



To Assess Perinatal Outcome in Meconium Stained Amniotic Fluid

¹Sagar Babasaheb Shirsath, ²Alishba Anasuddin Farooqui,
³Ishita Rajesh Baria and ⁴Mohammad Sana Samreen

¹⁻⁴Department of Obstetrics and Gynecology, Dr. Vithalrao Vikhe Patil Foundation's Medical College, India

ABSTRACT

To assess perinatal outcome in meconium stained amniotic fluid. Study design Prospective observational study. Subjects 100 cases of meconium stained liquor during labor and their outcome in terms of mode of delivery and fetal outcome. Women who were in labour and had a term pregnancy (>37 weeks gestation), cephalic presentation and a live singleton during a normal pregnancy met the inclusion criteria. As an exclusion standard, Pregnant women in labour who are unaware of their last menstrual cycle Eclampsia, antepartum bleeding, intrauterine mortality, congenital defects, previously diagnosed heart or lung conditions in the mother, pregnancy with IUGR babies, alternative presentations to cephalic After selecting the cases, a thorough history was collected and general and systemic exams were conducted. A thorough obstetrical examination was performed, noting the foetal heart rate, uterine contractions, presentation, position, height of the fundus, amount of amniotic fluid and pelvic status. Use of any drugs, including oxytocin, sedatives and analgesics, was also observed. Early ARM was performed in high risk patients, such as those with post-datism, oligohydromnios, or PIH. During artificial or spontaneous membrane rupture, meconium staining of the amniotic fluid was detected and its consistency was assessed, whether it was thin, moderate, or thick. Additionally, the foetal heart rate pattern was monitored and the manner of delivery was chosen in accordance with that. The infant was evaluated by an obstetrician and a neonatologist immediately after birth, followed up daily until discharge and then examined again after 15 days in the OPD. The APGAR scores at the first and fifth minutes, weight, sex the need for newborn resuscitation, admission to the neonatal ward and intensive care unit were used to assess the foetal outcome. Investigations that were pertinent were conducted, including a chest X-ray. One infant was born dead. All newborns were given immediate CPR and had their APGAR scores checked after five min. Five newborns required admission to the NICU out of the 13 newborns with APGAR scores below seven at one min. NICU admission was required in 40 cases, 10 cases were observed with Thin type meconium, 14 with moderate and 16 cases had thick meconium. Perinatal morbidity is influenced by birth asphyxia, aspiration pneumonia, respiratory distress syndrome, and febrile sickness. Deaths during pregnancy were 6%.

OPEN ACCESS

Key Words

Meconium stained, amniotic fluid and perinatal outcome

Corresponding Author

Sagar Babasaheb Shirsath,
Department of Obstetrics and
Gynecology, Dr. Vithalrao Vikhe
Patil Foundation's Medical College,
India

Author Designation

¹Senior Resident

²MS, 3rd Year PGT

^{3,4}MS, 2nd Year PGT

Received: 2 October 2023

Accepted: 25 October 2023

Published: 27 October 2023

Citation: Sagar Babasaheb Shirsath, Alishba Anasuddin Farooqui, Ishita Rajesh Baria and Mohammad Sana Samreen, 2024. To Assess Perinatal Outcome in Meconium Stained Amniotic Fluid. Res. J. Med. Sci., 17: 11-15, doi: 10.59218/makrjms.2024.1.11.15

Copy Right: MAK HILL Publications

INTRODUCTION

Meconium stained amniotic fluid (MSAF) is usually seen in 12-16% of deliveries^[1]. Meconium passage is less common before 37 weeks of gestational age and increases steadily with gestational age^[2]. It may represent the normal gastrointestinal maturation, or it may indicate an acute or chronic hypoxic event, thereby making it a potential warning sign of a fetal Compromise^[3,4]. Though its controversial to differentiate physiologic or pathologic meconium staining of amniotic fluid, there are few shreds of evidence that indicates its association with increased meconium aspiration syndrome, operative delivery, respiratory distress, neonatal sepsis, need for resuscitation, neonatal intensive care admission and low Apgar score^[5-8]. Besides, infants born through a meconium-stained amniotic fluid are more likely to develop respiratory distress and are at increased risk of perinatal death^[1-9]. Meconium aspiration syndrome (MAS) is characterized by the presence of respiratory distress with radiographic evidence of aspiration pneumonia in the presence of meconium-stained amniotic fluid^[4-10]. MAS occurs in about 5% of deliveries with meconium-stained amniotic fluid^[11] and death occurs in about 12% of infants with MAS^[12]. The evidence of poor perinatal outcome associated with meconium-stained amniotic fluid mandates a well-designed study. Present study was conducted with the aim of to study perinatal outcome in meconium stained amniotic fluid.

MATERIAL AND METHODS

A prospective observational study was conducted in obstetrics and gynaecology department of our institution during the period of months and study population included 100 cases of meconium stained liquor during labor and their outcome in terms of mode of delivery and fetal outcome. Women who were in labour and had a term pregnancy (>37 weeks gestation), cephalic presentation and a live singleton during a normal pregnancy met the inclusion criteria. As an exclusion standard, Pregnant women in labour who are unaware of their last menstrual cycle Eclampsia, antepartum bleeding, intrauterine mortality, congenital defects, previously diagnosed heart or lung conditions in the mother, pregnancy with IUGR babies, alternative presentations to cephalic After selecting the cases, a thorough history was collected and general and systemic exams were conducted. A thorough obstetrical examination was performed, noting the foetal heart rate, uterine contractions, presentation, position, height of the fundus, amount of amniotic fluid and pelvic status. Use of any drugs, including oxytocin, sedatives and analgesics, was also observed.

Using a partogram, a thorough follow-up of the labor's progression was conducted to determine whether it was occurring at the same time as expected. Patients were permitted to continue for a typical vaginal birth if their progress was smooth according to the partogram. However, those individuals were rigorously monitored and had artificial membrane rupture performed earlier than those whose progress did not match the partogram. Early ARM was also performed in high risk patients, such as those with post-datism, oligohydromnios, or PIH. During artificial or spontaneous membrane rupture, meconium staining of the amniotic fluid was detected, and its consistency was assessed, whether it was thin, moderate, or thick. There is an association between cervical dilatation and meconium's presence in amniotic fluid. Additionally, the foetal heart rate pattern was monitored and the manner of delivery was chosen in accordance with that. The infant was evaluated by an obstetrician and a neonatologist immediately after birth, followed up daily until discharge and then examined again after 15 days in the OPD. The APGAR scores at the first and fifth min, weight, sex the need for newborn resuscitation, admission to the neonatal ward and intensive care unit were used to assess the foetal outcome. Investigations that were pertinent were conducted, including a chest X-ray.

RESULTS

In meconium-stained amniotic fluid, foetal discomfort occurred 30% of the time on average. The majority (50%) of these instances had thick meconium fluid that was causing foetal discomfort.

One infant was born dead. All newborns were given immediate CPR and had their APGAR scores checked after five minutes. Five newborns required admission to the NICU out of the 13 newborns with APGAR scores below seven at one min.

NICU admission was required in 40 cases, 10 cases were observed with Thin type meconium, 14 with moderate and 16 cases had thick meconium.

According to this, 23% of instances had bradycardia, 8% had tachycardia, and 69% of cases had normal foetal heart rates when meconium was discovered.

Perinatal morbidity is influenced by birth asphyxia, aspiration pneumonia, respiratory distress syndrome, and febrile sickness. Deaths during pregnancy were 6%.

Table 1: No of babies with fetal distress

Type of meconium	No of fetal distress babies	Percentage
Thin	5	16.67
Moderate	10	33.33
Thick	15	50
Total	30	100

Table 2: Comparison of meconium stained amniotic fluid with APGAR score at 1 and 5 min

Type of meconium	APGAR score At 1 min			At 5 min		
	0-3 (Severe)	4-6 (Moderate)	7-10 (Mild)	0-3 (Severe)	4-6 (Moderate)	7-10 (Mild)
Thin (40)	-	4 (10%)	36 (90%)	-	1 (2.5%)	39 (97.5%)
Moderate (32)	2 (6.25%)	2 (6.25%)	28 (87.5%)	-	2 (6.25%)	30 (93.75%)
Thick (28)	3 (10.71%)	3 (10.71%)	22 (78.57%)	1 (3.57%)	1 (3.57%)	26 (92.86%)
Total (100)	5 (5%)	9 (9%)	86 (86%)	1 (1%)	4 (4%)	95 (95%)

Table 3: Meconium stained amniotic fluid and NICU admission

Types of meconium	No of cases	Percentage
Thin (40)	10	25
Moderate (32)	14	43.75
Thick (28)	16	57.14
Total (100)	40	40

Table 4: Fetal heart rate and degree of meconium stained liquor

FHR /min	No of cases	Thin	Moderate	Thick
< 90	6	0	2	4
90-120	17	4	8	5
120-160	69	36	21	12
> 160	8	0	1	7
Total	100	40	32	28

Table 5: Meconium stained amniotic fluid and perinatal morbidity and mortality

Perinatal morbidity	Thin	Moderate	Thick	Total	Perinatal mortality
Birth Asphyxia	0	2	3	5	2
Aspiration pneumonia	2	2	1	5	1
Respiratory distress syndrome	0	3	4	7	2
Febrile illness	1	1	3	5	1
Convulsion	0	2	1	3	0

DISCUSSIONS

A meconium-stained amniotic fluid was used in this study to assess the likelihood of a poor foetal outcome and to learn more about the foetal outcomes of those deliveries. 70% of the patients were between the ages of 26 and 30. According to Nesa *et al.*^[12] the mother's age was 26.2 5.2 years on average. In the current investigation, term patients made up 65% of the individuals with meconium-stained amniotic fluid. After 37 weeks, Gupta *et al.*^[13] discovered a significantly higher rate (86.7%) of meconium in amniotic fluid. Similar findings were also proposed by Oyelese *et al.*^[14] The majority of patients in the current study had birth weights between 2.59 and 2.76 kg. Similar results were seen in Sedaghatian *et al.*^[15] investigation. Neke *et al.*^[12] discovered that 77.5% of newborns were over 2.5 kg in weight. Of the patients in our study, 40% had thin, 32% had intermediate, and 28% had thick meconium. Similar results were found by Shaikh *et al.*^[16] and Piper *et al.*^[17] In the current study, PIH, post-datism, oligohydroamnios and PROM were correlated with obstetric risk factors in 57% of patients. 11.15% of these patients had PIH. 13.8% had PIH, according to Liaquat *et al.*^[18] In the current investigation, 69% of cases had normal foetal heart rates at the time of meconium detection, 23% had bradycardia and 8% had tachycardias, which were consistent with Berkus *et al.*^[19] findings that meconium stained patients had a much increased probability of having an abnormal foetal heart rate. Sasikala *et al.*^[20] colleagues

discovered that 6.5% of patients had tachycardia and 26.2% had foetal bradycardia. Compared to 21.42% of infants with thick meconium, 10% of patients with thin meconium had a low APGAR score in the first min^[7]. In their investigation, Sedaghatian *et al.*^[15] discovered a similar conclusion. Low^[7] APGAR scores were found in 6.74% of patients with thin meconium and 26.25% of patients with thick meconium, according to PatilKamal *et al.*^[21] The presence of meconium-stained amniotic fluid has a substantial impact on the mode of delivery. High (65%) rates of caesarean births, especially those with heavy meconium. Similar results were also shown by Nesa *et al.*^[12] Caesarean section rates were 62%, according to Chishty *et al.*^[22] The prevalence of caesarian deliveries has been found to be rising, even in areas where alternative intrapartum monitoring tools like foetal bloodcollection and cardiotocography are accessible. Birth asphyxia was much more prevalent in meconium-stained amniotic fluid, according to Gupta *et al.*^[13] Khatun *et al.*^[23] discovered 12.9% of cases of birth asphyxia in their research. While the current study found that 5% of babies experienced birth asphyxia. Babies delivered to mothers who snore and have sleep disordered breathing have higher chances of IUGR and intrapartum hypoxia (APGAR score 7). Similar outcomes were noted by Aggarwal *et al.*^[24] The death rate in the current study was 2% for individuals with thick meconium and 2% for cases with thin meconium. 4.9% mortality in meconium-stained amniotic fluid was discovered by Gupta *et al.*^[13]

CONCLUSION

The necessity for neonatal resuscitation, risk of birth hypoxia, meconium aspiration syndrome, hospital admission and mortality are all elevated in meconium-stained amniotic fluid. Therefore, identifying pregnant women who run the risk of passing meconium during delivery would allow for intense foetal monitoring and early intervention, which could reduce neonatal bad outcomes. To reduce foetal morbidity and subsequently mortality in patients with meconium-stained amniotic fluid, neonatal expertise should be available at the time of delivery along with equipment like an oxygen mask, laryngoscope, suction catheter, endotracheal tube and AMBU bag.

REFERENCES

- Mundhra, R. and M. Agarwal, 2013. Fetal outcome in meconium stained deliveries. *J. Clin. Diagn. Res.*, 7: 4-6.
- Wong, S.F., K.M. Chow and L.C. Ho, 2002. The relative risk of "fetal distress" in pregnancy associated with meconium-stained liquor at different gestation. *J. Obstet. Gynaecol.*, 22: 594-599.
- Monen, L., T.H. Hasaart and S.M. Kuppens, 2014. The aetiology of meconium-stained amniotic fluid: Pathologic hypoxia or physiologic foetal ripening? (Review). *Early Hum. Dev.*, 90: 325-328.
- Lee, J., R. Romero, K.A. Lee, E.N. Kim, S.J. Korzeniewski, P. Chaemsathong and B.H. Yoon, 2016. Meconium aspiration syndrome: A role for fetal systemic inflammation. *Am. J. Obstet. Gynecol.*, 214: 3660-2147.
- Divia, A., 2018. Study on risk factors and perinatal outcome in meconium-stained liquor in IOG: Madras Medical College, Chennai, <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0242025>
- ELMeneza, S.A., S.A. Bahgat, H.G. Elnady, R.N. Sabry, A.S. Megawer and W.M.A. Sreah, 2014. Fetal outcome of meconium-stained infants resuscitated by endotracheal suction versus oropharyngeal suction at birth. *Med. Res. J.*, 13: 80-85.
- Hutton, E.K. and J. Thorpe, 2014. Consequences of meconium stained amniotic fluid: What does the evidence tell us? *Early Hum. Dev.*, 90: 333-339.
- Kumari, R., P. Srichand, B.R. Devrajani, S.Z.A. Shah, T. Devrajani, I. Bibi and R. Kumar, 2012. Foetal outcome in patients with meconium stained liquor. *J. Pak. Med. Assoc.*, 62: 474-476.
- Naqvi, S.B. and S. Manzoor, 2011. Association of meconium stained amniotic fluid with perinatal outcome in pregnant women of 37-42 weeks gestation. *Pak. J. Surg.*, 27: 292-298.
- Klingner, M.C. and J. Kruse, 1999. Meconium aspiration syndrome: Pathophysiology and prevention. *J. Am. Board Family Med.*, 12: 450-466.
- Sippola, T., H. Aho, H. Peuravuori, H. Lukkarinen, J. Gunn and P. Kääpä, 2006. Pancreatic phospholipase A2 contributes to lung injury in experimental meconium aspiration. *Pediatr. Res.*, 59: 641-645.
- Nesa, F., F. Chowdhury, B.N. Yasmeen, S. Rahman, N. Begum and S.A. Hossain, 2018. Mode of delivery and fetal outcome in meconium stained amniotic fluid in dmch. *Northern. Int. Med. Coll. J.*, 9: 304-307.
- Gupta, V., B.D. Bhatia and O.P. Mishra, 1996. Meconium stained amniotic fluid: antenatal, intrapartum and neonatal attributes. *Indian. Pediatr.*, 33: 293-297.
- Oyelese, Y., A. Culin, C.V. Ananth, L.M. Kaminsky, A. Vintzileos and J.C. Smulian, 2006. Meconium-stained amniotic fluid across gestation and neonatal acid-base status. *Obstet. Gynecol.*, 108: 345-349.
- Sedaghatian, M.R., L. Othman, N. Rashid, P. Ramachandran and A.B. Bener, 2004. An 8 year study of meconium stained amniotic fluid in different ethnic groups. *Kuwait. Med. J.*, 36: 266-269.
- Shaikh, E.M., S. Mehmood and M.A. Shaikh, 2010. Neonatal outcome in meconium stained amniotic fluid-one year experience. *J. Pak. Med. Assoc.*, 60: 711-714.
- Piper, J., E.R. Newton, M.D. Berkus and W.A. Peairs, 1998. Meconium: A marker for peripartum infection. *Obstet. Gynecol.*, 91: 741-745.
- Liaquat, F., E.S. Anis, U. Altaf, U. Aziz and N. Afreen, 2021. Neonatal outcome in patients with meconium stained liquor. *Pak. J. Med. Health Sci.*, 15: 2130-2131.
- Berkus, M.D., O. Langer, A. Samueloff, E.M. Xenakis, N.T. Field and L.E. Ridgway, 1994. Meconium-stained amniotic fluid: Increased risk for adverse neonatal outcome. *Obstet. Gynecol.*, 84: 115-120.
- Sasikala, A., S. Raghavan, N. Mishra, S. Khatoon, A. Bupathy and R. Rani, 1995. Perinatal outcome in relation to mode of delivery in meconium stained amniotic fluid. *Indian J. Pediatr.*, 62: 63-67.
- PatilKamal, P., M.k. Swamy and K. Samatha, 2006. A one year cross sectional study of management practices of meconium stained amniotic fluid and perinatal outcome. *Obstet. Gynecol. India.*, 56: 128-130.

22. Chishty, A.L., Y. Alvi, M. Iftikhar and T.I. Bhutta, 1996. Meconium aspiration in neonates: Combined obstetric and paediatric intervention improves outcome. *J. Pak. Med. Assoc.*, 45: 104-108.
23. Khatun, M., 2005. Meconium Staining liquor and its correlative with fetal outcome within seven days of birth in Dhaka medical college. Dissertation. Bangladesh. Coll. Physicians. Surgeons., 2: 39-43.
24. Aggarwal, M., J.C. Suri, S. Suri and M.K. Sen, 2008. Maternal and Fetal outcomes of sleep disordered breathing in pregnancy. *Indian. J. Sleep. Med.*, 3: 9-25.