Research Article **Medical Sciences**

International Journal of Pharma and Bio Sciences **ISSN 0975-6299**

OBSTETRICS OUTCOME AT TERM IN MECONIUM STAINED AMNIOTIC FLUID – A RETROSPECTIVE STUDY.

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ABSTRACT

Objective-The purpose of this study was to find out prevalence ,risk factors, mode of delivery, & perinatal out come in Meconium stained amniotic fluid (MSAF) during delivery At term pregnancy.Study design-this retrospective study was conducted in MGMC&RI,puducherry with womens at 37-42 wks of gestation those were meconium stained amniotic fluid during labour & delivery.Different maternal outcome like mode of delivery,indication for operative delivery & perinatal outcome in relation to low apgar score,neonatal intensive care unit(Nicu) admission,meconium aspiration syndrome(MAS),perinatal asphyxia & neonatal death were analysed .Result—Prevalence of meconium stained amniotic fluid during labour & delivery was 12.42% during study period.Most of the cases were primigravida (85%) with mean age & gestational age of-24.99 yrs & 39.44 wks respectively. Postdated pregnancy (32.85%) & oligo hydramnios(18.57%) were the two major risk factor for meconium stained amniotic fluid.Caesarean section (C.S) was the most common mode of delivery (84.28%) due to fetal distress & thick meconium stained liquor(40.71%).20% of cases were admitted to Nicu for low apgar score at birth.50% of nicu admission were due to MAS & its complication.There were two(7.14% of nicu admission) neonatal death due to MAS & its complication inspite of early active intervention in our study.
Conclusion-Meconium stained amniotic fluid during labour & delivery is definite direct & indirect evidence of fetal distress(FD) .Grading of meconium stained amniotic fluid was a severe adverse effect in perinatal outcome. Instead of early active intervention there were early neonatal death in our study. So the outcome of meconium stained amniotic fluid during labour & delivery is unpredictable.

KEYWORDS—Meconium stained amniotic fluid.,Meconium aspiration syndrome,Fetal distress,Caesarean section, Neonatal intensive care unit.

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INTRODUCTION

Meconium ,the first sterile intestinal discharge of new born, is a viscous dark green substance composed of intestinal epithelial cells,lanugo,mucus,biles,mucosal cells & solid elements of swallowed Amniotic fluid.Meconium is rarely found in AF prior to 34 wks. Usually neonate passes meconium soon after birth but under stress fetus passes meconium while still inside the uterus. Presence of meconium stained amniotic fluid(MSAF) is a sign of fetal compromise & increased chance of perinatal morbidity. Risk factors that may cause stress on the fetus which lead to MSAF are --: placental ageing due to postdated pregnancy,lugr, oligohydramnios, hypertensive disorder of pregnancy,GDM , overt diabetes melitus & maternal drug abuse . Meconium may be aspirated before or during labour & delivery resulting in neonatal RDS.. Prevalence of Meconium stained amniotic fluid varying between 7-22% of live births [1] . Prevalence of MAS is about 1.8%-18% in infants delivered from MSAF[2] . There are contradictory studies about the effect of MSAF on obstetrics outcome.So this present study was conducted with the objective to find out prevalence, association of risk factor & mode of delivery & perinatal outcome in patients having meconium stained amniotic fluid during labour & delivery.

MATERIALS & METHODS

This retrospective study was conducted in MGMC&RI puducherry a tertiary care centre . Data was collected from labour room record for the period of JUNE 2013 to DEC 2013. Pregnant women at term with cephalic presentation with MSAF during labour was included in the study. Gestational age less than 37 wks or more than 42 wks, previous Caesarean section ,Twin pregnancy Non-cephalic presentation , abruption & IUD were excluded from the study.Data was collected regarding maternal age,gestational age & parity & induction with misoprostol. Outcome parameters were prevelance of MSAF ,mode of delivery,indication for operatve & instrumental delivery, birth weight, Apgar score <7 at 1 & 5mins , NIcu admission ,MAS & neonatal death. Collected data was entered in MS excel spread sheet & statistical analysis was done by EPI info.

RESULTS

Out of total -1260- deliveries only 164 patients(prevalence --12.42%) were found to have MSAF during labour & delivery .Among them 140 cases were taken for study & 24 cases excluded due to previous Caesarean section. Table 1 shows the distribution of Age,parity & gestational age among the cases.. The mean age & gestational age were 24.99 yrs. & 39.44wks respectively. Table 2 ,3 & 4 shows mode , Grading of meconium during delivery, risk factors & indication of caesarean sections respectively. Table -5 shows mode of delivery & prevalence of MAS according grading of meconium.Table 6 & 7 shows neonatal parameters such as mean birth weight, apgar score ,Nicu admission , causes & Neonatal death respectively.

Table 1
distribution of cases by Age, parity, & Gestaional ages.

Parameters	Cases
Age in years	
<20	04 (2.86%)
≥20-29Yrs	120 (85.%)
≥ 30yrs	16 (11.43%)
Mean (S.D) age in years---24.99yrs	
Parity	
Para0	119 (85%)
Para 1	16 (11.43%)
Para 2 or more	05 (3.57%)
Gestational age in wks	
37 to 40 weeks	94 (67.14)
40.1 to 42 weeks	46 (32.86%)
Mean GA—39.44wks	

Table—02
Type of labour,mode of delivery & grading of meconium

Parameters	Cases
Type of labour	
spontneous	72 (51.43%)
Induced	68 (48.57%)
Mode of delivery	
SVD	20 (14.28%)
IVD	02 (1.42%)
LSCS	118 (84.28%)
Grading of meconium	
Thin	32 (22.85%)
moderate	51 (36.42%)
Thick	57 (40.71%)
Misoprostol induced meconium stained liquor	14 (10%)

Table –03
Risk factors for MSAF

Risk factors	No of cases
Oligohydramnios	26(18.57%)
Pregnancy >40 wks	46(32.85%)
PIH	11 (7.85%)
IUGR	06 (4.28%)
Prom	19 (13.57%)
NRNST	04(2.85%)
GDM	07 (5%)
Hypothyroidsm	04(2.85%)

Table no-04
Different causes of Lscs.

Different causes of Lscs	No of cases
Fetal distress	107 (90.67%)
CPD	05(4.23%)
DTA	02 (1.69 %)
NRNST	02 (1.69%)
Failed induction	01 (0.84%)

Table NO---05
Mode of delivery & MAS according type of meconium

Grade of meconium	Mode of delivery			MAS
	SVD	IVD	Lscs	
Thin	09 (28.12%)	02 (6.25%)	21 (65.63%)	04(12.5%)
moderate	03(5.88%)	Nil (0%)	48(94.12%)	02(3.92%)
Thick	08(14.03%)	Nil(0%)	49(85.97%)	08 (14.03%)

Table no—06
Neonatal Parameters.

Neonatal parameters	Cases
Birth weight: < 2.5 kg. ≥ 2.5 kg	 26 (18.57%) 114 (81.43 %)
Mean (SD) Birth weight in Kg—2.91kg	
Apgar score: <7 in 1 min. <7 in 5 min	 23 (16.42%) 06 (4.28%)
Total Nicu admission	28 (20%)
Neonatal death	**02 (1.42%)**

Table No --07
Different causes of Nicu admission

Different causes of Nicu admission	No.of cases
MAS	08 (5.71%)
MAS with associated complication	06 (4.28%)
MSAF with PND	03 (2.14%)
PND	04 (2.85%)
HIE	02 (1.42%)
TTN	01(0.71%)
Sepsis	02(1.42%)
Neonatal jaundice	01(0.71%)
Reffered out side	01(0.71%)

DISCUSSION

Neuronal vagal stimulation of maturing GI tract due to fetal hypoxia (from head or cord compression) cause peristalsis & relaxation of the rectal sphincter leading to meconium passage. Effect of meconium in MSAF[3] reduces antibacterial activity & increases perinatal bacterial infection, irritating fetal skin causing erythematoxicum. Aspiration of meconium induces hypoxia via four pulmonary effect i.e airway obstruction,surfactant dysfunction,chemical pneumonitis & primary pulmonary hypertension.meconium deactivates surfactant & may also inhibit surfactant synthesis[8].. Free fattyacids of meconium have higher minimal surface tension than surfactant & strip it from the alveolar surface result diffuse atelectasis[8]). MSAF can be graded as --

Grade I (Thin)– Slight greenish or yellowish tinge discolouration. Usually will not cause MAS.

Grade II (Moderate)- AF looks like khakhi green or brownish in colour. In early labour, its also a concern that the baby could inhale the meconium at birth with risk of MS.

Grade III (Thick) – AF are very dark green colour and pea soup in consistency. Risk of MAS is very high and complication may be life threatening.

While Clear liquor is considered reassuring on amniotomy MSAF needs continuous electronic fetal monitoring for fetal welling[6,7]. MAS is a respiratory disorder in an infant born through MSAF whose symptoms cannot be other wise explained. Cleary & wiswell proposed severity criteria to define MAS as -

Mild – requires <40% o2 for <48hrs.

Moderate - >40% O2 for> 48hrs,no air leak.

Severe—associated ventilation for 48 HRS often with primary pulmonary hypertension.
Babies who have severe aspiration & need ventilation are at increased risk for pneumo thorax, aspiration pneumonia, bronchopulmonary dysplasia & PPHN. Uncomplicated MAs improve within a few days or weeks depending on severity of aspiration.some studies suggest those born with MAS are at a higher risk of having more sensitive lungs lead to an asthamatic condition. Severely affected babies may develops chronic lung disease, developmental abnormality, hearing loss or neonatal death.NICE 2007 recommended continous electronic fetal monitoring, emergency delivery if fetal blood sample PH <7.21, advanced resuscitation unit & skilled staff ,No suction prior to delivery during intranatal period in MSAF. No suction & observation for 12 hrs for signs of respiratory distress in healthy neonate at birth. IN sick neonate if vitals are depressed suction during direct vision, NIcu admission, arterial blood gases,chest x-ray & complete blood count.

The mean gestational age in our study is 39.44 wks while the mean GA in Becker et al [10] ,WongsF et al[11] study were 40.3±1.0 wks & 40wks respectively.In postdated pregnancy the incidence of MSAF during labour & delivery varies from 28-52% [12], in our study only 46 (32.86 %)postdated pregnancy were MSAF during labour & delivery.Naveen et al [13] also identified postdated pregnancy as one of risk factor for MSAF.The caesarean section rate because of MSAF is 84.28% in present study. In the study by patit etal[9] & Naveen S et al [13] the c.s rate was 42% & 49.1% respectively . This high rate can be attributed to the due to liberal decision of Obstetricians due to inherent fear of litigation. In a large study by Yoder et al[14] in 2002 , 17.3% & 2.7 % of live birth at term were exposed to MSAF & MAS respectively.In our study 28 (20%) of babies were admitted to nicu with low apgar score but in Patit et al [9] & wongs F etal [11] it was 19.1% & 29 % . respectively.In our study MAS were diagnosed in 10% of babies with mecomiun stained AF in comparision to 12.8% babies born through MSAF in patil et al study. In our study 02 (1.42%) perinatal death were observed while study by patil et al 4% perinatal death were observed. As thickness of meconium had a direct effect on the neonatal out come , the birth asphyxia rate is significantly higher in thick meconium compare to thin & no mortality in thin MSAF with birth asphyxia group.

CONCLUSION

Meconium stained amniotic fluid during labour & delivery is definite direct & indirect evidence of fetal distress(FD) .Grading of meconium stained amniotic fluid was a severe adverse effect in perinatal outcome. Instead of early active intervention there were early neonatal death in our study. So the outcome of meconium stained amniotic fluid during labour & delivery is unpredictable.

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