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MECONIUM STAINED LIQUOR- IT'S MANAGEMENT AND OUTCOME : ORIGINAL ARTICLE

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ABSTRACT

BACKGROUND: The occurence of meconium in the amniotic fluid, also known as MSAF (Meconium stained AF), is a concerning indicator of fetal impairment and is linked to a worse perinatal outcome. The purpose of this research was to find out what variables affect the mother and the baby when a pregnancy is affected by meconium staining the amniotic fluid.

MATERIAL AND METHODS: This present prospective study was carried out to find out neonatal outcome in cases of meconium stained liquor. In this study, 210 patients with no complicating risk factors and normal obstetric history were selected.

RESULTS: The meconium-stained amniotic fluid substantially influences both mode of delivery and neonatal outcome as compared to the other counterpart.

CONCLUSION: The meconium-stained amniotic fluid substantially influences both mode of delivery and neonatal outcome as compared to the other counterpart. Once meconium has passed vocal cords & entered lung parenchyma, we can not stop MAS.

Key words: *Meconium stained liquor, APGAR, Rupture of membranes ,neonatal mortality*

INTRODUCTION

The occurence of meconium in the amniotic fluid, also known as MSAF (Meconium stained AF), is a concerning indicator of fetal impairment and is linked to a worse perinatal outcome. The meconium stained amniotic fluid incidence varies from 7% to 22%, [1] and the occurrence of meconium aspiration syndrome (MAS) happen in roughly 5% of all instances with MSAF. Up to 0.05% of newborns who die have MAS as a contributing factor (i.e. 1 in 2000 of each pregnancies). [2]. India's neonatal mortality rate is 26 for every 1000 live births according to Ministry of Health and Family Welfare,Government of India. Predisposing variables of in utero transit of meconium include placental insufficiency, maternal HTN, pre-eclampsia, oligohydramnios, and maternal drug dependance (tobacco plant, cocaine). [3] Newborns whose birth fluid is cloudy with meconium have more possibility to have respiratory distress than newborns whose birth fluid is clear. Thus, the recognition of maternal factors may be helpful in predicting whether or not neonatal resuscitation will be required in the delivery room, which ultimately contributes to the improvement of the perinatal result and also the reduction of perinatal mortality and morbidity associated with meconium stained amniotic fluid. The purpose of this research was to find out what variables affect the mother and the baby when a pregnancy is affected by meconium staining the amniotic fluid.

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MATERIAL AND METHODS:

The present prospective study was conducted among 210 subjects of 37weeks or above **Study place:**The present study will be carried out at Department of Obstetrics and gynaecology,Dr D Y Patil Vidyapeeth and hospital,Pimpri,Pune. All patients will be interviewed and clinically examined.

Study group : All patients were divided into two groups.

1.Group A – Those with thin meconium-stained liquor amniotic fluid (MSAF).

2.Group B – Those with thick meconium-stained liquor amniotic fluid (MSAF).

Inclusion Criteria:

i.Cases showing meconium stained liquor(MSL) after artificial or spontaneous rupture of membranes.

ii.Cephalic presentation.

Iii.Gestational age 37 weeks or above.

Exclusion criteria:

i.Rh incompatibility.

ii.Jaundice.

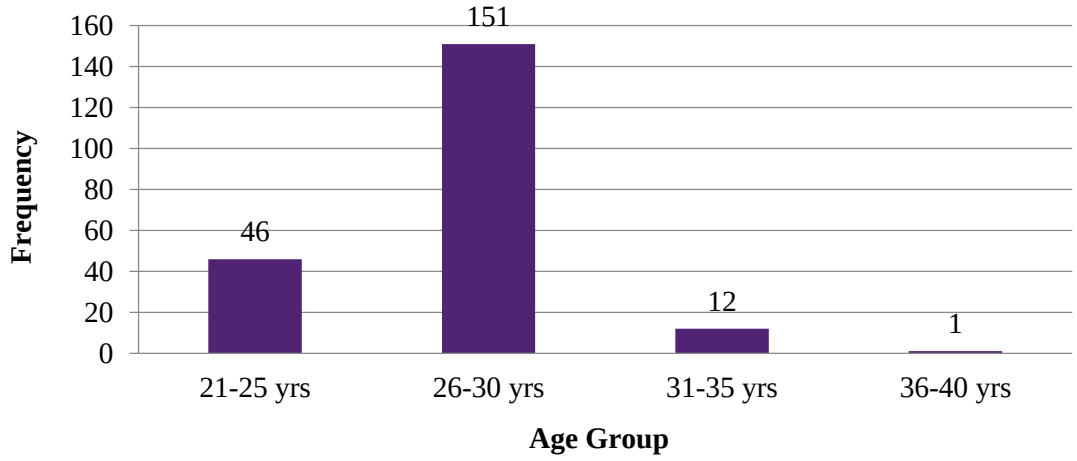
iii.Malpresentation

iv.Diabetic mother

Baseline HR (Heart rate) was recorded by stethoscope in the first stage every 15 minutes and in 2nd stage every 5minute. The mode of delivery was also noted i.e. normal delivery, instrumental delivery, or LSCS. During delivery, the baby was examined for abnormality of the cord around the neck, a true knot of the cord, and the status of the baby at birth by APGAR score (i.e. Heart rate, Breathing, Tone, Color, Reflexes). Whenever required for asphyxiated baby resuscitation was performed (ETI, Suction, IPPV) and shifted to NICU on SOS basis. For at least 3 days condition of the mother and baby was followed up in the ward.

OBSERVATIONS AND RESULTS

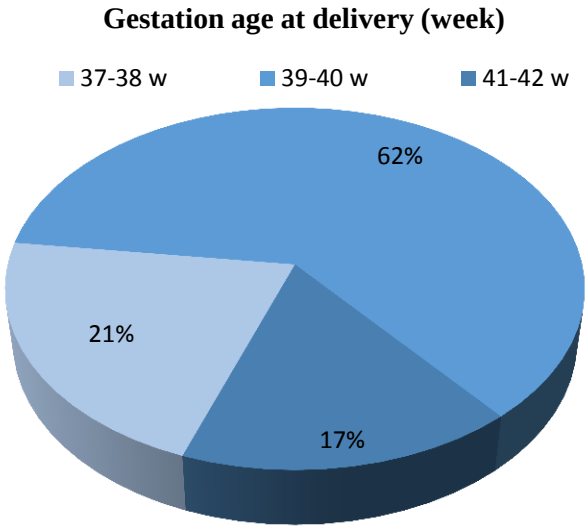
1) Bar diagram showing age wise distribution of study sample.



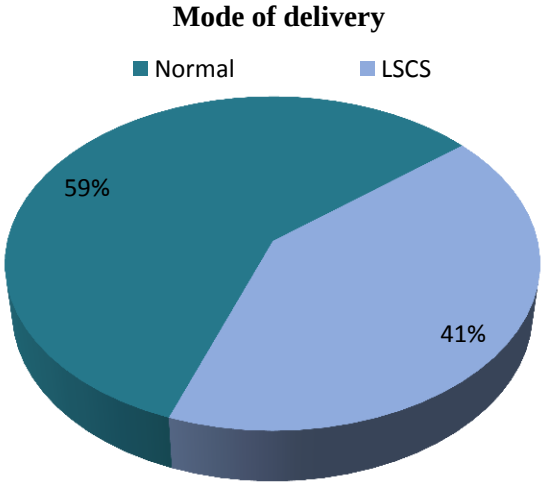
2) Obstetrics history among study samples

Obstetrics history	Frequency	Percentage
G2P1L1	86	41.0
G3P2L2A2	32	15.2
G4P3L2	1	0.5
Primi gravida	91	43.3
Total	380	100.0

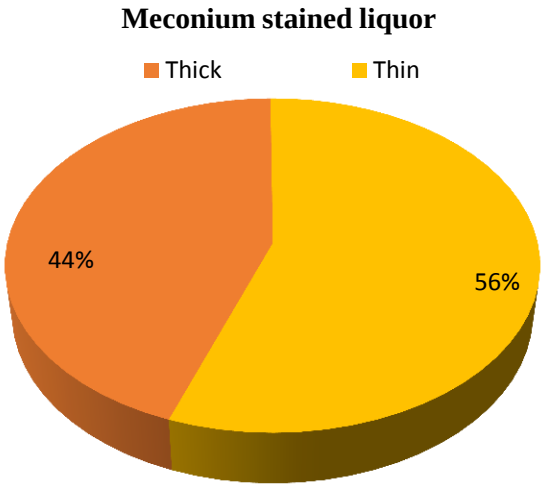
3) Pie diagram showing gestational age at delivery among study samples



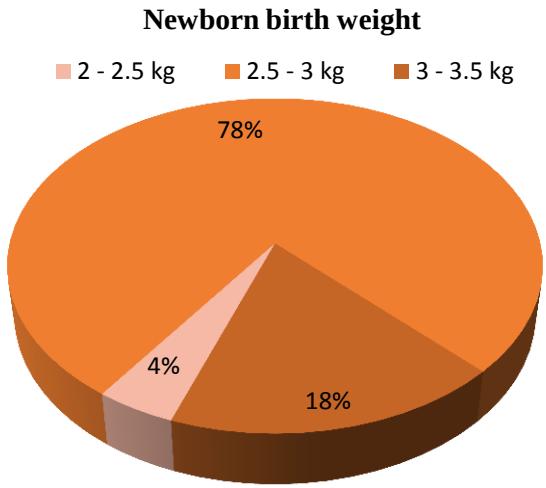
4) Pie chart showing distribution of study sample according to mode of delivery



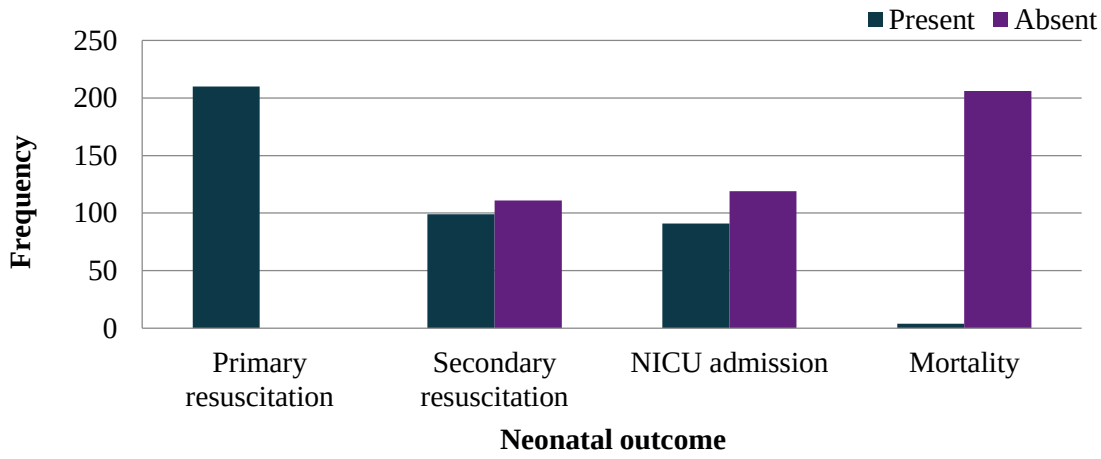
5) Pie chart showing distribution of study sample according to characteristics of meconium liquor



6) Birth weight among newborn



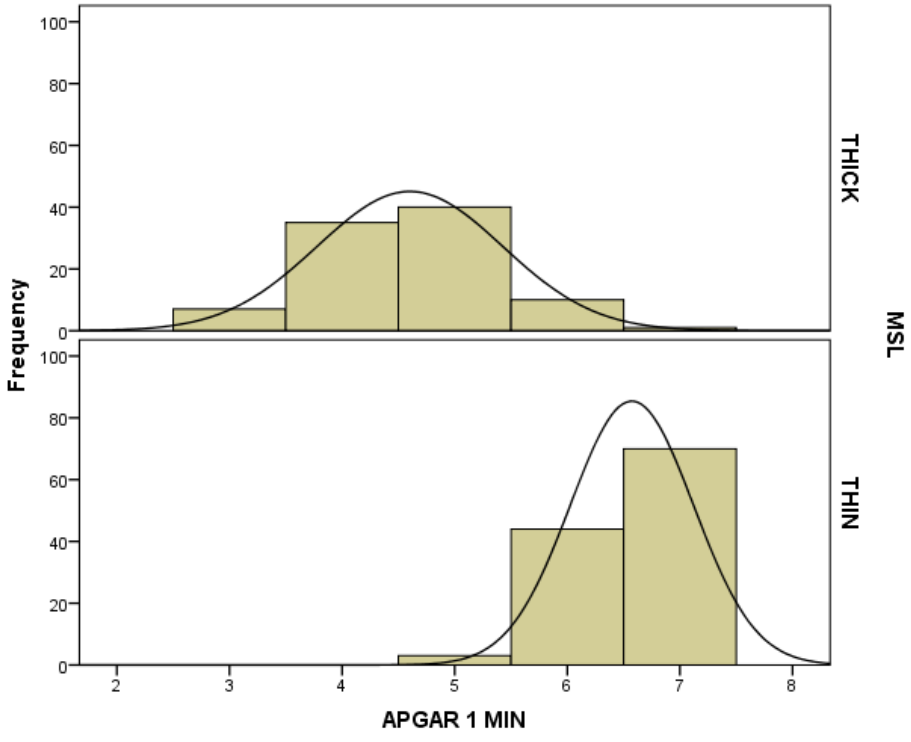
7) Bar diagram showing neonatal outcome



8) Mode of deliveries on the basis of meconium stained liquor

Variable	Mode of deliveries		Total	P value
Meconium stained liquor	Vaginal	LSCS		
Thick MSL	35	58	93	**0.000**
Thin MSL	88	29	117	
Total	123	87	210	

9) Neonatal APGAR scores based on MSL characteristics at 1 min and at 5 min



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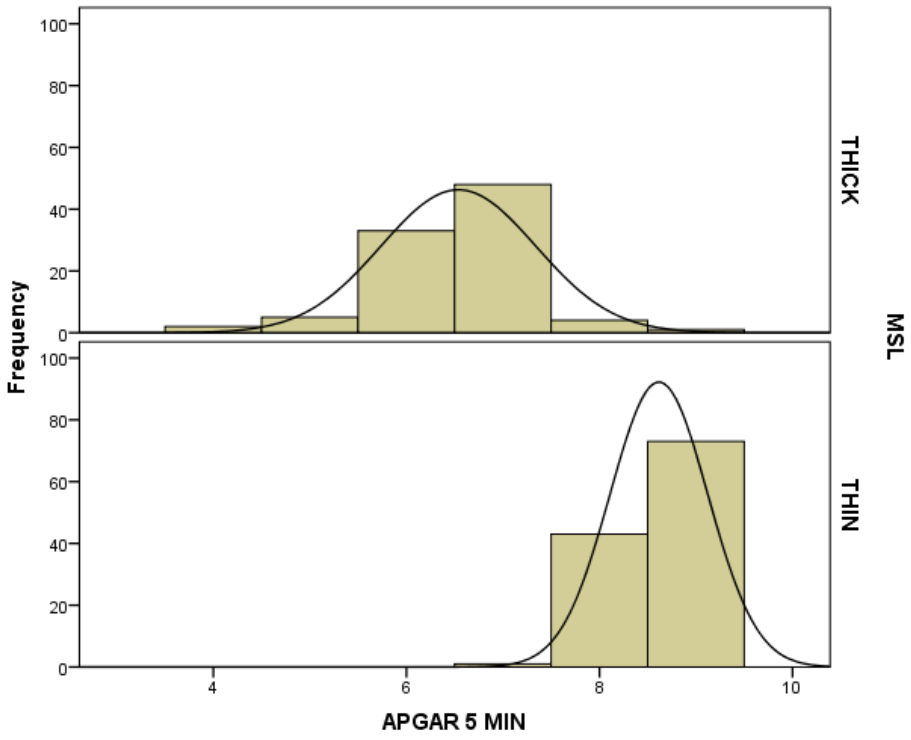

DISCUSSION

Meconium aspiration syndrome approximately accounts for 10 % of all causes of respiratory failure in neonates with of 20 % of neonatal mortality in developing countries. [4]

Additionally, neonates with MAS can suffer from various complications like neonatal sepsis, seizures, neurologic impairment and might require prolonged Neonatal ICU stay.[5]

Mild to severe MAS are classified based on the following criteria. [6]

- Mild : Oxygen requirement is less than 40% for less than one hour for a neonate.
- Moderate : Requirement of oxygen more than 40 % for a neonate for more than 2 days without air leak syndromes
- Severe : Requirement for ventilatory support for neonate for more than 2 days.

Resuscitation required for 25-30% of MSAF newborns in the delivery room whereas a similar proportion of MSAF newborns require transfer for NICU care. Approximately 40% of severe MAS infants develop persistent pulmonary hypertension of the newborn, which contributes to perinatal mortality. [7,8]

In the first 24 to 48 h after birth, a newborn physiologically passes meconium. Nevertheless, the fetus may pass meconium in the AF in utero due to different causes. Before 37 weeks of gestation, it is uncommon to find MSAF and along with the increasing gestational age the chances of a MSAF increases. [9] The etiology of it unknown. However, on the basis of studies done before had suggested that various factors such as prolonged second stage, postdatism , decreased amniotic fluid , IUGR and hypertension or other factors which can be acute fatty liver of pregnancy ,anemia or social factors such as advanced age during pregnancy,drug abuse are responsible at some extent. [10,11]

We have conducted a “MECONIUM STAINED LIQUOR ITS MANAGEMENT AND OUTCOME” study with the aim to assess the correlation between MSAF and neonatal

outcome, the correlation between thick and thin MSAF and fetal morbidity and mortality and correlation between thick and thin MSAF and mode of delivery.

210 subjects taken in the study with age around 27.22 years , with the highest 36 years and the lowest 22 years. 151 (71.9%) samples were from the 26-30 years , 46 (21.9%) subjects in 21-25 years. Out of which maximum were primigravida followed by second gravida patients. Neke Akhtar et al. also concluded age of mother was around 26.2 ± 5.2. [12] In our study 91 (43.3%) were primigravida and 118 were multigravida. According to Rao et al as high parity associated with decrease rates of MSL as parity increased. [13] However, Gupta et al believed that parity did not influence the incidence of MSAF. [14]

130 out of 210 patients (61.9 %) were delivered in 39-40 weeks of gestation followed by 45 patients i.e. 21.4% in 37 – 38 weeks of gestation. Among all the patients 117 (55.7%) were thin MSL as compared to the rest 93 (44.3%) were thick meconium-stained liquor. Gupta et al. & Oyelese Y et al revealed that there was a significantly increase in the incidence of (86.7%) meconium in the AF after 37 weeks. [14,15]

Though the presentation was cephalic 123 (58.6%) of study subjects were delivered normally vaginally while the remaining 87 (41.4%) were by lower segment cesarean section. Neke et al concluded that the incidence of C-section deliveries was 68% and more seen in thick MSL whereas Chishty AL et al. observed MSL associated with 62% of cesarean section rate. [16]

When neonatal outcomes were analyzed it was found that the 201/210 babies required primary resuscitation. 93 Out of 201 were thick meconium stained, rest 107 were of thin meconium. Subsequently, 99 out of 210 babies required further secondary resuscitation. In the group of secondary resuscitation, 93 / 99 were of thick meconium-stained deliveries, rest 6 / 99 were thin meconium-stained deliveries. The remaining 111 meconium-stained babies were stabilized with primary resuscitation. 91 / 210 babies born with meconium-stained liquor required NICU admissions. Out of which 87 were thick meconium stained and the rest 4 were thin meconium stained. All four deaths were noticed in the babies born with thick meconium liquor. No deaths have been noticed in the thin meconium-stained liquor deliveries. 58 out of 93 thick meconium-stained liquor underwent LSCS while the remaining 35 delivered by vaginal delivery. The birth asphyxia was markedly high in MSAF was documented by Gupta et al[14], whereas Khatun M et al. found 12.9% cases of hypoxia. [17]

APGAR score in 1st and 5th minute was low (<7) in patients with thick meconium in comparison to patients with thin meconium. Patil KP et al. observed that 6.74% of patients with thin meconium and 26.25% of patients with thick meconium had low (<7) APGAR score.[18] The mode of delivery was markedly affected by the presence of MSAF. In our study, 58 out of 93 thick meconium-stained liquor underwent LSCS while the remaining 35 were delivered by vaginal delivery in contrast to thin MSL which was 88 for vaginal deliveries and 29 for LSCS.

Primary MSL is when meconium staining present at the time of membrane rupture. Whereas secondary MSAF is defined as the amniotic fluid was clear initially but later on becomes meconium stained. As per Hiersch et al., who concludes that primary and secondary MSAF corresponds to fetal maturation and fetal distress respectively. [19]

Those who survive are at risk of various pulmonary complications like pneumonia, reduced lung capacity, bronchial allergic reaction and asthma . Approximately 5% of MAS patients

require Oxygen treatment at the age of first 30 days. [20] Furthermore, MAS despite the delivery route and the therapies might cause long-term neurodevelopment disabilities.
In order to control the incidence of MAS few measures can be taken as active induction of labour to reduce post-term births, aggressive management of deliveries based on cardiotocographic tracing, and better management of critical neonates in the delivery room. Traditional gastric lavage should be avoided while amnio-infusion may play a role. [21]

CONCLUSION

The meconium-stained amniotic fluid substantially influences both mode of delivery and neonatal outcome as compared to the other counterpart. Once meconium has passed vocal cords & entered lung parenchyma, we can not stop MAS. Meconium-stained amniotic fluid can increase the burden on the healthcare system as it can lead to the raised requirement of resuscitation of neonates, increased perinatal hypoxia, MAS, admissions in hospital, and mortality. Hence, intense fetal monitoring in intrapartum high risk pregnancies and timely Operation theatres should have necessary instruments like O2 mask, laryngoscope , suction machine with cathetre, ET tube & AMBU.The expert paediatrician with full working NCR unit are mandatory.Ultimately we can reduce neonatal morbidity & mortality in amniotic fluid stained with meconium.

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