



A COMPARATIVE STUDY OF ISOLATED DECREASED AFI AND ITS PERINATAL OUTCOME IN GESTATIONAL AGE BETWEEN 30-34 WEEKS AND MORE THAN 34 WEEKS.

Obstetrics & Gynaecology

Dr. B. Leela bai	Postgraduate, Department of Obstetrics and Gynecology, Alluri Sitaramaraju Academy of Medical Sciences, Eluru, West Godavari district, Andhra Pradesh-534005,
Dr. D. Murmu	Professor, Department of Obstetrics and Gynecology, Alluri Sitaramaraju Academy Of Medical Sciences Eluru, West Godavari district, Andhra Pradesh-534005.
Dr. K. Vandana*	Professor and Head of the department, Department of Obstetrics and Gynecology, Alluri Sitaramaraju Academy of Medical Sciences Eluru, West Godavari district Andhra Pradesh-534005. *Corresponding Author

ABSTRACT

Objectives: To study the perinatal outcome of Isolated decreased AFI in gestational age 30 to 34 weeks and more than 34 weeks of gestation, and to evaluate the impact of decreased AFI on the decision of termination of pregnancy. **Methods:** It's an observational prospective study. All women with singleton pregnancy with gestational ages between 30 to 42 weeks with decreased AFI, who were getting admitted in ASRAM for safe confinement between March 2022 to July 2022 are included in this study. The sample size is 150. Primigravidae and multigravida belonging to any age group with gestational age between 30 weeks to 42 weeks with amniotic fluid index of less than 8 cm are included. Complications, such as fever, chronic hypertension, Diabetes Mellitus, GDM, gestational hypertension, pre-eclampsia, collagen vascular diseases, IUGR etc. were excluded. Multiple pregnancy and Intrauterine death were also excluded. The women were followed up till the time of discharge following delivery, to study mode of delivery and perinatal outcome. **Results:** During the study period of 5 months, the occurrence of Isolated decreased AFI in 30 to 34 weeks was a less frequent finding. Only 34% belonged to this group whereas decreased AFI in greater than 34 weeks was a frequent finding 66%. In 30 to 34 weeks of gestation, the women were followed up by increased fetal surveillance, which included NST, Obstetric Doppler and BPP. Most of them had abnormal fetal heart rate tracing, and abnormal Doppler findings. Doppler findings included UPI and FPI, P value=0.000. All women in the above group received betamethasone for lung maturity, and termination of pregnancy was planned. Induction of labor was done in 26.9%. 84.6% of whom delivered by LSCS and 15.4% delivered vaginally. There is not much relationship between less AFI and APGAR in 1 minute. P value=.095, and at 5-minute P value=0.571. The NICU admission was necessary for most of the babies in 30 to 34 weeks with both decreased AFI and normal AFI as well. Many of them were admitted for preterm care 68% vs 64% in decreased AFI vs normal AFI, other reasons were respiratory distress 31.5% vs 27%, requiring surfactant therapy 15.7% in decreased AFI group. **Conclusion:** Isolated decreased AFI is an infrequent finding in gestational age between 30 to 34 weeks and is associated with increased incidence of LSCS. Most of the neonates required NICU admission for preterm care. The overall neonatal outcome is good.

KEYWORDS

Isolated decreased Amniotic fluid index, Induction of labor, LSCS, Neonatal outcome, Low birth weight.

INTRODUCTION:

Amniotic fluid serves several roles during pregnancy. It creates a physical space for fetal skeleton to shape normally, promotes fetal lung development and helps to avert compression of umbilical cord. Amniotic fluid is mainly formed from fetal plasma volume, fetal urine, fetal respiratory system, GIT, umbilical cord and fetal surface of placenta. Normally amniotic fluid volume reaches 1 liter by 36 weeks and decreases thereafter to less than 400 ml by 42 weeks.

Oligohydramnios is described as an abnormally decreased amniotic fluid. Etiology may be maternal or fetal. Isolated oligohydramnios is diagnosed when no other unfavorable maternal and fetal condition coexists. A decreased amniotic fluid volume is frequently one of the first clues to an underlying fetus abnormality or maternal disease state. Isolated oligohydramnios may occur in late pregnancy in patients with no other high-risk factor associated with oligohydramnios and may be incidentally diagnosed on a routine ultrasound. Oligohydramnios is often accompanied by other maternal and fetal conditions such as congenital anomalies, hypertension, diabetes, preterm premature rupture of the fetal membranes (PROM) and intrauterine growth restriction (IUGR). Each condition can predispose fetuses to adverse outcomes.

Thus, it is not entirely clear whether the adverse perinatal outcomes merely reflect the sequelae of other conditions or if reduced amniotic fluid volume itself contributes to the adverse outcomes.

Definition of Oligohydramnios:

An AFI of 5 to 18 cm is considered normal. More recently, oligohydramnios has been defined as less than 3rd and 5th percentile and hydramnios more than 95th for gestational age. The definition of oligohydramnios has varied with different techniques of measuring amniotic fluid volume and different investigators. Manning et al defined oligohydramnios when the largest pocket on ultrasound in its broadest diameter measured less than 1 cm. Subsequently they revised this criterion to a single pocket measuring 2 cm in both vertical and horizontal planes.

Phelan who described AFI defined oligohydramnios as an AFI less than 5 cm, but later Jeng et al proposed a cut off of 8 cm demonstrating increased incidence of meconium staining, caesarean delivery for fetal distress, abnormal fetal heart rate pattern and APGAR scores of 7 or less at one minute when AFI is less than 8.

Multiple definitions of oligohydramnios are used because no ideal cutoff level for intervention exists.

Oligohydramnios is characterized by the following features:

Diminished amniotic fluid volume (AFV)

- Amniotic fluid volume of less than 500 mL at 32-36 weeks' gestation
- Amniotic fluid volume depends on the gestational age; therefore, the best definition may be AFI less than the fifth percentile.
- Single deepest pocket (SDP) of less than 2 cm
- Amniotic fluid index (AFI) of less than 5 cm or less than the fifth percentile

In general, oligohydramnios developing early in pregnancy is less common and frequently has a poor prognosis. By contrast, in pregnancy that continues beyond term, diminished amniotic fluid volume may be found often.

Marks and Divon (1992) found oligohydramnios – defined as an AFI of 5 cm or less in 12 percent of 511 pregnancies of 41 weeks or greater. In 121 women studied longitudinally, there was a mean decrease of 25 percent per week in the AFI beyond 41 weeks.

Gagnon and colleagues (2002) found that chronic severe placental insufficiency caused a reduction in amniotic fluid volume not attributable to reduced fetal urine production. The risk of cord compression, and in turn fetal distress, is increased with diminished fluid in all labors, especially in post term pregnancy.

Etiology:

Maternal factors:

- Post term pregnancy
- PROM (premature rupture of membrane)
- Drugs like ACE inhibitors, and prostaglandin inhibitors
- Hypertension
- Autoimmune disorder
- Acute maternal hypovolemia

Fetal factors:

1. Intrauterine growth restriction
2. Non renal anomalies
 - Triploidy
 - Thanatophoric dwarfism
 - Thyroid gland agenesis
 - Skeletal dysplasi
 - Congenital heart block
 - Multiple anomalies
3. Chronic abruptio
4. Following amniocentesis or CVS
5. Fetal presentation
6. Renal anomalies
 - Renal agenesis
 - Upper urinary tract obstruction in the pelviureteric junction
 - Lower urinary tract obstruction as in posterior urethral valves and urethral agenesis
 - Prune belly syndrome
 - Bilateral multicystic dysplastic kidneys

Fetal effects of early onset oligohydramnios:

Fetal outcome is generally poor with early – onset oligohydramnios.

Shenker and colleagues (1991) described 80 pregnancies in which only half. of the fetus survived. Mercer and Brown (1986) described 34 mid trimester pregnancies complicated by oligohydramnios defined by the absence of amniotic fluid pockets greater than 1 cm. Nine fetus – a fourth – had anomalies, and 10 of 25 who were phenotypically normal either aborted spontaneously or were still born because of severe maternal hypertension, restricted fetal growth, or placental abruption. Of the 14 live born infants, 8 were preterm, and 7 died. The six infants who delivered at term did well.

Garmel and coworkers (1997) observed that approximately grown fetus associated with oligohydramnios prior to 37 weeks had a three-fold increase in preterm birth but not of later growth restriction or fetal death. Otherwise, normal infants may suffer the consequences of early-onset severely diminished amniotic fluid. Adhesions between the amnion may entrap fetal parts and cause serious deformities, including amputation. Moreover, because the fetus is subjected to pressure from all sides, musculoskeletal deformities such as clubfoot are observed frequently

AIMS & OBJECTIVES:

- To study the perinatal outcome of decreased AFI in gestational age between 30 to 34 weeks and more than 34 weeks
- To evaluate the impact of decreased AFI on the decision of termination of pregnancy.

MATERIALS & METHODS:

- **Study Design:** OBSERVATIONAL PROSPECTIVE STUDY
- **Sample Size:** 150
- **Duration Of Study:** MARCH 2022– JULY 2022

INCLUSION CRITERIA	EXCLUSION CRITERIA
1. All primi and multigravida	1. Gestational age less than 30 weeks
2. Gestational age between 30-42 weeks	2. Multiple pregnancy
3. Isolated oligohydramnios	3. Antenatal complications other than decreased AFI
4. No antenatal complications other than oligohydramnios	4. Intrauterine death.

- The AFI estimation is routinely performed in all expectant mothers either as a single parameter or as a part of full obstetric USG.
- All women included in the study will be followed up and observed for various perinatal outcome both in mother and fetus such as mode of termination of pregnancy, like induction of labor, elective or emergency
- LSCS, and fetal distress, preterm birth, IUGR, congenital

anomalies, musculoskeletal deformities and need of NICU care.

RESULTS:

TABLE 1- PARITY

PARITY	%
PRIMIGRAVIDA	102 (68%)
MULTIGRAVIDA	48 (32%)

TABLE 3- GESTATIONAL AGE

GESTATIONAL AGE	%
30-34 wks	50 (33.3%)
34-40 wks	59 (39.3%)
40-41 wks	38 (25.3%)
> 41 wks	3 (2%)

TABLE 2- AFI

AFI	%
NORMAL	49.3
BORDERLINE	13.3
OLIGOHYDRAMNIOS	35.3
ANHYDRAMNIOS	2

TABLE 4- OBSTETRIC COMPLICATIONS

OBSTETRIC COMPLICATIONS	%
NO COMPLICATIONS	97.3%
BREECH PRESENTATION	1.3 %
TRANSVERSE LIE	1.3 %

TABLE 5- MODE OF TERMINATION, DELIVERY

	SPONTANEOUS LABOUR	INDUCTION OF LABOUR	EMERGENCY LSCS	VAGINAL DELIVERY	LSCS	P VALUE
30-34 wks – decreased AFI normal AFI	15.3%/100%	28%/nil	58.7%/nil	15.4%/91.7%	84.6%/8.3%	<0.000
More than 34 wks – decreased AFI normal AFI	32%/48%	48%/40%	20%/14%	48%/88%	52%/12%	<0.000

TABLE 6- MECONIUM

MECONIUM STAINED	%
OLIGOHYDRAMNIOS	22.6%
NORMAL	18.9%

Table 9: Reason For Nicu Admission :

PRETERM CARE	68%/64%	16%/0
POST RESUSCITATION CARE	0/0	25%/66%
LBW	0/0	8.3%/0
TACHYPNOEA/GRUNTING	31.5%/27%	16.25%/33%
HYPERBILIRUBINEMIA	0/0	8.3%/0

DISCUSSION :

The study included 93 (62%) primigravidae and 57 (38%) multigravidae with isolated decreased AFI. Garmel et al27 . supported that 67% of women with oligohydramnios were nullipara while Charu et.al52 observed 60% of the women to be primigravida. The study showed that Isolated decreased AFI, regardless of gestational age, is a common reason for admission, increased fetal surveillance in the form of NST, Obstetric Doppler, and is the most common reason for early induction of labor. The results of this study are consistent with that of Locatelli A et al. who had done on the low risk population.54 Hina Ahmad et.al50 conducted a prospective cohort Study to assess the impact of isolated oligohydramnios on Perinatal outcomes after 30 weeks of gestation. Above study has shown that pregnancies complicated by isolated oligohydramnios are not associated with adverse perinatal outcomes. No difference was found in the perinatal mortality and morbidity and low Apgar scores in the study group when compared with the control. These results also strongly correlate with a recent study by Zhang J et al.53 who used data from multicentre clinical trial of RADIUS to show that isolated oligohydramnios is not associated with impaired fetal growth or an increased risk of adverse Perinatal outcome. In addition, significantly higher induction of labor was performed among women with isolated Oligohydramnios compared to the control group.

CONCLUSION:

This study concludes that Isolated decreased AFI –

- In GA between 30-34 wks. is infrequent and is associated with increased incidence of LSCS. Most of the neonates require NICU admission for preterm care. The overall neonatal outcome is good.
- In GA more than 30-34 weeks is a more frequent finding and is associated with early termination of pregnancy by Induction of labor. Increased rate of LSCS was found in view of abnormal fetal heart tracing as compared to normal AFI. The number of LBW babies is more, NICU admission is more with decreased AFI but the neonatal outcome is good.

REFERENCES:

1. Williams Obstetrics 23rd edition, chapter 21, page 490
2. Zang j, Troendle j, Meikle S, Klebanoff MA, Rayburn WF, Isolated oligohydramnios is not associated with adverse perinatal outcomes. Br J Obstet Gynaecol 2004 March; 111(3):220-25
3. Ian Donald's practical obstetric problems, chapter 18, page 369
4. Hill LM, Breckle R, Wolfram KR, O'Brien PC. Oligohydramnios; ultrasonically detected incidence and subsequent fetal outcome Am J Obstet Gynecol 1983; 147:40710.
5. Mc Curdy CM Jr, Seeds JW. Oligohydramnios; problems and treatment. Semin Perinatol 1993; 17: 183-96.
6. Magann EF, Kinsella MJ, Chauhan SP, McNamara MF, Gehring BW, Morrison JC. Does an amniotic fluid index of < 180: 1999; Gynecol Obstet J Am study. case-control A pregnancies? high-risk in delivery necessitate cm>Sherer DM. A review of amniotic fluid dynamics and the enigma of isolated oligohydramnios. Am J Perinatol 2002; 19: 253-66
7. Locatelli A, Vergani P, Toso L, Verderio M, Pezzullo JC, Ghidini A. Perinatal outcome associated with oligohydramnios in uncomplicated term pregnancies. Arch Gynecol Obstet 2004; 269: 130-3.
8. Hassan AA. The role of amniotic fluid index in the management of postdate pregnancy. J Coll Physician Surg Pak 2005; 15: 85-8.
9. 23rd Edition, Williams Obstetrics, chapter 36; Preterm Birth, page 80511.en.wikipedia.org/wiki/Amniotic fluid
10. Clinical Obstetrics and Gynecology, vol 40, no.2 June 1997, page 314,315,316
11. Clinical Obstetrics and Gynecology, vol 40, no.2 June 1997, page 280,281
12. www.glowm.com/.../figures/v3/0760/001f.gif
13. Williams manual of Obstetrics Pregnancy complications, 22nd edition; Appendices, page 512
14. Practical Guide to High-Risk Pregnancy, Fernando Arias, 3rd edition, chapter 3, pages 94.
15. Text book of Obstetrics, Sheila Balakrishnan
16. Youssef AA, Abdulla SA, Sayed EH, et al. Superiority of amniotic fluid index over amniotic fluid pocket measurement for predicting bad fetal outcome. South Med J 1993; 86:426-429.
17. Marks AD, Divon MY. Longitudinal study of the amniotic fluid index in post dates pregnancy. Obstet Gynaecol. 1992; 79:229-233.
18. Lagrew DC, Piron RA, Nageotte M, et al. How frequently should the amniotic fluid index be repeated? Am J Obstet Gynecol. 1992; 167:1129-1133.
19. COG-Vol 40 No 2 June 1997, Page 310-311.
20. Locatelli Anna et al, Archives of Gynecology and Obstetrics, vol 269 no:2, Jan 2004 47.
21. Magann EF, Chauhan SP, Martin JN: Is amniotic fluid volume status predictive of fetal acidosis at delivery? N Z J Obstet Gynaecol 43:129,2003b.
22. <http://informahealthcare.com/doi/abs/10.3109/147670598090204411998>, Vol. 7, No.4, Pages 197-200).
23. Petrozella, Loren N, MD; Dashe, Jodi S, MD; McIntire, Donald D, PhD; Leveno, Kenneth J, MD Obstetrics & Gynecology: February 2011 - Volume 117 - Issue 2, Part 1 - pp 338-342).
24. Hina Ahmad, Shama Munim (Department of Obstetrics and Gynecology, The Aga Khan University Hospital, Karachi, Pakistan.) (JPMA 59:691;2009).
25. Kreiser d, el-Sayed YY, Sorem KA, Chitkara U, Holbrook RH JR, Druzin MC Department of Gynecology and Obstetrics, Stanford University School of Medicine, Stanford, California, USA.