



## Perinatal Outcome in Meconium Stained Amniotic Fluid

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### Introduction

- Meconium stained amniotic fluid has long been implicated as a factor influencing fetal well being during intra-partum and post-partum periods. Obstetric Management is significantly effected by presence of Meconium Stained Amniotic Fluid (MSAF) possibility reflecting low threshold for obstetric intervention.
- Meconium-stained amniotic fluid, as a result of the passage of fetal colonic contents into the amniotic cavity, is noted in approximately 12% of all deliveries.
- Meconium aspiration syndrome (MAS) is noted in 5% of these infants and more than 4% of MAS infants die, accounting for 2% of all perinatal deaths.

**There is strong evidence most meconium passage occurs by each of three basic mechanisms:**

- As a physiologic maturational event.
- As a response to acute hypoxic events occurring late in pregnancy.
- As a response to chronic intrauterine hypoxia.

Many maternal factors contribute to passage of meconium before birth which include maternal

age, prolonged gestation, type of labour, anemia, hypertension and toxemia of pregnancy<sup>[1,2]</sup>. Type of meconium passage and time of passage are significant factors affecting fetal outcome.

### Methods

It was Prospective observational cohort study, study conducted in the department of Obstetrics and Gynaecology, M.G.M. Medical College & L.S.K. Hospital, Kishanganj, Bihar. A total 100 patients were enrolled for the study during June 2021 to September 2022. The pregnant women at term gestation with cephalic presentation with meconium stained amniotic fluid, keeping in mind the inclusion and exclusion criteria

### Inclusion Criteria

- All pregnant women in labour with cephalic presentation with singleton pregnancy with meconium stained liquor irrespective of age, parity and stage of labour.
- Artificial rupture of membranes or spontaneous rupture of membranes. Pregnancy induced hypertension
- Previous normal deliveries and previous LSCS.

**Exclusion criteria:**

1. Malpresentation Multiple pregnancies.
2. Preterm and post-term pregnancy Maternal medical diseases.
3. Fetal malformation Intrauterine fetal demise.
4. Obstetric complications: Eclampsia, antepartum hemorrhage.

**Results**

**Incidence of MSAF**

Total	MSAF	Percent
2415	305	12.62

Out of 2415 deliveries conducted, 305 i.e., 12.62% were meconium stained out of which 100 cases were selected for the present study which had inclusion criteria.

Of the total number of 100 cases, 63 cases had thick meconium and 37 cases thin meconium.

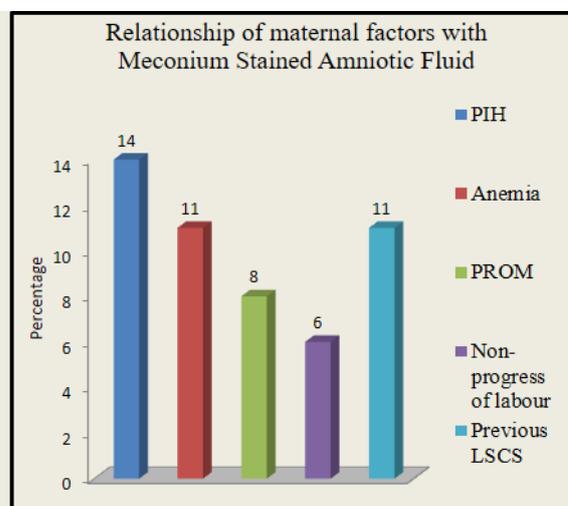
**Relationship of Weeks of Gestation to Meconium Stained Amniotic Fluid**

Gestational Age (weeks)	MSAF	
	No.	Percentage
37 – 38 weeks	33	33.0
39 – 40 weeks	59	59.0
41 – 42 weeks	8	8.0
<b>Total</b>	<b>100</b>	<b>100.00</b>

Meconium stained amniotic fluid is more common in between 39-40 weeks of gestation. Mean gestation age is 39.45 weeks in present study.

**Relationship of maternal factors with Meconium Stained Amniotic Fluid**

Maternal factors	No. of Deliveries	Percentage
PIH	14	14.0
Anemia	11	11.0
PROM	8	8.0
Non-progress of labour	6	6.0
Previous LSCS	11	11.0
<b>Total</b>	<b>50</b>	<b>50.0</b>



Out of 100 cases with Meconium stained amniotic fluid 50 cases i.e. 50% were associated with maternal complication (both antepartum and intrapartum). Of these 14 were PIH (14.0%)

followed by anemia 11 cases (11.0%), PROM – 8%, previous LSCS 11.0% and non-progress of labour in 6% of cases because of non-progress of labour.

**Mode of Delivery**

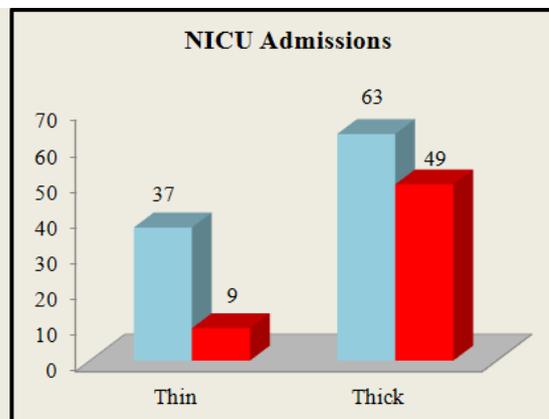
Mode of delivery	Thin	Percent	Thick	Percent	Total	Percent
Vaginal delivery	17	45.9	12	19.0	29	29.0
Forceps assisted vaginal delivery	1	2.7	1	1.6	2	2.0
Vacuum assisted vaginal delivery	5	13.6	7	11.1	12	12.0
LSCS	14	37.8	43	68.3	57	57.0
<b>Total</b>	37	100.00	63	100.00	100	100.00
Statistical Inferences	Chi-square- 9.8560 P value- 0.019					

37 patients with thin meconium stained amniotic fluid, 17 (45.9%) had normal vaginal delivery, while in thick meconium stained amniotic fluid out of 63 only 12 (19.0%) delivered normally.

Incidence of LSCS was more in thick meconium stained amniotic fluid i.e., 68.3% as compared to 37.8% with thin Meconium stained amniotic fluid.

**NICU Admissions**

MSAF	Total	NICU Admission	Percentage
Thin	37	9	24.3
Thick	63	49	77.8
P value	0.0041		

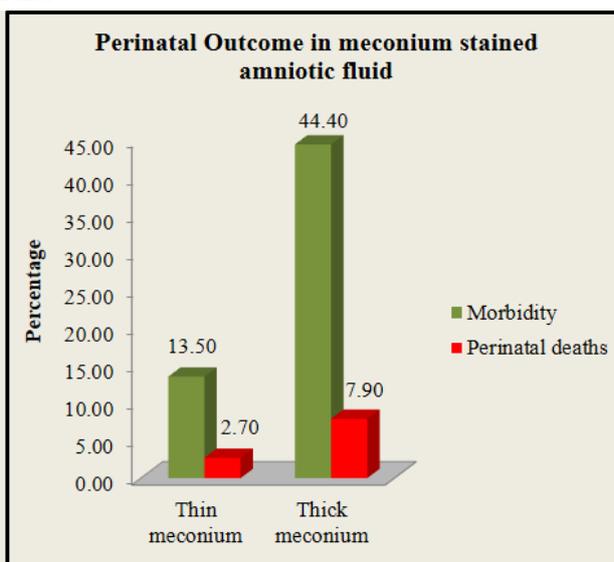


Out of 63 babies with thick Meconium stained amniotic fluid, 48 babies had NICU admissions i.e., 77.8%, where it was 24.3% in thin Meconium

stained amniotic fluid. NICU admission and number of newborn needed resuscitation were more with thick meconium stained.

### Perinatal Outcome in meconium stained amniotic fluid

Perinatal outcome	Thin meconium (n=37)	Thick meconium (n=63)
Morbidity	5(13.5%)	28(44.4%)
Perinatal deaths	1(2.7%)	5(7.9%)



Out of 100 cases, 33 babies i.e., 33.0% developed morbid condition in that perinatal morbidity and 6% cases had perinatal death.

### Discussion

In the present study the incidence was 12.62%. the similar finding of Kamala G et al, was 9.37% and Linder et al found 10.37%.

Meconium stained amniotic fluid is more common in between 39-40 weeks of gestation. Mean gestation age is 39.45weeks in present study. which was comparable with the study conducted by Miller<sup>[3]</sup> having mean gestation age of 39.82 weeks. Rosario<sup>[4]</sup> in his study found mean gestational age of 39.62 weeks and Krebs found mean gestational age of 40.04 weeks indicating gestational age progresses towards post-datism incidence of meconium staining is high.

In this study, 50% were associated with maternal complication (both antepartum and intrapartum). Of these 14 were PIH (14.0%) followed by anemia 11 cases (11.0%), PROM – 8%, previous LSCS 11.0% and non-progress of labour in 6% of cases because of non-progress of labour. Similar study of Kamala et al<sup>[5]</sup> found PIH 8.6%, Anaemia-6.0% and PROM 16% respectively.

In this study 37 patients with thin meconium stained amniotic fluid, 17 (45.9%) had normal vaginal delivery, while in thick meconium stained amniotic fluid out of 63 only 12 (19.0%) delivered normally. Incidence of LSCS was more in thick meconium stained amniotic fluid i.e., 68.3% as

compared to 37.8% with thin Meconium stained amniotic fluid. Comparable study of Bhide SS et al<sup>[6]</sup> found 59.2% had normal vaginal delivery, while in thick meconium stained amniotic fluid 49.29 delivered normally. Incidence of LSCS was more in thick meconium stained amniotic fluid i.e., 35.21% as compared to 16.50% with thin Meconium stained amniotic fluid.

In the present study, mortality was 6.0% leading cause of death being meconium aspiration syndrome of 4% followed by sepsis 1%, pneumonitis 1% and birth asphyxia.

### References

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4. Rosario MC, Seshadri L. Meconium staining of amniotic fluid in low risk parturients. *Journal of Obstetrics and Gynaecology of India* 1996; 46:642-646
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