



## LOW AMNIOTIC FLUID INDEX AT 34 - 36 WEEKS PERIOD OF GESTATION – A PREDICTOR OF ADVERSE PERINATAL OUTCOME

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**ABSTRACT** Oligohydramnios is a predictor of fetal compromise and a useful tool in pregnancy management. It has been assessed using various techniques, including two-diameter pocket (2-DP), single deepest pocket and amniotic fluid index (AFI). To compare the perinatal outcome in women with 34-36week period of gestation, singleton pregnancies having amniotic fluid index (AFI) < 5cm. This is a prospective study conducted in department of obstetrics and gynecology, Navodaya Medical College Hospital and Research Center Raichur between March 2022 to August 2022. 50 patients with AFI less than 5 cm at 34-36weeks of gestation meeting inclusion criteria. The women were followed up till delivery to determine adverse perinatal outcomes. An AFI < 5cm was associated with adverse perinatal outcome. 32% cases had low birth weight baby, 24% meconium aspiration syndrome, 14% low APGAR score, 10% cases had fetal distress and 4% cases had FGR. An amniotic fluid index of  $\leq 5$  cm detected at 34-36weeks is an indicator of poor perinatal outcome. In presence of oligohydramnios, the occurrence of non-reactive NST, thick meconium-stained liquor, development of fetal distress, the rate of LSCS, low 5-minute Apgar score, low birth weight, perinatal morbidity and mortality are more.

**KEYWORDS :** amniotic fluid, oligohydramnios, maternal and perinatal outcome.

### INTRODUCTION

The precise origin of the liquor amnii is still not well understood. It is probably of both maternal and foetal origin. Liquor amnii provides fluid medium for the early development of the embryo protecting it from concussion, pressure, desiccation, reminiscent of the aquatic origin of life. In normal pregnancies, the volume of amniotic fluid increases to about one litre at 36 weeks which is the maximum level. Amniotic fluid volume rises progressively during gestation until 34-36 weeks, the mean amniotic fluid volume is relatively consistent in the level of 700 – 800 ml. After 40 weeks there is a prospective decline of amniotic fluid volume at a rate of 8 % per week, with amniotic fluid volume averaging about 400 ml at 42 weeks.

The technique of the four-quadrant method of calculating the amniotic fluid index (AFI) described by Phelan et al. in 1987 is the accepted method. Oligohydramnios is associated with increased risk of adverse perinatal outcome. The umbilical cord compression during labour is common with oligohydramnios which increases the risk for caesarean delivery, meconium aspiration syndrome, because of foetal distress and 5 minute apgar score less than 7. Betnasol coverage was done for all pregnant women in our study who were at risk of preterm delivery.

### AIMS AND OBJECTIVE

To compare the perinatal outcome in women with 34 – 36week period of gestation singleton pregnancies having amniotic fluid index (AFI) < 5cm and to evaluate the association and predictive value of ultrasound measurements of amniotic fluid volume for adverse pregnancy outcome.

### MATERIAL AND METHODS

#### Study design and setting:

- This is a prospective study conducted in department of obstetrics and gynecology, Navodaya Medical College Hospital and Research Center Raichur between March 2022 to August 2022.
- 50 patients with AFI less than 5 cm at 34-36weeks of gestation meeting inclusion criteria.
- The women were followed up till delivery to determine adverse perinatal outcomes.

#### Inclusion criteria:

- Singleton pregnancy with cephalic presentation with intact membranes at 34- 36 weeks.

#### Exclusion criteria: Patients excluded from study are

- Pregnancy associated with previous history of unknown perinatal loss, any congenital malformation in fetus.
- Antepartum hemorrhage
- Medical disorder like diabetics, cardiac disease was excluded from the study.

- Patient with multiple gestation.
- Period of gestation less than 34week and more than 36 weeks.

### Methodology

- After obtaining institutional ethical committee approval, the study was conducted on 50 women for 6 months with singleton ,34-36weeks period of gestation, attending the department will be monitored by assessing maternal and fetal condition.
- At entry into the study, detailed history and written informed consent was taken from all the subjects.
- Measurements of the deepest pool in each quadrant were summated and AFI was recorded excluding umbilical cord and fetal extremities in centimeters. If the woman did not deliver within 7 days of ultrasound, a repeat ultrasound for measuring AFI was done. The mode of delivery and perinatal outcomes were noted.
- The data obtained will be collected and entered Microsoft excel spread sheet and analyzed.

### RESULTS

- Characteristics of women as per age, SES, Gestational age, Booking status, Perinatal outcome.

**TABLE – 1 Age Distribution**

		No. of Patients	Percentage
Age	<20	2	4
	20-24	19	38
	25-29	16	32
	30-34	13	26
Socio Economic Status	Lower Class	22	44
	Lower Middle Class	7	14
	Middle Class	21	42
Gestational Age In Weeks	<30	3	6
	30-35	14	28
	35-40	26	52
	$\geq 40$	7	14
Booking Status	Booked	45	90
	Un Booked	5	10
Perinatal Outcome	Fetal Distress	5	10
	Low Birth Weight Baby	16	32
	IUGR	2	4
	Low APGAR	7	14

MAS	12	24
Normal	8	16

Age in Years	No. of Cases	Percentage
<20	2	4
20-24	19	38
25-29	16	32
30-34	13	26

In present study most of the cases belonged to the age group of 20-24yrs, which constitute 38% (19) of total cases. 32% (16) of cases belonged to the age group of 25-29yrs.

**TABLE – 2 Socio Economic Status**

Socio Economic Status	No. of Cases	Percentage
Lower Class	22	44
Lower Middle Class	7	14
Middle Class	21	42

In present study 44% (22) cases out of 50 cases belonged to lower class of socioeconomic status and 42% (21) cases belonged to middle class status

**TABLE – 3 Booking Status**

Booking Status	No. of Cases	Percentage
Booked	45	90
Unbooked	5	10

In present study majority of cases were having booked status, which constitute 90% (45) of cases.

**TABLE – 4 Gestational age in weeks and AFI**

	N	Minimum	Maximum	Mean	Std. Deviation	P Value
Gestational Age in Weeks	50	34.00	36.00	36.2658	3.53970	0.030
AFI	50	1.00	4.00	3.2200	0.73651	0.0156

In present study gestational age in weeks and AFI are statistically significant P value <0.05.

**TABLE – 5 Perinatal Outcome**

		Total		Chi-square
		No.	%	
Perinatal outcome	Fetal Distress	5	10	12.439
	Low Birth Weight Baby	16	32	
	FGR	2	4	
	Low Apgar	7	14	
	Mas	12	24	
	Normal	8	16	
Total		50	100	

In present study 32%(16) cases had low birth weight baby, 24%(12) cases had MAS, 14%(7) cases had low APGAR, 10%(5) cases had fetal distress and 4%(2) cases had FGR.

**CASE STUDY**

- In this study 50 cases of singleton pregnancy with cephalic presentation with intact membranes at 34-36wks of gestation having amniotic fluid index <5cm were compared the perinatal outcome and evaluated the association and predictive value of ultrasound measurements of amniotic fluid volume for adverse pregnancy outcome.
- Most of the cases in our study belonged to age group of 20-24yrs, which is almost 38% of cases.
- 90% of cases in present study had the booked status.
- Perinatal outcome mainly consists of low birth weight, MAS, Low APGAR, Fetal distress and FGR.
- Comparison of the Occurrence of Low Birth Weight.

Studies	Occurrence of birth weight <2500gm in %
Raj Sriya et al. (2001)	58.38
Present study	32

- Comparison of MAS with Other Studies.

Studies	Occurrence of MAS
Raj Sriya et al. (2001)	38.38
Present study	24

- Comparison of Low Apgar Score with other studies

Studies	Low apgar score in %
Rutherford et al.,	11
Raj Sriya et al.	9.72
Present study	14

- Comparison of Incidence of Fetal Distress with Other Studies

Studies	Number of patients (%)
Rutherford et al.,	11
Sarno et al. (2004)	11.9
Present study	10

- Incidence of FGR is 4% in present study.

**CONCLUSIONS**

Amniotic fluid index measurement can be used as a useful adjunct to other fetal surveillance methods, to identify those infants at risk of poor perinatal outcome an amniotic fluid index of ≤5 cm detected at 34-36 weeks is an indicator of poor perinatal outcome. Ultrasonography should be utilized for early detection, monitoring, and management of women with reduced liquor volume. Antepartum fetal assessment tests, intensive intrapartum monitoring coupled with timely intervention, a competent neonatologist and neonatal intensive care unit facility can ensure a better perinatal outcome.

**REFERENCES:**

- [1] William's Obstetrics 25th edition.
- [2] ACOG 2019 Guidelines.
- [3] Moses J, Doherty DA, Magann EF. (2004), "A randomized clinical trial of the intrapartum assessment of amniotic fluid volume: amniotic fluid index versus the single deepest pocket technique". Am J Obstet Gynecol.190:1564-70.
- [4] Magann EF, Doherty DA, Field K. (2004), "Biophysical profile with amniotic fluid volume assessments". Obstet Gynecol.104:5-10.
- [5] Sriya R, Singhai S, Rajan M. (2001), "Perinatal outcome in patients with amniotic fluid index < 5cm". J Obstet Gynaecol India. 51(5):98-100.
- [6] Sherer DM, Langer O. (2001), "Oligohydramnios: use and misuse in clinical management". Ultrasound Obstet Gynecol 18:411-9.
- [7] Magann EF, Chauhan SP, Kinsella MJ, McNamara MF, Whitworth NS. (1999), "Antenatal testing among 1001 patients at high risk: the role of ultrasonographic estimate of amniotic fluid volume". Am J Obstet Gynecol 180: 1330-1336.
- [8] Alfi revic Z, Luckas M, Walkinshaw SA. (1997), "A randomised comparison between amniotic fluid index and maximum pool depth in the monitoring of post-term pregnancy". Br J Obstet Gynaecol 104:207-11.
- [9] Moore TR, CayleJE. (1990), "The amniotic fluid index in normal human pregnancy". Am J Obstet Gynecol 162:1168-73.
- [10] Gilbert WM. (1994), "Disorders of Amniotic Fluid. In: Creasy RK, Resnik R. Maternal Fetal Medicine. Philadelphia". W.B. Saunders Company; 620-24
- [11] Sarno AP Jr, Ahn MO, Brar HS. (1989), "Intrapartum Doppler velocimetry, amniotic fluid volume, and fetal heart rate as predictors of subsequent fetal distress". Am J Obstet Gynecol 161:1508-14.
- [12] Phelan JP, Smith CV, Broussard P. (1987), "Amniotic fluid volume assessment with the four-quadrant technique at 36-42 weeks' gestation". J Reprod Med 32:540-2.
- [13] Rutherford SE, Phelan JP, Smith CV, Jacobs N. (1987), "The fourquadrant assessment of amniotic fluid volume: an adjunct to antepartum fetal heart rate testing. Obstetrics & Gynecology". 70(3):353-6.