



STUDY OF FETAL MORBIDITY AND MORTALITY IN VARYING DEGREES OF MECONIUM STAINED AMNIOTIC FLUID

Gynecology

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KEYWORDS

INTRODUCTION

Meconium, the gastrointestinal excreta of foetus is derived from Greek "mekonion" meaning "from poppy" or "like opium" and believed that the substance caused sleeping state of the foetus in the mother's womb. Some theories have been proposed to explain foetal passage of meconium. Foetus passes meconium in response to hypoxia and signals foetal compromise.⁽¹⁾ In utero passage of meconium may represent normal gastrointestinal tract maturation under neural control. Meconium passage could follow vagal stimulation from common but transient umbilical cord entrapment and resultant increased peristalsis. Thus meconium release also could represent physiological process.⁽²⁾ 7-22% of pregnancy has been complicated due to meconium passage.⁽³⁾ 5% of these develop meconium aspiration syndrome. Meconium aspiration syndrome can cause or contribute to neonatal death in up to 0.05% (i.e. 1 in 2000 of all pregnancies).⁽⁴⁾ Meconium passage is rare before 32 weeks and its incidence increases as gestational age increases, especially in postdated pregnancy.⁽⁵⁾ Factors such as placental insufficiency, maternal hypertension, pre-eclampsia, oligohydramnios, postdatism, diabetes or maternal drug abuse (tobacco, Cocaine) result in in- utero passage of meconium.⁽⁶⁾ Meconium stained liquor is associated with higher rate of caesarean delivery, instrumental delivery, NICU admission rate, fetal distress, low birth weight, neonatal death.⁽⁷⁾ Various measures have been done to prevent these complications like amnioinfusion, oropharyngeal suctioning, endotracheal intubation after birth etc.⁽⁸⁾ There is controversy regarding its outcome and management, so this present clinical study was done to find out its significance in respect of perinatal mortality and morbidity.

OBJECTIVE

The purpose of this study was to determine the incidence, risk factors, mode of delivery and perinatal outcome in meconium stained amniotic fluid (MSAF) during delivery.

MATERIALS AND METHOD

The study was conducted in tertiary care hospital over a period of 4 months on the women coming to labour room or OPD with singleton pregnancy, cephalic presentation without associated medical and surgical complication with true labour pains at any gestational age.

Following selection of the cases, detailed history and examination for height of uterus, lie, presentation, position, liquor including pelvis assessment was done. Use of any medication like oxytocin, analgesics and sedatives, time of rupture of membranes, appearance of meconium were noted and depending upon the consistency and colour, liquor was grouped as thick (deep green) and thin (yellow). Fetal heart rate was monitored and any abnormality if any was noted.

Pediatrician was present during delivery oropharyngeal and/or nasopharyngeal suction, laryngoscopy and suction, endotracheal intubation was done according to the condition of the newborn and APGAR was noted at 1 min, 5 min, and 10 min after birth.

All the babies of the study group were followed up for perinatal morbidity and mortality. Incidence of NICU admission in the study group and the incidence of meconium aspiration & meconium aspiration syndrome were noted in babies born with meconium stained liquor.

RESULTS AND OBSERVATIONS

Fifty hundred meconium stained neonates born through vaginal delivery (22 neonates) or cesarean section (26 neonates) were studied. The mean age of mothers was 21.52 years. These women were further divided on the basis of clinical gradation of meconium staining according to colour and consistency, thin MSL-54% (n=27), and thick MSL-46% (n=13).

In present study we found increased incidence of MSL as gestational age increases as depicted in Table 1.

Gestational Age	34-36 wks	36-38 wks	38-40 wks	40-42 wks
FTND	Thick- 0 Thin- 4	Thick- 0 Thin- 8	Thick- 2 Thin- 5	Thick- 1 Thin- 2
LSCS	Thick- 1 Thin- 1	Thick- 2 Thin- 9	Thick- 5 Thin- 4	Thick- 1 Thin- 1
Instrumental	Thick- 0 Thin- 0	Thick- 0 Thin- 0	Thick- 0 Thin- 0	Thick- 1 Thin- 0
VBAC	Thick- 0 Thin- 0	Thick- 0 Thin- 1	Thick- 0 Thin- 0	Thick- 0 Thin- 0

In present study we found increased incidence of MSL in early parity as depicted in Table 2.

Parity	P1	P2	P3	P4	P5
	22	10	5	2	1
MSF	Thick - 5 (22.7%) Thin - 17(77.27%)	Thick - 3 (30%) Thin - 7 (70%)	Thick - 2 (40%) Thin - 3 (60%)	Thick - 2 (100%) Thin - 0	Thick - 1 (100%) Thin - 0

In present study the Male to Female ratio was found to be 29:21 as depicted in table 3.

	Thick	Thin
Male	4(40%)	25(62.5%)
Female	6(60%)	15(37.5%)

It was found that vaginal delivery was less in cases with meconium stained liquor compared to other modes of delivery as depicted in table 4.

FTND	LSCS	Instrumental	VBAC
22	26	1	1
Thick- 3 (13.63%)	Thick-10 (38.14%)	Thick - 0	Thick - 0
Thin - 19 (86.36%)	Thin-16 (61.53%)	Thin - 1 (100%)	Thin - 1 (100%)

Table 5 shows various indication of caesarean section.

2nd stage arrest	2(7.695%)
Previous LSCS with Scar tenderness	4(15.38%)
Fetal distress	7(26.92%)
Failure of induction	1(3.84%)
Non- progress of labour	3(11.53%)
Severe oligohydramnios	3(11.53%)
Post datism	2(7.69%)
PROM	2(7.69%)
Breech	2(7.69%)

Table 7 shows fetal outcome in women with MSL and clear liquor.

Baby With Mother	Baby In NICU	Died
37(74 %)	10(20%)	3(6%)
Thick -3	Thick -7	Thick -3
Thin - 34	Thin - 3	Thin - 0

DISCUSSION

The presence of meconium in amniotic fluid in cephalic presentation was of great concern even to the midwives and obstetrician of old age. Passage of meconium, once thought to be a sure sign of fetal death 'in utero', was later understood to be an evidence of fetal hypoxia. Even the modern obstetricians cannot be indifferent at the sight of meconium stained liquor during labour which calls for close vigilance of the fetal well-being.

The incidence of meconium stained liquor during labour in previous study varied between 7% and 22%. Mahapatro et al 2014 found the prevalence of meconium stained amniotic fluid is 12.42%.⁽³⁾

Barham (1969)⁽⁹⁾ classified meconium stained liquor into three groups according to different colours – light (50.82%), yellow (19.3%) and dark green (29.85%). In the present study, meconium stained liquor was classified into two grades. There were 51.86% in thin staining group and 48.14% were thickly stained. Priyadarshini et al found thin MSL = 86(34.4%), moderate MSL = 102(40.8%), thick MSL = 62 (24.8%).⁽⁷⁾ Nirmala et al,⁽¹⁰⁾ in her study, showed that there were 1267 deliveries among which MSL = 100(7.89%); thin MSL = 39%, moderate MSL = 43%, thick MSL = 18%. Our study was consistent with the study of Barham et al.

In present study incidence was relatively higher in maternal age group of 35 years and more which is comparable to Mahapatro et al (2014) found increased incidence of thick meconium, 11-43%, when maternal age group was above 30 years.⁽³⁾ Mundhara et al 2013 also found higher incidence of thick MSL in mothers with advance maternal age.⁽⁵⁾ Similarly to our study Osava RH et al. does not found correlation between maternal age and meconium stained liquor.⁽⁶⁾

Incidence of MSL increases with gestational age and this was very evident in present study. Statistically no significant association was found, due to sample size and associated variable factors which were not included in present study. Chakraborty et al found 34.1% incidence of thick MSL in postdated pregnancy but due to small sample size no significant relation was found.⁽³⁾

In the present study incidence of cesarean section was significantly increased in stained group (52%). This may be due to legal litigations. Espinheira MC et al in his study, showed the caesarean rate as 62.5%.⁽¹¹⁾ Conflicting results may be due to increased incidence of caesarean section in early labour or better resuscitation of newborn at birth and due to litigations.

Based on our study we can conclude that meconium stained amniotic fluid is associated with increased incidence of caesarean section, lower Apgar score, more neonatal nursery admissions. In the present study mainly Apgar score of 1 is found (66%). Similar results were observed by Rekha kumar et al.⁽¹³⁾

CONCLUSION

The presence of meconium in amniotic fluid is a serious sign of intra-uterine fetal compromise associated with an increase in perinatal morbidity, while clear amniotic fluid is referred as a good perinatal outcome. Some factors may influence the presence of meconium in amniotic fluid like advancing maternal age and gestational age, but significant association not found in our study, while mode of delivery, birth weight and APGAR score showed significant association for fetal outcome.

REFERENCES

1. Ouladsahebmadarek E, Hoseinian MH, Hamdi K, Ghosazadeh M. Perinatal outcome in relation to mode of delivery in meconium stained newborn. Pakistan Journal of Medical Sciences. 2012; 13-16, Jan 1; 28(1).
2. Chakraborty A, Mitra P, Seth S, Das A, Basak S, Paul J. Study on risk factors of meconium stained fluid and comparison of pregnancy outcome in clear and meconium stained amniotic fluid in a tertiary hospital, Kolkata, India. Int J Bio Med Res. 2013; 3084-3087, 4(2).
3. Mahapatro AK, Ghose S. Obstetrics outcome at term in meconium stained amniotic fluid-retrospective study. Int J pharm Bio Sci. 2014; 866-871, 5 (2); (B).
4. Rokade J, Mule V, Solanke G. To study the perinatal outcome in meconium stained amniotic fluid. Int Journal of Sci and Res Publications. 2016; 41-43, July; 6(7).
5. Mundhara R, Agarwal M. Fetal outcome in meconium stained deliveries. Journal of clinical and diagnostic research. 2013; 2874-2876, Dec; 7(12).
6. Osava, RH, Silva FM, Oliveira SM, Tuesta EF, Amaral, MC. Meconium stained amniotic fluid and maternal and neonatal factors associated. Revista de Saude Publica. 2012; 1023-1029, Dec; 46(6).
7. Balchin I, Whittaker JC, Lamont RF, Steer PJ. Maternal and fetal characteristics associated with meconium- stained amniotic fluid. Obstetrics & Gynecology. 2011; 828-835, Apr; 117(4).
8. Priyadarshini M, Panicker S. Meconium stained liquor and its fetal outcome

- retrospective study. IOSR Journal of Dental and Medical Sciences. 2013; 27-31, Apr; 6(2).
9. Barham, KA. Amnioscopy, meconium and fetal well- being. BJOG: An International Journal of obstetrics & gynaecology. 1969; 412-418, May; 76(5).
 10. Duhan N, Paul A, Duhan U. Meconium staining of amniotic fluid- a poor indicator fetal compromise. JK Science. 2010, Oct; 12(4).
 11. Nangia S, Pal MM, Saili A, Gupta U. Effect of intrapartum oropharyngeal (IP-OP) suction on meconium aspiration syndrome (MAS) in developing country: A RCT. Resuscitation. 2015; 83-87, Dec; 97.
 12. Espinheira MC, Grilo M, Rocha G, Guedes B, Guimaraes H. Meconium aspiration syndrome – the experience of a tertiary centre. Revista portuguesa De Pneumologia. 2011; 71-76, Apr; 17(2).
 13. Kumari R, Srichand P, Devrajani BR, Shah SZ, Devrajani T, Bibi I, kumar R. Foetal outcome in patients with meconium stained liquor. JPMA. The Journal of Pakistan Medical Association. 2012; 474-476, May; 62(5).
 14. Unnisa S, Sowmya B.S, Rao SB, Rajagopal K. Maternal and fetal outcome in meconium stained amniotic fluid in a tertiary centre. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 2016; 813- 817, Mar; 5(3).
 15. Supriya K, Thunga S, Singh P. Clinical study of meconium stained amniotic fluid. International Journal of Biomedical and Advance Research. 2014; 612-614, 5 (12).