



MATERNOFETAL OUTCOME IN MECONIUM STAINED LIQUOR AT TERTIARY CARE HOSPITAL

Obstetrics & Gynaecology

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ABSTRACT

BACKGROUND: Occurance of meconium-stained amniotic fluid (MSAF) during labour may be considered as a measure for prediction of poor fetal outcomes such as meconium aspiration syndrome and perinatal asphyxia ,resulting in perinatal as well as neonatal morbidity and mortality. It constitutes about 5% of deliveries with meconium stained amniotic fluid and death results in about 12% of infants with MAS.

METHODS: 40 cases of meconium stained liquor detected after spontaneous or artifical rupture of membranes taken during labour from june 2020 to december 2020 and their outcome in terms of mode of delivery(whether vaginal delivery or lower segment caesarean section) and fetal outcome and associated maternal high risk were studied

RESULT: Anemia was co existant in around 15%, pregnancy induced hypertension(PIH) in 25%and premature rupture of membrane in 10%.Pregnancies complicated with Pregnancy induced hypertension had significant higher rate of meconium stained liquor among all cases. Caesarean Section was commonly performed in meconium stained amniotic fluid cases and accounted for about 65%of all cases.

CONCLUSIONS: Meconium Stained amniotic fluid increases the chances of caesarean rates,leading to birth asphyxia ,Meconium Aspiration Syndrome and hence increases the chances of neonatal intensive unit admission.

KEYWORDS

Meconium,Amniotic fluid,Meconium Stained amniotic fluid,MSAF

INTRODUCTION:

AIMS AND OBJECTIVE:

To predict perinatal outcome in cases with meconium stained amniotic fluid,their mode of delivery and associated maternal risk factors.

The word meconium has been derived from the Greek word “meconium arion”resembling opium or poppy like substances ,causing sleeping state like fetus in the uterus.¹

Presence of meconium-stained amniotic fluid (MSAF) during labour is considered as the indicator in predicting adverse fetal outcomes like meconium aspiration syndrome and perinatal asphyxia ,leading to perinatal as well as neonatal morbidity and mortality.^{2,3}

Meconium stained amniotic fluid has a direct relation with fetal distress and increased chances of aspiration of meconium with harmful effect on the neonatal lungs.

Whitridge J. William in 1903 observed a characteristic sign of impending asphyxia is escape of meconium . Passage of meconium is rarely seen before 34 weeks of gestation and its incidence increases after 37 weeks of gestation.It increases consistantly with the increasing gestational age.

Meconium passage in mature fetus is increased by myelination of nerve fibers,its parasympathetic tone and with concentration of motilin.

Thin Meconium is passed as a maturation event in most of the cases.⁴

Three basic mechanism required for meconium passage:

- Physiological maturation event.
- Acute hypoxia occurring in late pregnancy
- Chronic intrauterine hypoxia.⁵

Meconium is thick,black green in colour ,germ and odor free material present in intestine of fetus till 12 weeks of pregnancy and stored in colon of fetus through out the pregnancy.^{6,7}

Amniotic fluid with meconium consists of debris,desquamated cells from intestine, skin, mucin,lanugo hair , material from vernix caseosa and some intestinal secretion.⁸

After 24-48 hrs of birth, the passage of meconium is normally seen in the newborn infants

Amniotic fluid contains carbohydrate, proteins, lipids, lactate, pyruvate,electrolytes,enzymes and hormones.

It protect fetus from external enviornment and help in fetal movement and growth.

Assessment of fetal lung maturity is done by determining lecithin/sphingomyelin ratio and presence of phosphatidyl glycerol in the amniotic fluid.

The assessment of lamellar body in amniotic fluid, surfactant to albumin ratio in amniotic fluid and electrical conductivity ,which is best method for evaluation of fetal lung maturity Meconium stained amniotic fluid is rarely seen before 37weeks of gestation and occurance of meconium stained amniotic fluid increases with increasing period of gestation⁹

Meconium aspiration is defined as presence of meconium below the level of vocal cord and contribute almost 20-30% of all new born which is associated with meconium stained amniotic fluid .

Occurs in uterus with gasping of fetus or after the birth Meconium Aspiration Syndrome(MAS) is defined as difficulty in breathing that develop after the birth ,with X-ray finding of aspiration pneumonitis and presence of meconium stained amniotic fluid.⁹

It constitute about 5% of deliveries with meconium stained liquor and mortality occurs in about 12% of infants with MAS.

As per RCOG intrapartum guideline,meconium stained liquor is categorised as Significant MSL and Non significant MSL.

Thin yellow or greenish tinged fluid, containing non particulate material is seen in Non significant MSL.

Dark green or black liquor that is thick and tenacious and consists of lumps of meconium ,seen in Significant MSL.¹⁰

MATERIAL AND METHODS:

This prospective observational study was carried out in the Department of Obstetrics and Gynaecology, Mahatma Gandhi Hospital ,Jaipur from june 2020 to December 2020

INCLUSION CRETERIA:

Included all pregnant women who had completed more than 37weeks

of gestation with singleton pregnancies with cephalic presentation with no congenital anomalies.

EXCLUSION CRITERIA:

Included pregnancies who had completed less than 37 weeks of gestation with presentation other than cephalic presentation with known fetal congenital abnormalities

Those with meconium stained amniotic fluid (MSAF) detected after spontaneous or artificial rupture of membranes

40 cases with Meconium stained amniotic fluid are selected from June 2020 to December 2020

The patients were carefully watched for progression of labour and they were strictly monitored for progress of labour and fetal heart rates .

Mode of delivery was decided, considering all obstetrical conditions. Fetal outcome in terms of fetus being apparently healthy .Apgar Score at 1 minute and 5 minutes ,birth weight ,neonatal intensive care admission (NICU) ,birth asphyxia,meconium aspiration syndrome (MAS)and early neonatal death were noted.

RESULTS:

Tables:

1)Maternal Age

<20yrs	0	0
20-30yrs	26	65%
>30yrs	14	35%

Parity

Primigravida	21	52.5%
Multigravida	19	47.5%

Gestational Age

37-38weeks	14	35%
39-40weeks	6	15%
>40weeks	20	50%

2)Relation of antepartum and intrapartum factors with meconium stained fluid.

Factor	Cases	Percentage	P value
Anemia	6	15%	0.17
IHCP	3	7.5%	0.3
DM	1	2.5%	Not significant
Hypertension	10	25%	0.083
PROM	4	10%	0.2
DCM	1	2.5%	Not significant
Hypothyroid	8	20%	0.1
Asthma	1	2.5%	Not significant

3)Association of cervical dilatation with meconium stained liquor

CERVICAL DILATATION	NO OF CASES	Percentage
0	9	22.5%
1	16	40%
2	8	20%
3	7	17.5%

4)Mode of Delivery

Mode of delivery	Cases	Percentage
Vaginal	14	35%
Instrumental	0	0
C-section	26	65%

Fetal weight

<2kg	10	25%
2-2.5kg	16	40%
>3kg	14	35%

5)Perinatal Outcome

Parameter	Cases	Percentage
Asymptomatic at Birth	32	80%
Apgar score at 1 minute(<7)	18	45%
Apgar score at 5 minute(<7)	6	15%
Meconium Aspiration Syndrome	1	2.5%
Birth Asphyxia	13	32.5%
Neonatal Sepsis	1	2.5%
Early neonatal Death	1	2.5%

40 pregnant women with 37 completed weeks of gestation and with cephalic presentations were included in this study. 20-30 yrs of age was seen in 65% cases Approximately gestational age of more than 40 weeks seen in 50%cases.

Anemia was found in around 15%, pregnancy induced hypertension (PIH) was found in 25%and premature rupture of membrane was found in about 10%cases.Pregnancies with PIH had higher rate of meconium staining among cases.

No significant difference seen with Diabetes and Asthma.

Caesarean Section was seen with MSAF cases and accounted for about 65% cases.

In 80% cases babies were asymptomatic at birth .

Neonates with MSAF had low Apgar scores at birth and 32.5%cases needed neonatal care unit admission.

Meconium aspiration was seen in single case and one baby had early neonatal death.

No significant difference was observed in terms of weight at birth.

STATISCAL ANALYSIS:

Among 40 pregnant women, 65% were between age of 20-30yr and 35% were above 30yr of age.

52.5% were primigravida and 47.5% were multigravida.

35% were between 23-38 week,15% between 39-40weeks and 50% were more than 40weeks.

Anemia seen in 15% ,IHCP in 7.5% and DM ,HTN ,DCM and Asthma seen in 2.5% .

PROM accounts for 10% and Hypothyroidism in 20%.

Caesarean section was done in 65% cases and Vaginal delivery in 35% cases.

Fetal weight were less than 2kg in 25% and 40% were between 2 to 2.5 kg and more than 3 kg fetal weight were seen in 35%

In terms of perinatal outcomes ,around 80% were asymptomatic at birth,45% had apgar score at 1 min ,15% had apgar score at 5 min.Meconium aspiration syndrome were seen at 2.5%,Birth asphyxia seen in 32.5% and neonatal sepsis were seen in 2.5% and early neonatal death seen in 2.5%.

DISCUSSION:

This study was done to find out the adverse fetal outcome and risk in deliveries with meconium stained liquor .

Factor influencing fetal well being during intrapartum and postpartum period is meconium stained liquor.

Meconium passage before birth occurs in about 20% of the term deliveries.

Incidence of MSAF was one for every five deliveries,relatively being a common finding.

It is most common cause of compromised fetal outcomes and hence increases number of neonatal intensive care unit admissions.

This study in accordance with study done by Rajlaxmi et.al showed that incidence of MSAF was higher in age group of 20-30 years which is quite similar to Sandu SS et al and caesarean which is seen in about 65% of cases.

Saunders et al reported that caesarean sections were done two times as frequently in women with meconium stained amniotic fluid.Higher rate is seen due to lack of monitoring facilities such as foetal scalp pH monitoring and tracing of foetal electronic monitoring.

In accordance with study results,our study showed double caesarean section.

The present study had a caesarean rate of around 50%.

Higher rates shows abnormal foetal heart rate patterns associated with MSAF and they also reflect the obstetrics dilemma in managing risk of complicated labour, as during this time, they are more concerned about the foetus and any alterations in normal labour patterns ends up in caesarean section.

In contrast to our study, Wong SF found that only 13.2% of MSAF had undergone caesarean sections as compared to 8.8% cases who had undergone them in clear liquor. Such lower rates of caesarean section could be due to incorporation of scalp pH monitoring sampling in their study unlike Naveen S et al also reported a caesarean section of 49.1% in MSAF.

The consistency and frequency of meconium has direct relation with foetal outcome. The risk of perinatal death increases to five to seven times when a thick meconium is present at onset of labour.

Infants with thin meconium passes as a physiologic process of maturation and are healthy at birth but may still require intensive foetal monitoring.

Incidence of MSAF increases with gestational age and are seen in this study.

50% cases had period of gestation of more than 40 weeks. A majority of these cases were unbooked and mainly postdated, as these mothers had previous successful home deliveries. So, waited for longer duration and had reported to hospital when their pregnancies had crossed term or beyond and when they had felt that are difficult to deliver.

Another study was done by Pooja et al showing incidence of meconium stained liquor syndrome in about 2.5% which is similar to this study.

Another study was done by Hemali et al to find out the cause of fetal outcome in meconium stained liquor deliveries and to determine the risk of adverse fetal outcome associated with them.

More than 35% were term patients.

In our study 25% patients were associated with hypertension.

Pregnancy induced hypertension was associated with MSAF unlike 13% in studies of Bhide et al and Hosna Ara Khatun et al.

Hypertension disorders are one of common maternal medical conditions associated with pregnancy. MSAF along with pregnancy induced hypertension causes underlying insufficiency of uteroplacental circulation which lead to fetal hypoxia, resulting in meconium passage.

Pregnancy induced hypertension was seen in about 25% cases.

CONCLUSION:

Meconium Stained amniotic fluid newborn increases the chances of caesarean rates, causes birth asphyxia, MAS and increase neonatal intensive unit admission.

The prevalence of meconium stained amniotic fluid was almost similar to the research of international.

Factors such as pre-eclampsia, maternal age more than 30 yrs, obstructed labour, induced labour and prolonged labour were individually associated with increased risk for meconium-stained amniotic fluid in term pregnancies.

So, Early detection can be done using partograph and timely intervention is required to decrease prolonged and obstructed labour.

So identification of pregnant woman at a risk of passage of meconium during labour allows intensive fetal monitoring and early intervention which may lead to reduction in poor neonatal outcome.

Neonatal expertise at the time of delivery with equipments like oxygen mask, laryngoscope, suction catheter, endotracheal tube & AMBU bag should be present and advanced neonatal resuscitation unit may be required to decrease neonatal morbidity and mortality in patients with meconium stained liquor.

Meconium stained amniotic fluid especially thin MSL alone is not a

indicator for fetal distress but with non assuring Fetal heart rate pattern should be taken as alarming sign for neonatal outcome.

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