

FREQUENCY OF MECONIUM STAINED LIQUOR IN PATIENTS WITH POSTDATES PREGNANCIES

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ABSTRACT

Objective: To determine the frequency of meconium stained liquor in patients having gestation period of more than 40 weeks.

Material and Methods: This is a retrospective chart review of 495 patients treated at Khyber Teaching Hospital Peshawar Pakistan from September 2017 to September 2019. All the cases were identified from the medical record maintained at the Department. Laboring women having gestational age of more than 40 weeks were included in the study.

Results: A total of 495 patients were included in the study. The Frequency of meconium stained remained high (67.47%). Mean gestational age was 40 weeks with the SD of ± 1.084 weeks. With Primigravida (39.2%) and multigravida (60.8%), incidence of spontaneous labour was high (60%) as compared to induced labour (39.5%). Presence of meconium and fetal distress lead to high number of cesarean deliveries (64%). Out of total cases (334) delivered with meconium stained liquor, majority of cases (76%) were of grade 3MSL (39.5%) and grade 2 MSL (36.5%) respectively. 63.7% of cases led to cesarean deliveries.

Conclusion: Postdates pregnancy is a key factor causing meconium stained liquor. Timely induction of labour at 41 weeks of gestation is advised.

Keywords: Meconium stained liquor, postdates pregnancy, Meconium aspiration syndrome.

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INTRODUCTION

There is an increased interest in the study of etiological factors leading to perinatal morbidity and mortality. In postdates pregnancies, meconium stained liquor occurrence had been extensively counted as the predictor for the adverse fetal outcome, like meconium aspiration syndrome and perinatal asphyxia that increases the perinatal as well as neonatal morbidity and mortality¹. Meconium, a germfree odorless, thick and black green material, found in the intestine of fetus during twelve weeks of gestation and stored during whole antenatal period. As the age of gestation increase the meconium-stained amniotic fluid also increase while it's uncommon before 37 weeks of gestation².

The passage of meconium into the amniotic fluid may be associated with obstetric factors such as prolonged labour, post-term pregnancy, babies having low

birth-weight, oligohydramnios, hypertensive disorders of pregnancy and retardation of intrauterine growth³. The medical factors are pregnancy with anemia and cholestasis while advanced maternal age, drug abuse especially use of cocaine and tobacco are considered to be the sociodemographic and behavioral risk factors⁴.

The literature shows that increased gestation period increases the incidence of meconium stained liquor rate. Evidence suggests that meconium stained liquor complicate the pregnancy (7% to 22%)⁵.

The ratio of Meconium aspiration syndrome reported worldwide is about 5 to 10.5% of neonates with meconium stained liquor, that contributes to about 12% of neonatal death (the rate of fatality reported 40% in neonates and 2% of perinatal mortality^{6,7}). The meconium fluid aspiration has adverse outcome in short and long terms mainly by increasing the rate of neonatal resuscitation, Respiratory distress, lower Apgar score, neonatal admissions, meconium aspiration syndrome, sepsis, and pulmonary disease in neonate. The infant born with meconium fluid aspiration also have high chances of severe mental retardation and cerebral palsy.

The meconium stained amniotic fluid related perinatal morbidity and mortality can be reduced if the major

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associated factors are recognized and timely decision taken for the mode and time of delivery.

The objective of the study is to identify the level of prevalence of meconium stained liquor with postdates gestation in our setting. The findings and conclusion of the study would be helpful for making appropriate decisions by health practitioners for managing the postdates pregnancies.

MATERIAL AND METHODS

The study was conducted in the Department of Gynecology and Obstetrics Khyber Teaching Hospital Peshawar Pakistan. Study design was retrospective chart review and duration of study was two years from September 2017 to September 2019.

Sample size was 495, by taking all patients with postdated pregnancy who were identified from the medical record maintained at the Department. All the patients (N=495) having gestational ages of more than 40 weeks were included in the study. Whereas, patients with comorbid conditions like diabetes, hypertension, cardiac, renal, or having obstetrical conditions such as antepartum hemorrhage, breech presentation, cord around neck, congenital fetal anomalies, and intrauterine fetal demise were excluded from the study.

Data was collected on a structured proforma where all the necessary patient data including clinical details such as age of the patient, parity status, gestational age, type of labour covering spontaneous or induced, degree of meconium (first, second or third degree), and mode of delivery (normal vaginal, operative, or instrumental deliveries). Thereafter, data was entered and analyzed. The analysis was carried out mainly through descriptive statistics. Quantitative variable like gestational age was calculated. Gestation period, mode of delivery, types of labour were presented in frequency whereas, frequency of meconium stained liquor, gestation period and meconium stained liquor, types of meconium were presented in numbers.

Meconium stained liquor was defined as the staining of the amniotic fluid that convert the colour of liquor from clear to different shade like yellow, greenish or brown colour which depends upon the degree of meconium stained liquor. Whereas, postdates pregnancy was defined as gestation period of more than 40 weeks.

RESULTS

A total of 495 patients were included in the study. In the study, frequency of gestational age was worked out. The mean gestational age was found to be 40 weeks with standard deviation of ± 1.084 weeks. Mean age of the patient was calculated as 26 years with standard deviation of

± 3.49 years.

The Frequency of meconium stained remained high (67.47%) in postdates pregnancies. The parity status reported different results. The percentage of multi paras remained high (60.8%) whereas, primis were 39.2%. Incidence of spontaneous labour was 60.5% as compared to induced labour where 39.5% cases were recorded.

Presence of meconium and fetal distress lead to high number of cesarean deliveries (63.7%), followed by normal vaginal deliveries (26.6%) and instrumental deliveries (9.5%) respectively. Out of total cases (334) delivered with meconium stained liquor, majority of cases (76%) were of grade 3 meconium stained liquor (39.5%) and grade 2 meconium stained liquor (36.5%) respectively.

DISCUSSION

Meconium stained liquor prevalence was high (67.47%), which may be due to the selection or targeting of specific population i.e. postdates pregnancy. The result also corresponds with findings of Jimma University and specialized hospital of south west Ethiopia who also reported high prevalence (58.7%) of meconium stained liquor in postdate pregnancy⁸. Similarity maybe due to the resemblance in the health institutions or same services

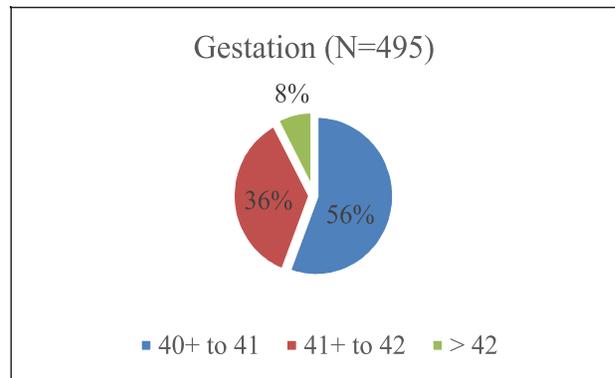


Fig 1: Percentage distribution of postdated gestations.

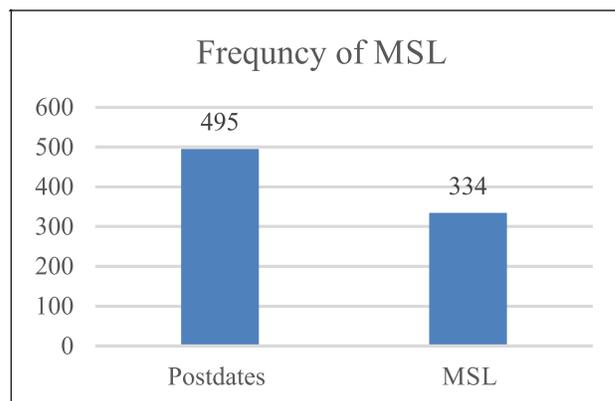


Fig 2: Frequency of MSL in postdated gestations.

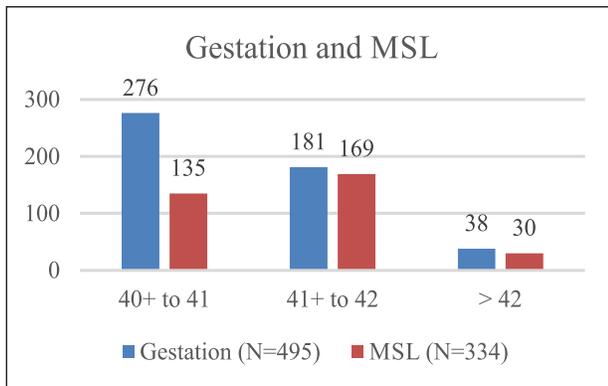


Fig 3: Distribution of MSL in postdated gestations.

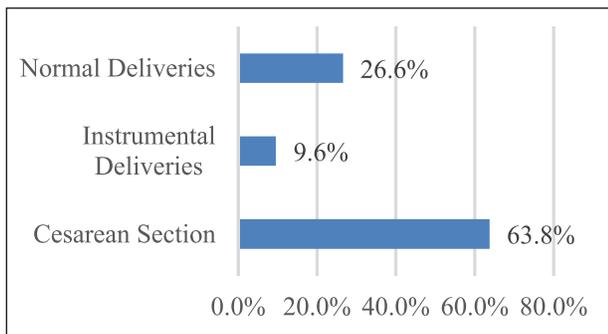


Fig 4: Percentage distribution of mode of delivery with MSL

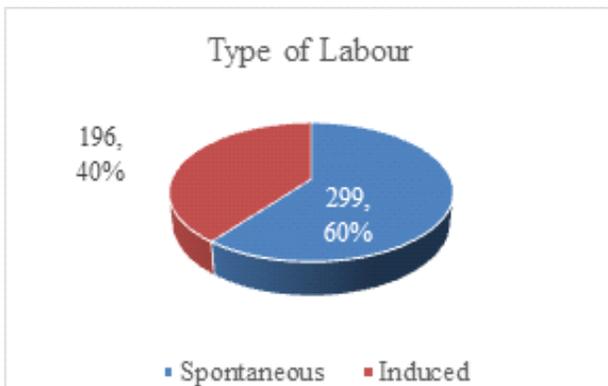


Fig 5: Percentage distribution of type of labour in patients with MSL

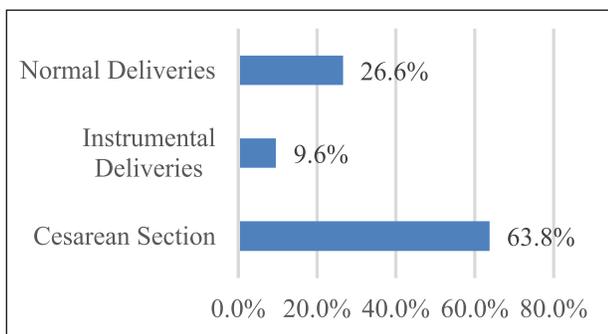


Fig 6: Distribution of types of meconium

quality.

Similarly, an Indian study ¹⁰ also reported high frequency (88.5%) of meconium stained liquor in postdates pregnancies. They considered low behavioral risk factors of meconium stained liquor like smoking, cocaine consumption, and addiction of Marijuana as well, which are missing in our setting.

Conversely, frequency of meconium stained liquor in the Brazilian context is low (35.8%), ⁹ which may be due to better accessibility and quality of services. Whereas, this study was performed in a tertiary level referral setting covering catchment area of low level of health service facilities.

The mean age of the patients was found to be 26 years with standard deviation of ± 3.49 years which is in line with the findings of other studies. Beisher ¹¹ found that majority of patients with postdate pregnancies falls in the range of 25 to 30 years age. He explained that mother's age also showed significant association with the progression of meconium stained liquor. The explanation of this can be the age-related effects on cardiovascular vessels and this association is also related to age of uterine blood vessels and stiffness of arteries which can cause deficient perfusion of placenta and utero placental perfusion.

The study reported different results for parity status as 301 (60.8%) cases were found to be of multi paras and 194 (39.2%) cases of primary gravida. Similarly, Punya et al ¹² also showed that para one status was high (50.2%) in less than 40 weeks gestation whereas, para 0 status was high (59.5%) in 40 to 41 weeks gestation.

Incidence of labour induction quoted by various authors is in the range of 20% - 40% ^{13,14}. It was found that induced labour and meconium stained liquor are significantly associated. Incidence of spontaneous labour (60.4%) and induced labour (39.5%) were found to be in line with other studies. For example, Shilpa's ¹⁵ reported 38% induction rate. The tetanic uterine contractions (uterine tachysystole) and the administration of oxytocin leads to intrauterine fetal hypoxia and insufficient placental perfusion. When the fetus is exposed to hypoxia or asphyxia, vagus nerve stimulation increases the parasympathetic effect on the passage of meconium ¹⁶. The stressful environment for the fetus can cause augmented peristalsis of fetal gastrointestinal tract, relaxation of anal sphincter and then the passage of meconium. Therefore, there is a need of vigilant fetal monitoring of induced cases of postdates pregnancies.

Research studies have reported that perinatal morbidity and mortality increases with the increase in gestational age. Rokade and Nadia, reported in their studies the perinatal mortality of 2 to 3 deaths per 1000 deliveries at gestation period of 40 weeks. It doubles till 42 weeks of gestation and is 4 to 6 times at gestation period of more

than 42 weeks^{17,19}. The study found meconium stained liquor in more than 90% cases having gestation of 40+ to 42 weeks with 40.4% in 40+ to 41 weeks and 50.5% in gestation of 41+ to 42 weeks respectively, which is also in line with similar studies. Punya¹² found that MSL and fetal distress was present in 30.4% cases in gestations 40 to 41 weeks and 45.5 % in more than 41 weeks gestation. Tilstra and Mathews¹⁸ study showed that the gestational ages at delivery were higher in meconium stained liquor group. Out of total cases (334) delivered with meconium stained liquor, majority of cases (76%) were of grade 3 meconium stained liquor (39.5%) and grade 2 meconium stained liquor (36.5%) respectively.

The study found cesarean section (63.7%) as key mode of delivery in postdates patients with MSL followed by normal virginal deliveries (26.6%) and instrumental deliveries (9.5%) respectively. Similarly, Sori D and Beleteet al⁸ found that in postdates pregnancy with MSL 70.2% of patients had operative deliveries and those mothers with grade three meconium had 5 times increased risk of operative deliveries compared to those with grade one staining. Punya¹² concluded that both forceps 3.3% and vacuum assisted vaginal deliveries 7.8 % were more in > 41 weeks gestation group. Emergency cesarean sections were more in > 41 weeks 30.8 %. Kumars et al²⁰ found 72% cesarean section rate. Conversely, Ayesha Arif²¹ found 15% cesarean section rate in a study carried out on 150 patients. In her study induction of labour for postdates pregnancy resulted in normal vaginal deliveries with good fetal outcome. The difference in result can be attributed to their small sample size.

CONCLUSION

Postdates pregnancy leads to increased perinatal morbidity and mortality in the form of birth asphyxia, meconium aspiration syndrome, increased rate of admission to neonatal intensive care unit. The prevalence shows that postdates pregnancy is highly associated to meconium stained liquor. Correct assessment of gestational age and then induction of labour at 41 weeks has to be the protocol to prevent adverse fetomaternal outcome.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

Mazhar T: Concept design, literature review, data analysis and manuscript drafting

Jabeen S: Drafting bibliography

Arif R: Assisted in manuscript drafting and proof reading

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.