

ORIGINAL ARTICLE

Assessment of maternal parameters associated with meconium-stained amniotic fluid- A clinical study

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ABSTRACT:

Background: The present study was conducted to assess maternal parameters associated with meconium-stained amniotic fluid. **Materials & Methods:** 94 laboring mothers with meconium-stained amniotic fluid was recorded. Meconium-stained liquor (MSL) was categorized in to three categories. Maternal parameters were recorded. **Results:** Maximum cases were seen in age group 20-30 years followed by <20 years had 29, had 45 and >30 years had 20 cases. MSL grade 1 was seen in 42, 2 in 36 and 3 in 16 patients. The difference was significant ($P < 0.05$). **Conclusion:** GDM, PROM, prolonged labor and hypertensive disorder were common risk factors of meconium-stained amniotic fluid.

Key words: Hypertensive disorder, meconium-stained amniotic fluid, maternal.

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INTRODUCTION

The occurrence of meconium-stained amniotic fluid (MSAF) during labor has been long considered the predictor of adverse fetal outcomes such as meconium aspiration syndrome and perinatal asphyxia, which leads to perinatal and neonatal morbidity and mortality.¹ Meconium is a germ-free, thick, black-green, odourless material which is first recognized in the fetal intestine around 12 weeks of gestation and stores in the fetal colon throughout gestation.²

Presence of meconium in the amniotic fluid could be a dangerous condition.³ It may increase the risk of bacterial infection, aspiration of meconium resulting in gasping breathing pattern causing hypoxia due to airway obstruction, chemical pneumonitis and pulmonary hypertension. The exposure of respiratory tract to the meconium results in inflammation of the lung tissues along with deactivation of surfactants and inhibition of the same.⁴

Infants with meconium-stained amniotic fluid, regardless of whether they are vigorous or not, should no longer routinely receive intrapartum suctioning.⁵ However, meconium-stained amniotic fluid is a condition that requires the notification and availability of an appropriately credentialed team with full resuscitation skills, including endotracheal intubation.

Evidence showed that the incidence of meconium-stained liquor is increasing as the gestational age increases. From 7 to 22% of term pregnancy were complicated by meconium-stained liquor worldwide.⁶ The present study was conducted to assess maternal parameters associated with meconium-stained amniotic fluid.

MATERIALS & METHODS

The present study was conducted in the department of gynaecology. It comprised of 94 laboring mothers with meconium-stained amniotic fluid who delivered or underwent cesarean section. All patients were enrolled regarding the study and their consent was obtained. Ethical clearance was obtained before starting the study.

Data related to mother such as name and age was recorded. Meconium-stained liquor (MSL) was categorized in to three categories. Grade I MSL included small amount of meconium diluted in a plentiful amount of amniotic fluid. Grade II MSL included the cases having moderate meconium staining and grade III MSL were the cases with heavy staining. Maternal parameters were recorded. Results were tabulated and subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Age group (Years)	Number	P value
<20	29	0.02
20-30	45	
>30	20	

Table I shows that age group <20 years had 29, 20-30 years had 45 and >30 years had 20 cases. The difference was significant ($P < 0.05$).

Table II Distribution based on MSL grade

MSL grade	Number	P value
1	42	0.05
2	36	
3	16	

Table II, graph I shows that MSL grade 1 was seen in 42, 2 in 36 and 3 in 16 patients. The difference was significant ($P < 0.05$).

Graph I Distribution based on MSL grade

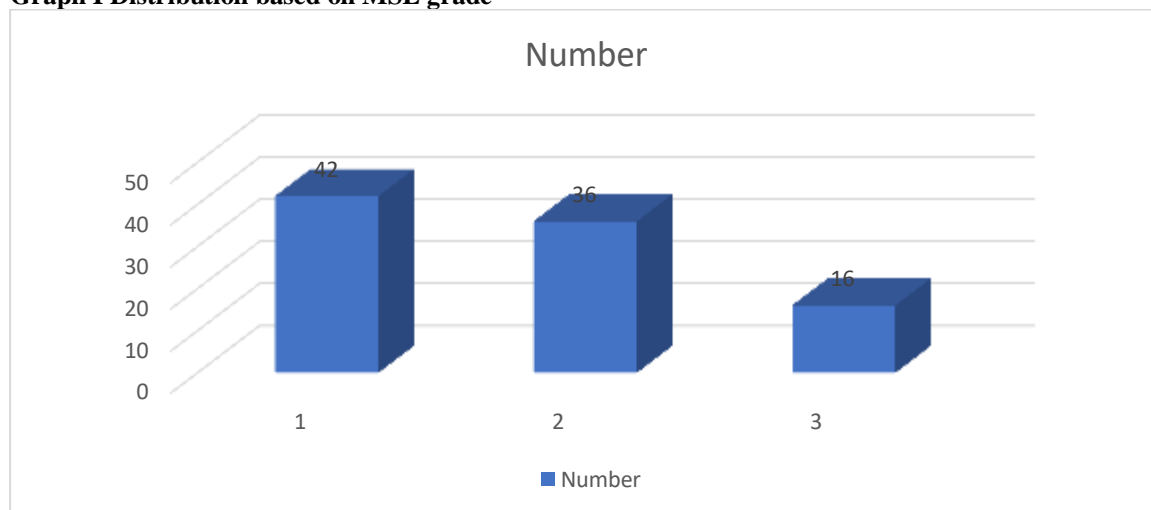
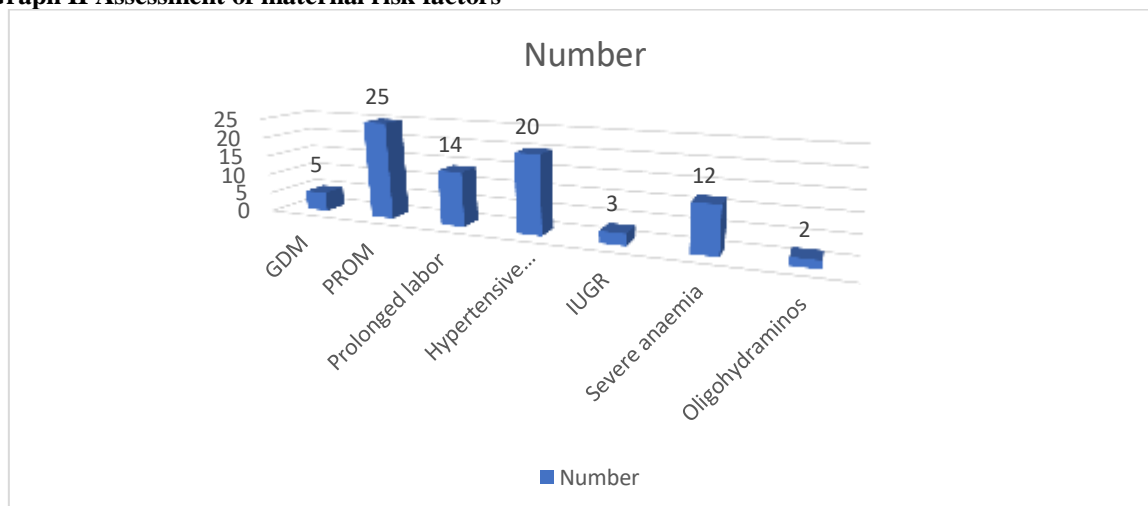


Table III Assessment of maternal risk factors

Risk factors	Number	P value
GDM	5	0.02
PROM	25	
Prolonged labor	14	
Hypertensive disorder	20	
IUGR	3	
Severe anaemia	12	
Oligohydramnios	2	

Table III, graph II shows that common risk factors were GDM in 5, PROM in 25, prolonged labor in 14, hypertensive disorder in 20, IUGR in 3, severe anaemia in 12 and oligohydramnios in 2 patients. The difference was significant ($P < 0.05$).

Graph II Assessment of maternal risk factors



DISCUSSION

The passage of meconium in to the amniotic fluid and its consequences are a multifactorial process which is affected by multiple factors associated with fetus as well as mother.⁷ Knowledge of association of various maternal and fetal factors with meconium aspiration syndrome is important to know and understand to timely judge the outcome and take the appropriate clinical decisions.⁸ Meconium stained liquor (MSL) is the passage of meconium by a fetus in utero during the antenatal period or in labour. 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 or greenish 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.⁹ The present study was conducted to assess maternal parameters associated with meconium-stained amniotic fluid. In present study, age group <20 years had 29, 20-30 years had 45 and >30 years had 20 cases. MSL grade 1 was seen in 42, 2 in 36 and 3 in 16 patients. Addisu et al¹⁰ found that the prevalence of meconium-stained amniotic fluid was found to be 17.8%. Women whose age greater than 30 years, duration of labor greater than 24 hours, induced labor, preeclampsia and obstructed labor [AOR =5.9, 95%CI =1. 29–29.68] were found to be associated with meconium stained amniotic fluid. The prevalence of meconium stained amniotic fluid was similar as compared to the international standard. Preeclampsia, maternal age, obstructed labor, induced labor and longer duration of labor were factors associated with an increased risk for meconium-stained amniotic fluid. Thus, early detection and timely intervention are mandatory to decrease prolonged and obstructed labor.

We found that common risk factors were GDM in 5, PROM in 25, prolonged labor in 14, hypertensive disorder in 20, IUGR in 3, severe anaemia in 12 and oligohydramnios in 2 patients. Patel et al¹¹ recorded various maternal and fetal parameters associated with meconium-stained amniotic fluid. Majority of them were between 20–30 years of age (59%). The women between 31–35 years of age were 27%. Participants either 35 years were 9% and 5% respectively. There were 82 patients who had grade I MSL, 63 patient who had grade II MSL whereas 55 patients who had grade III MSL. Out of 200, there were 196 women who were having associated risk factors like prolonged labour, PROM, hypertension, postdatism, GDM, IUGR and anaemia. MSL as well as MAS has been strongly associated with the parity of the mother. It was also observed that patients who's age was greater than 35 yrs. All (100%) presented with grade 3

MSL. Fetus whose gestational age was greater than 40 weeks has fewer chances of co-morbidities.

Husain et al¹² of the total 200 subjects, 183(91.5%) were reactive and 17 (8.5%) were non-reactive women. Most commonly noted risk factor were post-date 53 (26.5%), anaemia 35 (17.5%), premature rupture of membranes 28 (14%) and pregnancy-induced hypertension 10 (5%). They found that significant change was seen in cardiotocography of clear liquor which needs more evaluation to rule out ongoing hypoxia.

The shortcoming of the study is small sample size.

CONCLUSION

Authors found that common risk factors of meconium- stained amniotic fluid was GDM, PROM, prolonged labor and hypertensive disorder.

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