

## **CORRELATION OF AMNIOTIC FLUID INDEX AND COLOR OF LIQUOR WITH PERINATAL OUTCOME**

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### **Abstract**

To prove the efficiency of Amniotic fluid index (AFI) with color of liquor in predicting foetal jeopardy during labour and to select the patient who require continuous monitoring so that unnecessary delay in management can be avoided. To assess the mode of deliveries and fetal outcome depending on Amniotic fluid index and color of liquor in term pregnancy in active labour. This is an prospective observational study done in Department of Obstetrics and Gynaecology at Bharatha Ratna Dr Ambedkar medical college & hospital during Oct 10 to Sep 12. 200 pregnant women who were booked in this hospital and latter admitted for delivery at term gestation were taken into the study and details about mode of delivery, condition of the mother and the neonate was assessed at the end of each delivery. The procedure of the study will be explained and regarding consent for the study will be taken. All term gestation pregnancy in active labour. Multiple gestation, Non cephalic presentations and Previous LSCS. Out of 200 patients, the incidence of meconium stained liquor with oligohydramnios 61% and Perinatal mortality was 2.5%. From this study we can conclude that, in term pregnancies it is a reliable method to assess the perinatal outcome.

Key words: AFI, Foetal distress, Labour, Meconium staining, Oligohydramnios.

### **INTRODUCTION**

Amniotic fluid serves number of important function in development of embryo and fetus. At term it measures about 600-800ml. Ultrasound assessment of amniotic fluid has important point in fetal wellbeing. Amniotic fluid index (AFI) is a semi quantitative sonographic assessment of amniotic fluid volume, which is measured as sum of the 4 quadrant deepest vertical amniotic fluid pockets in the gravid uterus which is free of umbilical cord and fetal parts.[1] Oligohydramnios was defined as the absence of any amniotic fluid pocket of at least 1cm in depth and polyhydramnios as presence of a pocket more than 8cm.

Its main function is protective to the fetus. During pregnancy acts as a shock absorber, protecting the fetus from possible extraneous injury. It also maintains temperature, helps in growth and free movement of fetus.

During labour, it form a hydrostatic wedge which helps in dilatation of the cervix. During uterine contraction, it prevents marked interference with the placental circulation so long as the membranes remain intact.[2]

The composition of the fluid is almost identical to a transudate of plasma. Mainly it consist of water (98-99%), solid (1-2%).

The word meconium is derived from Greek word `Meconium arion` meaning substance that resembles poppy juice which is greenish in colour. It consist of various products of secretion, excretion and desquamation by gastrointestinal tract, besides swallowed amniotic fluid, lanugo hair and vernix caseosa.[3]

Meconium is a semisolid viscous material formed by gradual dehydration by absorption of water in the intestine. In its semisolid form it contains water 72.4% to 80%, polysaccharides, lipids, more than 32 steroids and proteolytic enzymes.[4]

Abnormal colour of amniotic fluid are green in colour during Meconium stained, Golden colour in Rh incompatibility, Greenish yellow in post maturity, Dark coloured in accidental haemorrhage and Dark brown in Intra uterine death.

Incidence of meconium staining increased with gestational age. Incidence raised from 2% in 37 weeks to 44% in 42 weeks.[5]

This Meconium is further graded into thin and thick depending upon its consistency. Babies with thick meconium aspiration had significantly higher incidence of asphyxia and neonatal mortality.[6]

## METHODS

This study is a prospective observational study done in the Dept of Obstetrics and Gynaecology in Bharatha Ratna Dr B.R. Ambedkar Medical Collage & Hospital, Bangaluru, over a period of 2 years from Oct 2010 to Sep 2012. About 200 term gestation womens who are in active labour admitted to labour ward taken into the study. Details of the each women, mode of delivery, condition of the mother and the neonate were assessed at the end of each delivery.

## RESULTS

In this study, out of 200 women, mean age of patients belongs to 21-25 y (41%), Parity distribution about 85(42.5%) were primi and 115(57.5%) were multiparous, Amniotic fluid index which was < 5cm in 26(13%), 14(7%) women had AFI of 5-8cm and 160(80%) had >8cm, Meconium stained liquor present in 56(28%) and clear liquor in 144(72%), Period of gestation between 37-39weeks were 94(47%) and 40-42weeks were 106(53%), Normal delivery were 139(69.5%), 16(8%) had instrumental delivery and 45(22.5%) had LSCS and finally about 136(68%) neonates did not required neonatal care and 64(32%) did required neonatal care(Table1).

## DISCUSSION

Over the years, it has been recognized that foetal morbidity and mortality occurs as a consequence of labour even in patients with low risk. Oligohydramnios during the antepartum period has been associated with intrauterine growth restriction. Amniotic fluid volume is known to reduce with advancing gestational age, thus it is logical to evaluate amniotic fluid volume when the women comes to labour, so that we can predict foetal morbidity.

Meconium stained amniotic fluid has been implicated as a factor for foetal well being during latent labour and intrapartum period which needs close monitoring. In this study Meconium stained with oligohydramnios had sensitivity of 96.88% and specificity of 91.91% with accuracy of 93.50% (p<.0001).

In some other study done by Rutherford (1987) showed, presence of meconium stained with oligohydramnios was about 54%, were as study by Sarno (1990) showed 41.9% and Raj Sriya (2001) showed 38.88%, but in our study it showed about 61% which was high among all other studies.(Table2)

In this study the incidence of NICU admissions among oligohydramnios was 39.1%. But in the studies by Raj Sriya (2001) it was 88.88% and 8.2% in the study by Baron (1995)(Table3).

In this study perinatal mortality was 2.5%. In the series of other authors perinatal mortality ranged from 3% to 7.7%.(Table4)

## CONCLUSION

The colour of liquor with AFI can be used as an important method to diagnose foetal compromise present in low risk women in labour. Obstetricians can be more vigilant by either doing close monitoring. The above parameters shows we can detect fetal distress if present during early labour, so that delay can be avoided.

## CONFLICT OF INTEREST

The authors declare that there are no conflict of interest

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**Table1:Correlation of Study variables according to AFI**

Variables		Amniotic Fluid Index(AFI)			P Value
		<5.0 (n=26)	5.0-8.0 (n=14)	>8.0 (n=160)	
Age in Years	16-20	10(38.4%)	4(28.6%)	36(22.5%)	0.442
	21-25	8(30.8%)	5(35.7%)	69(43.1%)	
	26-30	6(23.1%)	3(21.4%)	47(29.4%)	
	31-35	2(7.7%)	2(14.3%)	8(5.0%)	
Parity	Prime	14(53.8%)	7(50.0%)	64(40.0%)	0.350
	Multi	12(46.2%)	7(50.0%)	96(60.0%)	
Meconium liquor	Clear	10(38.4%)	7(50.0%)	127(79.4%)	<0.001
	Meconium	16(61.5%)	7(50.0%)	33(20.6%)	
Mode of Delivery	Normal	2(7.7%)	7(50.0%)	130(81.3%)	<0.001
	Instrumental	1(3.8%)	4(28.6%)	11(6.9%)	
	LSCS	23(88.5%)	4(28.6%)	19(11.9%)	
POG	37-39	9(34.6%)	5(35.7%)	80(50.0%)	0.235
	40-42	17(65.4%)	9(64.3%)	80(50.0%)	
ICU Stay	No	1(3.8%)	7(50.0%)	128(80.0%)	<0.001
	Yes	25(96.2%)	7(50.0%)	32(20.0%)	

**Table2:Occurrence of Meconium stained liquor with Oligohydraminos**

Studies	Occurrence of Meconium stained
Rutherford et al	54.0%
Sarno et al	41.9%
Raj Sriya et al	38.8%
Present study	61.0%

**Table3: Admissions to NICU in Oligohydraminos**

Studies	NICU Admission
Baron C et al.,(1995)	8.2%
Raj Sriya et al.,(2001)	88.8%
Present study	39.1%

**Table4:Meconium stained liquor with Perinatal Mortality**

Authors	Perinatal Mortality
Hellman	7.0%
Debdas	3.0%
Goud and Krishna	7.7%
Narang	7.5%
Arun	3.7%
Present Study	2.5%

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