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FETOMATERNAL OUTCOME IN MECONIUM STAINED AMNIOTIC FLUID IN A TERTIARY RURAL HEALTH CARE CENTRE

Obstetrics & Gynaecology

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ABSTRACT

Background: The study was undertaken to determine the correlation of amniotic fluid stained with meconium (MSAF) with maternal and fetal outcome.

Methods: This prospective observational study was carried out in the Department of Obstetrics and gynecology, Sri Adichunchanagiri Institute of Medical Sciences, BG Nagara for over a period of 6 months between July 2020 and December 2020. A total of 168 pregnant women were included in the study. MSAF on spontaneous or artificial rupture of membranes were monitored during labour with fetal heart rate abnormality, consistency of liquor, 1 minute and 5 minute Apgar score, LSCS, instrumental delivery, NICU admissions and neonatal complications as outcome variables.

Results: Women were divided into two groups: 69 were cases with meconium stained amniotic fluid (MSAF) and 99 were controls with clear amniotic fluid. Among 69 cases with MSAF 17.4% were unbooked & 82.6% were booked (at least 3 visits in first trimester), 79.7% were between 20-30 years of age group. Primigravida's constituted 55.1% in the study group. Approximately 34.8% had gestational ages of >39- 40 weeks. Caesarean section done in cases of MSAF accounted for 55.1% Normal deliveries were 36.2% in cases and 45.5% in controls.

Conclusions: Presence of MSAF is worrisome for both the obstetrician and pediatricians view as it increases surgical intervention, birth asphyxia, MAS & NICU admissions. Continuos fetal heart rate monitoring during labour and reassurance of fetal well-being by acid-base assessment were most significant factors in the reduction of meconium aspiration syndrome.

KEYWORDS

Meconium stained liquor, Term gestation, Apgar score, Birth asphyxia, MAS

INTRODUCTION:

A substance that accumulates in the bowel of the fetus in the intrauterine life is called meconium. Obstetricians have long realized that meconium during labor is problematic in the prediction of fetal distress or asphyxia. Around 12 to 22 percent of labors are complicated by meconium. There are three theories which suggest the mechanism of passage of meconium by the fetus in utero. First, fetuses may pass meconium in response to hypoxia, and meconium therefore signals fetal compromise. Second, in utero passage of meconium may represent normal gastrointestinal tract maturation under neural control. Thirdly, meconium passage follows vagal stimulation from common but transient umbilical cord entrapment with resultant increased bowel peristalsis. Recent reports have found an increased risk of fetal distress, neonatal respiratory distress, and increased perinatal morbidity and mortality. Meconium stained amniotic fluid (MSAF) also increases the incidence of meconium aspiration syndrome (MAS) which causes severe respiratory distress and fetal acidemia at birth.[1] The MAS can cause or contribute to neonatal death and in addition up to one third of all cases in which aspiration occurs, develop long-term respiratory compromise. MAS can occur in about 5% of deliveries with meconium-stained amniotic fluid and death occurs in about 12% of infants with MAS. Various methods have been tried to detect the presence of meconium in liquor and to prevent MAS. These methods include aminoinfusion, oropharyngeal suction, endotracheal intubation, aminoscopy, early induction of labour and detection by ultrasonography.[5] In the absence of these facilities there is an unnecessary increase in instrumental vaginal deliveries and caesarian section (CS) rate with increased maternal morbidity and mortality.

Considering the risk of MSAF, this study was under taken with an objective to correlate the maternal and fetal out come in those deliveries where there was meconium stained liquor & to determine the of adverse fetal outcome associated with MSAF.

METHODS:

This prospective observational study was carried out in the department of Obstetrics and Gynaecology, Sri Adichunchanagiri Institute of Medical Sciences, BG Nagara over a period of 6 months between July 2020 to December 2020.

Inclusion Criteria- All pregnant women more than 37 weeks of gestation with singleton pregnancies, and cephalic presentation, with no known fetal anomalies, spontaneous onset of labour, in whom presence of meconium in amniotic fluid on spontaneous rupture of membranes (SRM) or artificial rupture of membranes (ARM).

Exclusion criteria- included pregnancies < 37wks, any fetal anomalies, maternal age more than 35 yrs, antepartum fetal death, intra uterine growth retardation, non-cephalic presentations, Placenta Previa, induction of labour, and maternal systemic diseases.

168 pregnant women were included in the study, 69 were cases with meconium stained amniotic fluid (MSAF) and 99 were controls with clear amniotic fluid. Meconium was graded thick when amniotic fluid was viscous & contained large particulate material, thin if fluid was light greenish in colour.

All the information regarding cases and controls were noted in a pre designed proforma. The patients were carefully watched for progress of labour and they were strictly monitored for fetal heart rates by doing continuous fetal monitoring. Presence of meconium after spontaneous or artificial rupture of membranes was followed by cardiotocography for 20 minutes. Fetal outcome in terms of fetus being apparently healthy, Apgar score at 1 minute and at 5 minutes , birth weight, neonatal intensive care admission (NICU), birth asphyxia, meconium aspiration syndrome (MAS) and early neonatal death (death within seven days of birth), were noted.

The data was analysed using chi square test.

RESULTS:

During the study period there were 168 deliveries met the inclusion criteria. Women were divided into two groups 69 served as cases with MSAF, while 99 women clear amniotic fluid were taken as controls.

Among 69 cases with MSAF 17.4% were unbooked & 82.6% were booked (at least 3 visits in first trimester), 79.7% were between 20-30 years of age group. Primigravida's constituted 55.1% in the study group. Approximately 34.8% had gestational ages of >39- 40 weeks. Among MSAF 56.5% were thin stained and 43.5% were thickly stained (Table 1).

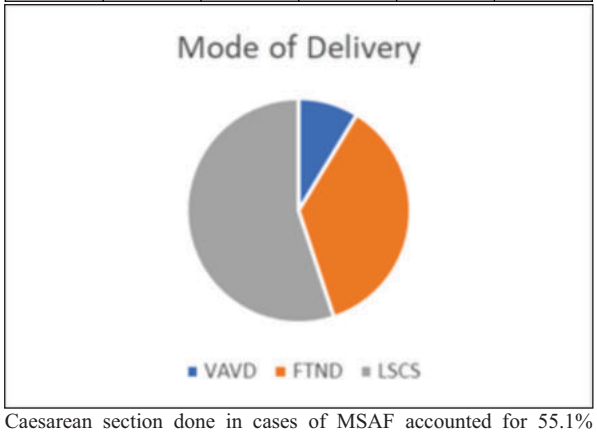
Table 1: Prevalence Of MSAF In Relation To Booking States

Maternal Age, Parity, Gestational Age And Intrapartum Meconium Staining.

		Group				P value
		Control (N=99)		Case (N=69)		
		N	%	n	%	
Booked Mothers		80	80.8%	57	82.6%	0.767
Unbooked Mothers		19	19.2%	12	17.4%	
Maternal Age	<20 yrs	0	0.0%	4	5.8%	0.049
	20-30 Yrs	86	86.9%	55	79.7%	
	>30 yrs	13	13.1%	10	14.5%	
Gestational Age	37-38 Wks	15	15.2%	11	15.9%	0.978
	>38-39	38	38.4%	25	36.2%	
	>39-40.0	35	35.4%	24	34.8%	
	>40-41.0	11	11.1%	9	13.0%	
Parity	Primi	59	59.6%	38	55.1%	0.550
	G2	28	28.3%	20	29.0%	
	G3	12	12.1%	9	13.0%	
	G5	0	0.0%	1	1.4%	
	G7	0	0.0%	1	1.4%	
Liquor	Thick	-	-	30	43.5%	-
	Thin	-	-	39	56.5%	

Table 2: Mode Of Delivery.

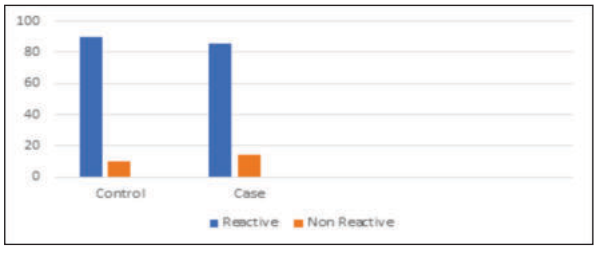
Mode of Delivery	Group				P value
	Control (N=99)		Case (N=69)		
	n	%	n	%	
VAVD	15	15.2%	6	8.7%	0.213
FTND	45	45.5%	25	36.2%	0.233
LSCS	39	39.4%	38	55.1%	*0.045*



Caesarean section done in cases of MSAF accounted for 55.1% Normal deliveries were 36.2% in cases and 45.5% in controls. Approximately 8.7% cases had instrumental delivery while in control group was 15.2% (Table 2).Regarding CTG outcome of patients with MSAF, 14.5% patients had non-reactive CTG, and 85.5% had reactive CTG. (Table-3).

Table 3: CTG Outcomes.

CTG	Group				P value
	Control (N=99)		Case (N=69)		
	n	%	n	%	
Reactive	89	89.9%	59	85.5%	0.387
Non Reactive	10	10.1%	10	14.5%	



Severe anaemia was seen in around 24.6% cases, pregnancy induced hypertension (PIH) was seen in 26.1% cases and that pre labour rupture of membranes was seen in 36.2% cases. Pregnancies complicated with PIH had statistically significant higher rates of meconium staining among cases as compared to those among controls. Gestational diabetes mellitus was seen in 8.7% of cases.

Table 4: Relation Of Antepartum And Intrapartum Factors With Meconium Stained Amniotic Fluid.

	Group				P value
	Control (N=99)		Case (N=69)		
	n	%	n	%	
PIH	15	15.2%	18	26.1%	0.079
Anemia	23	23.2%	17	24.6%	0.833
PROM	30	30.3%	25	36.2%	0.420
Non Progess of Labour	6	6.1%	7	10.1%	0.330
GDM	8	8.1%	6	8.7%	0.887
Previous LSCS	9	9.1%	12	17.4%	0.110

Infants with MSAF had low Apgar scores at birth (Table 5)

Table 6 Shows that no significant difference was observed in terms of birth weight between cases and controls. 39.1% of the infants needed NICU admissions for further resuscitation and management. 15.9% of cases had birth asphyxia which was statistically significant compared to that of the control. 23.2% of cases had transient tachypnea of newborn.

Table 5: APGAR Scores Among The Infants

		Group				P value
		Control (N=99)		Case (N=69)		
		n	%	n	%	
Apgar 1min	<7	5	5.1%	7	10.1%	0.207
	>=7	94	94.9%	62	89.9%	
Apgar 5min	<7	0	0.0%	1	1.4%	0.230
	>=7	99	100.0%	68	98.6%	

Table 6: Birth Weight

		Group				P value
		Control (N=99)		Case (N=69)		
		n	%	n	%	
Birth Weight	<=2.5 kg	8	8.1%	15	21.7%	*0.038*
	>2.5-3.0 kg	41	41.4%	26	37.7%	
	>3.0 kg	50	50.5%	28	40.6%	

Table 7: Neonatal Outcomes

		Group				P value
		Control (N=99)		Case (N=69)		
		N	%	n	%	
Birth asphyxia	Yes	0	0.0%	11	15.9%	*<0.001*
NICU Admission	Yes	18	18.2%	27	39.1%	*0.003*
TTNB	Yes	13	13.1%	16	23.2%	0.090

DISCUSSION:

Detection of MSAF during labour causes apprehension & anxiety to the health provider, as it is often considered as an indicator of fetal distress. It is a frequent cause for poor fetal outcome, as it increases the

number of neonatal intensive care unit admissions. We found that the incidence of MSAF was higher in the age group of 21-30 years which was similar to that as seen in Bhide S et al. study.[3] Incidence of MSAF increases with gestational age and this was very evident in this study. Association of PIH with MSAF is caused by an underlying utero placental insufficiency, which causes foetal hypoxia, resulting in meconium passage. Saunders et al. reported that caesarean sections were performed twice as frequently in subjects with meconium stained amniotic fluid.[2] This higher rate may be due to lack of facilities such as, fetal scalp pH monitoring and tracings of foetal electronic monitoring. In our study 85.5% patients with MSAF were CTG reactive, while the rest (14.5%), were with non-reactive CTG. Non-reactive CTG affected decision-making. But it is seen that infants delivered through CS have slightly better pH values and APGAR score than those delivered vaginally. In one study MAS was observed in 23.7% babies with thick meconium and 3.33% with thin meconium,[6]20 but in a study by Bhutta, et al it is proved that though MSAF is associated with MAS, there is no association between meconium thickness and severity of the respiratory disease.[7] In our study, 10.1% had low Apgar score, 21.7% had low birth weight, and 15.9% developed birth asphyxia. Among 27 babies admitted to NICU, two babies had Meconium Aspiration Syndrome. One baby was under CPAP for 3 days followed by oxygen hood for 3 days and nasal prongs for 5 days. Baby was on antibiotics and was discharged after 25 days from NICU. Another baby was on CPAP was 3 days and nasal prongs for 4 days. Baby was discharged after 10 days from NICU. There was no neonatal deaths encountered. Vigilant and careful monitoring of high-risk pregnancies can reduce perinatal morbidity and mortality.

CONCLUSION:

Meconium stained amniotic fluid is worrisome from both obstetrician's and paediatrician's point of view, as it increases the caesarean rates, causes birth asphyxia, and increases neonatal intensive care unit admissions, which were clearly seen in this study. Presence of MSAF requires intensive fetal monitoring, so as to decrease perinatal morbidity and mortality.

REFERENCES:

1. Cunningham FG, Leveno KJ, Bloom SL, Hauth JC, Gilstrap LC III, Wenstrom KD: Fetal assessment. Williams Obstetrics, ed 25. New York, Mc Graw Hill, 2018.
2. Saunders K. Should we worry about meconium? A controlled study of Neonatal outcome. Trop Doct. 2002;32(1):7-10.
3. Bhide SS, Shedurnikar N, Aiyer S, Baxi SR. Neonatal outcome after meconium stained amniotic fluid. J Obstet Gynecol India. 1993;44:933-5.
4. Sandhu SK, Singh J. Critical evaluation of meconium staining of amniotic fluid and fetal outcome. . J Obstet Gynecol India. 1993;43:528-53.
5. Ratnam SS, Bhaskar Rao K, Arulkumaran S. Practical approach to Intrapartum fetal monitoring in labour. Chapter 12. Obstetrics and Gynecology for Postgraduates. 1992;1:115-25
6. Becker S, Solomayer E, Dogan C, Wallwiener D, Fehm T. Meconium-stained amniotic fluid-perinatal outcome and obstetrical management in a low-risk suburban population. Eur J Obstet Gynecol Reprod Biol 2007; 132: 46-50.
7. Bhutta ZA, Jalil S. Meconium aspiration syndrome: the role of resuscitation and tracheal suction in prevention. Asia Oceania J Obstet Gynaecol 1992; 18: 13-7.