



A COMPARISON BETWEEN MECONIUM CONSISTENCY AND INCIDENCE OF FEED INTOLERANCE IN BABIES BORN WITH MECONIUM STAINED AMNIOTIC FLUID - AN OBSERVATIONAL STUDY

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ABSTRACT

BACKGROUND: Feed intolerance in meconium stained amniotic fluid babies is common in early postnatal life. This can delay in establishing feeds in newborn and lead to numerous problems. Hence early identification of feeding problems and prevention has become important for the pediatricians.

OBJECTIVE: To compare the incidence of feed intolerance in babies born with meconium stained amniotic fluid to meconium consistency.

METHODS: Observational study on 121 newborn born with meconium stained amniotic fluid and followed up for feed intolerance in the post natal period for 48 hours.

RESULTS: The incidence of feed intolerance between different nature of meconium was not statistically significant (p=0.152)

CONCLUSION: Meconium consistency has least impact on incidence of feed intolerance in meconium stained amniotic fluid babies

KEYWORDS : Meconium, Feed intolerance, Newborn, Amniotic fluid

INTRODUCTION:

Meconium stained amniotic fluid (MSAF) babies are faced commonly by all pediatricians during neonatal resuscitation. Meconium stained amniotic fluid plays an important factor for predicting fetal outcome. Incidence of Meconium stained amniotic fluid is 12% to 16% in all deliveries.^{1,2}

Meconium stained amniotic fluid is associated with meconium aspiration syndrome, feed intolerance, hypoxic ischemic encephalopathy and may lead to poor fetal outcome. Ingestion of meconium by the baby causes feed intolerance as it is a chemical irritant.

Feed intolerance is 2.8 times more noticed in meconium stained amniotic fluid babies after the first feed compared to the normal babies.³ Hence a routine gastric lavage is done for all such babies to prevent vomiting or abdominal distension by many practitioners based on practical experience.

Thick meconium is associated with post term mothers, unbooked pregnancy and oligohydramnios.⁴ Poor neonatal consequences like low apgar, meconium aspiration syndrome is associated to thick meconium liquor.^{5,6} The objective of this study is to analyse the incidence of feed intolerance in meconium stained amniotic fluid babies with meconium consistency.

MATERIALS AND METHODS

Study design

A prospective observational study done for a period of two years (October 2019 to October 2021) in the postnatal ward of a teaching Government Medical College, Cuddalore, Tamilnadu, India. The study was approved by the Institutional Ethics Committee for Human Research. A written informed consent was obtained from the mother before delivery.

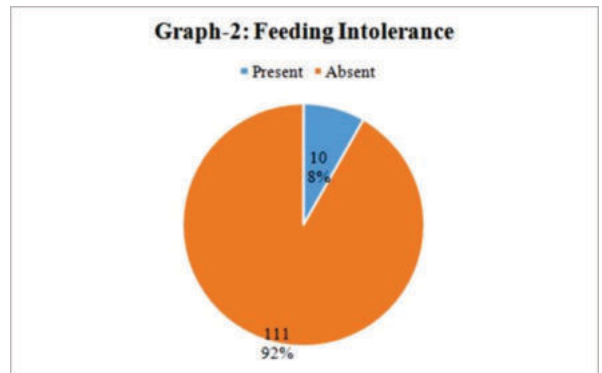
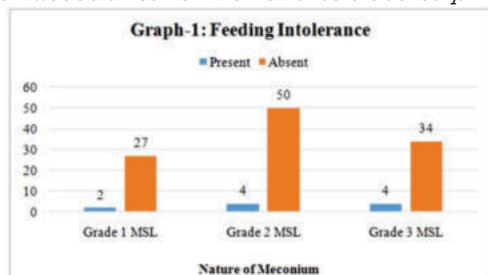
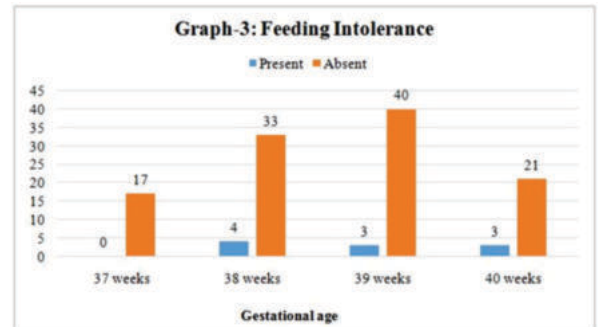


Table 1. Feeding Intolerance with the Nature of Meconium

Nature of Meconium	Feeding Intolerance		Total	Fisher exact p value
	Present	Absent		
Grade 1 MSL	2 (6.89%)	27 (93.1%)	29 (100%)	0.152
Grade 2 MSL	4 (7.4%)	50 (92.59%)	54 (100%)	
Grade 3 MSL	4 (10.52%)	34 (89.47%)	38 (100%)	
Total	10 (8.26%)	111 (91.73%)	121 (100%)	



The inclusion criteria was all meconium stained amniotic fluid - vigorous babies with gestational age >37 weeks and birth weight >2000grams. Preterm babies, non vigorous babies, downe's score >3, gross congenital anomalies and babies requiring cardiopulmonary resuscitation were excluded. The gestational age was calculated by Modified ballards score⁷

and Naegle's rule.⁸

Meconium was graded as grade 1, 2 and 3 based on the consistency

Grade 1 - slight greenish, yellow discolored fluid

Grade 2 - moderate stained greenish, brown colour

Grade 3 - thick staining with pea soup consistency⁹

METHODS

All the deliveries were attended by postgraduates trained in neonatal resuscitation. Infant was placed in a radiant warmer after delivery. Gentle oronasal suctioning was given. Umbilical cord was cut and clamped using sterile clamp. Baby was stabilised and monitored for heart rate, cyanosis, respiratory rate, apnea for 15 minutes. A baseline abdominal girth at umbilicus level was measured. The grade of meconium was recorded. Stable babies were shifted to the recovery room, postnatal ward for rooming in with the mother as early as possible; within 30 minutes. All the babies were exclusively breastfed and monitored for 48 hours. The first feed was given by the mother with the help of the trained nursing staff and assessed.

For study purpose, vomiting is defined as forceful expulsion of contents of stomach with effort. Regurgitation is defined as effortless expulsion of gastric contents. Criteria is adopted from Ameta et al³ as vomiting >2 episodes in a period of 4 hours or >3 episodes in a day, increase in abdominal girth >2 cm from baseline and residual gastric volume >50 percent of undigested milk or bilious fluid (checked if abdominal distension is noted).

The sample size is based on Lokraj shah et al¹⁰ considering the prevalence of feed intolerance and 95% confidence interval with 80% power the sample size was calculated as 121.

RESULTS

During my study period, 1135 babies were delivered of which 170 babies were born with meconium stained amniotic fluid. 49 babies were excluded for various reasons and 121 babies were enrolled and observed. Birth weight, sex, gestational age, mode of delivery, were also analysed.

Primary outcome

Grade 3 meconium stained amniotic fluid babies likely had higher proportion of feed intolerance with the incidence of 10.52% whereas grade 2 and grade 1 meconium stained amniotic fluid had 7.4% and 6.89% respectively. However incidence of feed intolerance with meconium nature was not statistically significant (p-0.152)

Secondary outcome

- Feeding intolerance with Gestational age
Babies with Gestational age of 40 weeks had higher incidence of feed intolerance (12.5%) followed by 10.81% in 38 weeks and 0% at 37 weeks. however statistically insignificant
- The incidence of vomiting, abdominal distention was highest in the first 6 hours of life with 5% and 1% respectively

DISCUSSION

In my observational study done among 121 babies born with meconium stained amniotic fluid, grade 3 meconium stained amniotic fluid had slightly higher incidence of feed intolerance however statistically not significant.

In my study feed intolerance was noticed more in babies with gestational age of 40 weeks and incidence of feed intolerance was higher during the first 6 hours of life.

Gaurav Ameta et al performed a study on 244 babies and

described that thickness of meconium did not affect the incidence of feed intolerance.⁹

Kumud Babu et al performed a study on 146 babies to evaluate incidence of feed intolerance in first 48 hours in meconium stained amniotic fluid babies and stated that there was no significant need for further stomach wash irrespective of nature of meconium thin or thick (RR 1.27 [95% CI :0.5, 3.4] and 0.49 [95% CI : 0.1, 2.5] respectively.¹¹

This present study demonstrates the incidence feed intolerance in meconium stained amniotic fluid babies as 8% and incidence was noted highest in the first 6 hours of life .

Hence early initiation of breast feeding dilutes the meconium in stomach leading to reduced irritation to gastrointestinal tract. The overall incidence of feed intolerance remained unchanged irrespective of gender, birth weight and nature of delivery.

The limitation of this study were small sample size, study conducted in tertiary setting and hence results cannot be generalized.

The feed intolerance for non vigorous babies are to be studied as the duration of exposure to meconium in utero is high in these babies and initiation of feeding is delayed

CONCLUSION

Incidence of feed intolerance in meconium stained amniotic fluid babies was not significantly related to nature of the meconium.

Conflict of interest – None

REFERENCES:

- Hageman JR, Conley M, Francis K, et al. Delivery room management of meconium staining of the amniotic fluid and the development of meconium aspiration syndrome. *Journal of Perinatology : Official Journal of the California Perinatal Association*. 1988 ;8(2):127-131. PMID: 3193263.
- Vani RK, Pati B, Veena KS, Kumar HVR. Comparison of neonatal outcome parameters between thick and thin meconium stained liquor: a prospective study. *Int J Reprod Contracept Obstet Gynecol* 2018; 7: 4407-12.
- HNarchi, N Kulaylat. Feeding problems with the first feed in neonates with meconium-stained amniotic fluid. *Pediatr Child Health* 1999;4(5):327-330.
- K., Rupa & Pati, Banishree & S., Veena & R., Hemanth. (2018). Comparison of neonatal outcome parameters between thick and thin meconium stained liquor: a prospective study. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*. 7. 4407. 10.18203/2320-1770.ijrcog20184481
- Fan, Hueng-Chuen, Fung-Wei Chang, Ying-Ru Pan, Szu-I Yu, Kuang-Hsi Chang, Chuan-Mu Chen, and Ching-Ann Liu. 2021. "Approach to the Connection between Meconium Consistency and Adverse Neonatal Outcomes: A Retrospective Clinical Review and Prospective In Vitro Study" *Children* 8, no. 12: 1082. <https://doi.org/10.3390/children8121082>
- Ballard JL, Khoury JC, Wedig K, Wang L, Eilers-Walsman BL, Lipp R. New Ballard Score, expanded to include extremely premature infants. *J Pediatr*. 1991 Sep; 119(3):417-23. doi: 10.1016/s0022-3476(05)82056-6. PMID: 1880657.
- Edwards KI, Itzhak P. Estimated Date of Delivery. [Updated 2020 Nov 6]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2021 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK536986/>
- Tolu LB, Birara M, Teshome T, Feyissa GT (2020) Perinatal outcome of meconium stained amniotic fluid among labouring mothers at teaching referral hospital in urban Ethiopia. *PLoS ONE* 15(11): e0242025. <https://doi.org/10.1371/journal.pone.0242025>
- Ameta G, Upadhyay A, Gothwal S, Singh K, Dubey K, Gupta A. Role of gastric lavage in vigorous neonates born with meconium stained amniotic fluid. *Indian J Pediatr*. 2013 Mar; 80(3):195-8. doi: 10.1007/s12098-012-0805-x. Epub 2012 Sep 19. PMID: 22990631.
- Shah, L., Shah, G.S., Singh, R.R. et al. Status of gastric lavage in neonates born with meconium stained amniotic fluid: a randomized controlled trial. *Ital J Pediatr* 41, 85 (2015). <https://doi.org/10.1186/s13052-015-0194-7>
- Kumud Babu Singh, Rashee Jain, Rajiv Babu, Jai Jyoti, Manish Kumar Singh, Ishan Parasher. "Role of routine gastric lavage in term and late pre-term neonates born through Meconium Stained Amniotic: A Randomised Control Trial". *Journal of Evolution of Medical and Dental Sciences* 2013; Vol. 2, Issue 51, December 23; Page: 9868-9875.