

# Pregnancies with Meconium Stained Liquor

Lubna Ali, Tayyaba Anbreen, Rozina Yasir

## ABSTRACT

*Objective* To assess the frequency of meconium stained liquor and related factors.

*Study design* Descriptive case series.

*Place & Duration of study* This study was conducted in the Department of Obstetrics & Gynaecology Unit IV, Lyari General Hospital Karachi, from April 2010 to March 2011.

*Methodology* All women with gestational age of at least 37 weeks, with cephalic presentation and presence of meconium on vaginal examination were included. Patients with multiple gestation, mal presentation, previous scar, fever and fetal malformation were excluded from the study. Personal data, history, examination, investigations and labor findings were recorded.

*Results* During the study period the total numbers of deliveries conducted were 908. Out of these 7.7% women had meconium stained amniotic fluid. Grade I meconium was present in 15 (21%) cases, grade II in 19 (27%) and grade III in 36 (51%) cases. Obese multigravidas accounted for majority of cases as compared to primigravidas. Gestational age and postdate pregnancies had no significant impact on meconium stained amniotic fluid (MSAF). Most of the women (64%) had spontaneous vaginal delivery.

*Conclusions* Meconium stained amniotic fluid was found in 7.7% cases and more than 50% were of grade III type. Most of the women were multigravida and 67% were moderately anemic.

*Key words* Meconium stained amniotic fluid, Meconium aspiration syndrome, Fetal distress.

## INTRODUCTION:

Meconium is the dark green liquid normally passed by the newborn baby. It contains mucus, bile and epithelial cells. Meconium is derived from the Greek word "mekonion" meaning poppy juice or opium. Aristotle is credited for noting the relationship between the presence of meconium in amniotic fluid and a sleepy fetal state in utero.<sup>1</sup> Meconium staining of amniotic fluid as a result of the passage of fetal colonic contents occurs in 8% - 16% of all deliveries. It can either occur as a physiologic event due to increasing gestational age or it may be pathological, indicating fetal distress. Pathological factors associated with MSAF include maternal high blood

pressure, toxemia of pregnancy and maternal cardio respiratory disease.<sup>2</sup>

Most infants who are delivered with meconium stained amniotic fluid are born to mothers > 37 weeks pregnancy. Meconium rarely appears in amniotic fluid before 32 weeks of gestation. Hypoxic stress may stimulate fetal gasping movements that result in meconium aspiration. Meconium aspiration syndrome (MAS), associated with aspiration or perhaps diffusion of meconium into the fetal airways, occurs in 5% of these infants and more than 4% of MAS infants die accounting for 2% of all perinatal deaths.

Meconium may cause detrimental effects on fetal tissue and organs. Meconium stimulates umbilical vessel constriction, vessel necrosis and production of thrombi, potentially associated with ischemic cerebral palsy. Meconium alters the level

## Correspondence:

Dr. Lubna Ali  
Department of Gynecology & Obstetrics  
DUHS, Karachi  
E mail: lubna.ali09@hotmail.com

of zinc in amniotic fluid, which may reduce the antibacterial properties and possibly facilitates intra-amniotic infection.<sup>4</sup> MSAF is consistently identified as a predictor of maternal and perinatal complications. This study was conducted to find out frequency of deliveries with meconium stained liquor and characteristics of these pregnancies.

#### METHODOLOGY:

This descriptive study was conducted in the Department of Obstetrics & Gynaecology unit IV Lyari General Hospital Karachi, from April 2010 to March 2011. Inclusion criteria was gestation of 37 weeks or more, singleton pregnancy, cephalic presentation and meconium stained liquor at any stage of labor. Women who had gestational diabetes, PIH, malpresentations, previous cesarean section were excluded. Presence of fetal anomaly and oligohydramnios (AFI<7cm) were other exclusion factors.

Demographic data including history, physical examination, investigations advised and events during labor were recorded. Grading of meconium stained liquor was done. It was clinically defined as grade-I when the color was light green liquor, grade-II when it was brown, thin with uniform staining of the liquor, grade-III when there was brown thick uniform staining of the liquor noted. Newborns delivered with meconium stained liquor had oropharyngeal suction immediately by the trained staff. Inactive / lethargic newborns were admitted in NICU for observation and management of any coexistent pathology. Post delivery neonatal management of infants born with moderate or thick meconium stained liquor was based on the newborn's condition immediately after birth. Data was analyzed with descriptive statistics for numerical and categorical variables.

#### RESULTS:

A total of 908 deliveries were conducted during the study period. Out of these 70 (7.7%) women had meconium stained amniotic fluid. Grade I meconium was present in 15 (21%) cases, grade II in 19 (27%) and grade III in 36 (51%) cases. The demographic characteristic of patients with MSAF is shown in table I. Nearly 50% of women were between 26-30 year of age. Multigravida had MSAF more than primigravidas. Twenty eight women had body mass index(BMI) less than 25, twenty six had BMI between 26-30 and sixteen were obese.

Table II shows pregnancy and labor characteristic in MSAF. Most of the women (n=55) had gestational age from 37-40 weeks, while 15 were post dates. Of the total, 64% of women had spontaneous vaginal

delivery while 27% had operative delivery. The mean neonatal birth weight was 2.94 kg. Moderate anemia (hemoglobin 6-9gms) was present in 67% (n=47) women. Most of the women had short duration of labor of < 6 hours (n=57, 81.4%). Cord around neck once or twice was found in 27 neonates.

**Table I: Demographic Characteristics of Patients With MSAF (n=70)**

Age (Year)	Number	Percentage
20-25	22	32
26-30	35	50
31-35	13	18
Mean age=27.90 ± 3.97 year		
<b>Parity:</b>		
Primigravida	19	27
2-4	39	56
>5	12	17
Mean=3.00 ± 2.00		
<b>BMI ( kg/m<sup>2</sup>)</b>		
<25	22	32
26-30	26	37.14
>30	16	22.85
Mean=27.30 ± 4.22 kg/m <sup>2</sup>		

**Table II: Pregnancy/Labor characteristics in MSAF (n=70)**

Gestational Age (Weeks)	Number	Percentage
>37-40	55	78.5
41-42	15	21.5
Mean=39.09 ± 1.42 weeks		
<b>Mode of Delivery</b>		
Spontaneous (SVD)	45	64.2
Assisted delivery	06	08.5
LSCS	19	27.1
<b>Birth Weight (Kg)</b>		
<2.5	18	25.71
2.6-3.0	32	45.71
>3.1	20	28.57
Mean=2.941 ± 0.494 Kg		

#### DISCUSSION:

Meconium continues to be considered a soft marker of fetal distress based on its historical role even in era of modern perinatal management.

The presence of MSAF is generally associated with perceived danger of meconium aspiration syndrome, a much feared pulmonary complication.<sup>5</sup> The current study identified meconium stained amniotic fluid in nearly 8% of deliveries. The generally reported incidence in literature is approximately 8-16% which is quite similar to our figure.<sup>2</sup> There is a evidence that the incidence of MSAF has remained fairly stable at 9-12% while the incidence of MAS has been declining over recent years.<sup>6</sup> Another study indicated that the prevalence of MSAF is significantly higher in black African women as compared to women to other ethnicity.<sup>7</sup> This may be reflective of pregnancy related services available in particular region.

Maternal age in present study did not exert a significant effect on MSAF despite being an important variable having many adverse affects on the fetuses and newborns.<sup>2</sup> Advance maternal age is an identified risk factor for some adverse perinatal events like prematurity, congenital and developmental anomalies.<sup>8</sup> Our study showed that MSAF was more common in multigravidas. This is different from other studies which showed primigravidas were significantly associated with MSAF.<sup>2</sup> According to Saunders primigravidas have various factors that place the fetus under stress.<sup>9</sup> Maternal obesity is widely known as independent risk factor for a number of adverse pregnancy outcomes. Obesity during pregnancy was linked with maternal complications ranging from effects on fertility to effects on delivery and in the postpartum period as well as many complications affecting fetuses and newborns.<sup>10</sup>

The mean gestational age of 39.09 weeks is not considered as significant. This study was unable to identify postdate pregnancy as an important variable for MASF because 79% of pregnancies were at term and only 21% were post-term. A reduction in the rate of post-term delivery was reported to be the most important factor underlying decreased incidence of meconium aspiration syndrome.<sup>11,12</sup> Undiagnosed post date pregnancies were more common in the 7<sup>th</sup> and 8<sup>th</sup> decades of last century before the wide spread use of ultrasound to confirm pregnancies.<sup>5</sup> In literature, the incidence of MSAF in post-term pregnancies varied from 28-52%, whereas a local study described the frequency of 16% in post date deliveries.<sup>13</sup> The mean birth weight in our study was 2.94kg. Majority of the babies were of good weight and only 25% babies with MSAF weigh less than 2.5kg.

In cases of MSAF fetal heart rate abnormalities

were noted. Both events had an influence on obstetrical decision making. Intrapartum aminon infusion dilutes meconium stained amniotic fluid significantly and has been studied as an additional tool to prevent meconium aspiration syndrome.<sup>14</sup> In our setup majority of the patients were illiterate, had no awareness of antenatal care and came late in active labour with meconium detected on admission. The finding of meconium in the latent phase of labor seems to be more ominous than during the active phase of labour. Most of the patients delivered within six hours of admission in contradiction to results found in literature where cesarean section rate was high due to presence of meconium and fetal distress, confirmed by CTG. Our study showed higher vaginal delivery rate as compared to literature. In other study obstetric interventions such as cesarean section was found to have a statistically significant protective effect, independent of the presence of meconium.

#### CONCLUSIONS:

Meconium stained amniotic fluid was found in 7.7% cases and more than 50% were of grade III type. Most of the women were multigravida and 67% were moderately anemic.

#### REFERENCES:

1. RossMG. Meconium aspiration syndrome-more than intrapartum meconium. 2005;353, 946-8.
2. David AN, Njokanma OF, Iroha E. Incidence of and factors associated with meconium staining of the amniotic fluid in a Nigerian University teaching hospital. J Obstet Gynaecol. 2006;:518-20.
3. Ahanya SN, Lakshmanan J, MorganBLG, Ross MG. Meconium passage in uterus, mechanisms consequences and management. Obstet Gynecol Survey. 2005; 60:45- 53.
4. Altshuler G, Arizawa M, Molnar Nadasdy G. Meconium induced umbilical cord vascular necrosis and ulceration: a potential risk between the placenta and poor pregnancy outcome. Obstet Gynecol. 1993;79:760-6.
5. Beckers S, Solomager E, Ddogan C, Waliener D, Fehm T. Meconium stained amniotic fluid- perinatal outcome and obstetrical management in a low

- risksuburban population. *J Obstet Gynecol Reprod Biol.* 2007;132:46-50.
6. Yoder BA, Kirch EA, Barth WH, Gorden MC. Changing obstetric practices associated with decreasing incidence of meconium aspiration syndrome. *Obstet Gynaecol.* 2002; 99;731-9.
7. Sedaghatam MR, Othman L, Rashid N, Ramachanran P, Bener AB. An 8 years study of meconium stained amniotic fluid in different ethnic groups. *Kuwait Med J.* 2004;34:266-9.
8. Kul Karni ML. Genetic disorders: In Parthasarathy A, (Editor) *Paediatrics.* New Delhi: Jaypee Brothers. 2002:614-66.
9. Saunder K. Should we worry about meconium? A controlled study of neonatal outcome *Trop Doctor.* 2002;32:7-10.
10. Arendas K, Qiu Q, GruslinA. Obesity in pregnancy; preconceptional to postpartum consequences. *J Obstet Gynaecol Can.* 2008;30:477-88.
11. Khazardoost S, Hantoushzadeh S, Khooshdeh M, Borna S. Risk factors for meconium aspiration in meconium stained amniotic fluid. *J Obstet Gynaecol.* 2007; 27:576-7.
12. Ross MG. Meconium aspiration syndrome- more than intrapartum meconium. *New Engl J Med.* 2005;353:946-8.
13. Shaikh EM, Mehmood S, Shaikh MA. Neonatal outcome in meconium stained amniotic fluid- one year experience. *J Pak Med Assoc,* 2010;60:711-4.
14. Aslam I. Meconium stained liquor : Neonatal outcome. *Professional Med J.* 2013;20: 202-7.