labor of a primigravida is significantly longer than that of a multigravida. Several investigators have demonstrated that prolonged duration of the second stage of labor is associated with a higher risk of the occurrence of MSL⁵. These observations suggest that the frequency of MSL is higher among primigravidas than among multigravidas. The results of our study support the view as 70 % of the patients with MSL were Primigravida which was similar to a similar study conducted by Rokade *et al*⁵ which had 62% of MSL in Primigravida. Naveen S⁶ *et al* conducted a study on 1500 deliveries to identify predictors of MSAF in India and they observed that a post-dated pregnancy was one of the risk factors for MSAF lending support to the hypothesis that meconium passage is a physiologic event that is in large part due to developmental maturation of the fetal autonomic nervous system¹. In this study 63.75% patients had post dated pregnancy which was similar to studies conducted by Rokade⁵ *et al* and Gupta¹⁰ *et al*. The consistency of meconium has a direct correlation with foetal outcome. The risk of perinatal death is increased five to seven times when a thick meconium is present at the onset of labour. In our study 28 patients(35%) had thick meconium stained liquor and 52 (65%) had thin meconium. This was similar to Shaikh *et al*⁴ with 78% thin and 22% thick meconium stained liquor. In the present study 51 patients (63.75%) delivered by LSCS, 7 patients(8.75%) had instrumental delivery and 22 patients (27.5%) had FTND which was similar to Desai *et al*⁹. They had 56% LSCS, 12.66% instrumental deliveries and 31.33% FTND. In our study rate of LSCS was seen markedly higher and FTND was seen markedly lower in Thick meconium stained liquor

group. This was similar to results of Supriya⁷ *et al* and Shikha¹⁰ *et al*. Fetal distress presenting as abnormal FHR was seen in 17.3% patients with thin MSL and 60.7% in thick MSL, this result was comparable to that of Supriya *et al*⁷ which had 13.3% abnormal FHR in thin meconium group and 48% in thick meconium group. In our study APGAR less than 7 was seen in 36 babies (45%) at 1st minute and 11 babies (13.75%) at 5th minute. At 1st minute, 36.5% patients of thin meconium and 60.7% of thick meconium had low Apgar scores which was similar to Shikha *et al*¹⁰ having 38.88% low Apgar scores at 1st minute in thin meconium patients and 75% in thick meconium patients. At 5th minute 13.5% of thin meconium and 14.3% of thick meconium group had low Apgar score. This was also similar to the study conducted by Shikha *et al*¹⁰ having 13.9% babies with Apgar <7 at 5th minute in patients with thick meconium liquor. Gupta *et al*⁸ concluded from their study that growth retardation is associated with meconium stained liquor and found 22.2% low birth weight neonates with MSL. In our study 50% of the neonates with MSL had low birth weight. In the present study 45% of the neonates with MSL had NICU admission. 60.7% of the thick meconium group and 36.5% of the thin meconium group neonates were admitted to NICU. Shikha *et al*¹⁰ in her study had only 2.7% NICU admission in thin meconium group and 16.6% in thick meconium group. Gupta *et al*¹⁰ concluded that Meconium aspiration syndrome is highly associated with thick meconium liquor rather than thin meconium. In our study 28.6% of the neonates with thick meconium had MAS whereas only 3.8% of thin meconium had MAS. Shikha *et al*¹⁰ also concluded the same from her study with 16.6% MAS in thick meconium group and 0 in thin meconium group.

CONCLUSION

Meconium stained amniotic fluid complicates both maternal and fetal health status. Period of gestation is directly proportion to Meconium stained amniotic fluid irrespective of labour. Other associated factors for MSL are nulliparity and low birth weight. MSL increases the incidence of operative vaginal deliveries as well as Caesarean sections. It causes neonatal complications like low Apgar scores, admission to NICU, RDS and Meconium aspiration syndrome.

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