



A RETROSPECTIVE STUDY ON AMNIOTIC FLUID INDEX AND ITS RELATION TO PERINATAL OUTCOME

Obstetrics & Gynaecology

Dr. Kyasa Sushmitha*	Postgraduate, Department of Obstetrics and Gynaecology, Alluri Sitarama Raju Academy of Medical Sciences, Eluru, West Godavari District, Andhra Pradesh 534005 India *Corresponding Author
Dr. Shaik Nazeema	MS, Department of Obstetrics and Gynaecology, Alluri Sitarama Raju Academy of Medical Sciences Eluru, West Godavari District Andhra Pradesh 534005, India
Dr. K. Sri Tanaya	Professor, Department of Obstetrics and Gynaecology, Alluri Sitarama Raju Academy of Medical Sciences Eluru, West Godavari District Andhra Pradesh 534005, India
Dr. K. Vandana	Professor & HOD, Department of Obstetrics and Gynaecology, Alluri Sitarama Raju Academy of Medical Sciences, Eluru, West Godavari District, Andhra Pradesh 534005, India
Dr. Ayesha Farheen	Postgraduate, Department of Obstetrics and Gynaecology, Alluri Sitarama Raju Academy of Medical Sciences, Eluru, West Godavari District, Andhra Pradesh 534005, India

ABSTRACT

Introduction: Recognizing the fetus with death risk or damage inside uterus, measuring the risk and determining the correct time and mode of intervention are the important steps of perinatal medicine. Clinical measurement of AFV is an important part of assessing fetus as any abnormality in its volume is found to have association with a variety of pregnancy complications including intrauterine death of fetus. Quantification of amniotic fluid is a vital part of the BPP, most importantly in the 3rd trimester. Increasing knowledge of strong correlation between fetal well-being and AFV in high-risk pregnancy has resulted in evolution of more appropriate methods of AFV assessment by USG, one such method is 4 quadrant technique or AF Index proposed by J.P Phalen and colleagues. **Materials and Methods:** It is a study conducted at Alluri Sitarama Raju Academy of medical sciences among 250 women attended the department of OBGY during October 2023 to October 2024. The objective of this study is to evaluate the relation between Amniotic fluid index and its relation to variables like 1. Mode of delivery 2. Fetal outcome 3. Maternal causes of abnormal AFI. **Results:** In the oligohydramnios group, there was a significantly higher incidence of preterm labor (26.8%) and intrauterine growth restriction (IUGR) (25.4%), as well as an increased rate of low birth weight (33.8%). Delivery method analysis revealed that emergency cesarean sections were most common in both the oligohydramnios (52.1%) and polyhydramnios (54.3%) groups, while normal vaginal delivery was more frequent among women with normal AFI. Meconium-stained liquor (MSL), an indicator of fetal distress, was significantly more prevalent in the oligohydramnios group (21.1% thick MSL and 19.7% thin MSL). Furthermore, polyhydramnios was associated with a higher incidence of macrosomia (17.4%) and maternal conditions like gestational diabetes mellitus (21.7%). In contrast, gestational hypertension was predominantly linked to oligohydramnios (23.9%). Interestingly, a large portion of both abnormal AFI cases were idiopathic in nature—46.5% for oligohydramnios and 67.4% for polyhydramnios. **Conclusion:** Present study suggests Amniotic Fluid Index is a good predictor of neonatal morbidity. The Amniotic Fluid Index is the good predictor of fetal distress in intrapartum Period. The possibility of fetal distress is higher in AFI group of ≤ 5 cm. Pregnancies with diagnosis of oligohydramnios and compromised fetuses are most likely to be delivered earlier than pregnancies with normal AFI. Any possibility of worsening fetal condition may prompt immediate delivery. The information that is mentioned in present study is consistent with other studies mentioned above.

KEYWORDS

INTRODUCTION

Recognizing the fetus with death risk or damage inside uterus, measuring the risk and determining the correct time and mode of intervention are the important steps of perinatal medicine. Clinical measurement of AFV is an important part of assessing fetus as any abnormality in its volume is found to have association with a variety of pregnancy complications including intrauterine death of fetus. Quantification of amniotic fluid is a vital part of the BPP, most importantly in the 3rd trimester. Increasing knowledge of strong correlation between fetal well-being and AFV in high-risk pregnancy has resulted in evolution of more appropriate methods of AFV assessment by USG, one such method is 4 quadrant technique or AF Index proposed by J.P Phalen and colleagues.

AIMS AND OBJECTIVES

Aim

The aim of the present study is to evaluate Amniotic fluid index (AFI) in 250 pregnancies and its relation to perinatal outcome.

Objectives

To study the relation between Amniotic fluid index and its relation to variables like:

1. Mode of delivery
2. Fetal outcome
3. Maternal causes of abnormal Amniotic fluid index (AFI).

MATERIALS AND METHODS

It is a study conducted at Alluri Sitarama Raju Academy of medical sciences among 250 women attended the department of Obstetrics and

Gynecology during October 2023 to October 2024.

Inclusion Criteria

1. All antenatal women of gestational age at 32 weeks and above.
2. Those with correct dates or with early trimester scan.
3. Singleton pregnancy.
4. Vertex presentation.
5. Intact membranes.
6. AFI estimated through phelans technique (4 quadrant).
7. Intrauterine live fetus.

Exclusion Criteria

1. Patient with unknown LMP or early trimester scan.
2. Multifetal gestation.
3. Malpresentations.
4. Pre-labour rupture of membranes.
5. Congenital anomalies of fetus.
6. Intrauterine death.
7. Post term pregnancy.

RESULTS AND ANALYSIS TABLES:

Table 1: Comparison Based on AFI and Incidence of Preterm labour:

	≤ 5	6 – 24	> 24	Total
Yes	19(26.8%)	1(0.8%)	11(23.9%)	31(12.4%)
No	52(73.2%)	132(99.2%)	35(76.1%)	219(87.6%)
Total	71(100%)	133(100%)	46(100%)	250(100%)

Chi square test = 35.70, $p < 0.0001$, statistically significant

Table 2: Distribution Based on AFI and Type of Delivery :

	≤5	6 – 24	>24	Total
Forceps assisted	0(0%)	1(0.8%)	6(13%)	7(2.8%)
Normal	20(28.2%)	54(40.6%)	14(30.4%)	88(35.2%)
Preterm vaginal	9(12.7%)	1(0.8%)	0(0%)	10(4%)
Emergency LSCS	37(52.1%)	45(33.8%)	25(54.3%)	107(42.8%)
Elective LSCS	5(7%)	32(24.1%)	1(2.2%)	38(15.2%)
Total	71(100%)	133(100%)	46(100%)	250(100%)

Chi square test = 62.80, p = <0.0001 , statistically significant

Table 3: Distribution Based on AFI and FGR :

	≤5	6 – 24	>24	Total
Yes	18(25.4%)	1(0.8%)	0(0%)	19(7.6%)
No	53(74.6%)	132(99.2%)	46(100%)	231(92.4%)
Total	71(100%)	133(100%)	46(100%)	250(100%)

Chi square test = 44.52, p = <0.0001 , statistically significant

DISCUSSION

In the oligohydramnios group, there was a significantly higher incidence of preterm labor (26.8%) and intrauterine growth restriction (IUGR) (25.4%), as well as an increased rate of low birth weight (LBW) (33.8%).

Delivery method analysis revealed that emergency cesarean sections were most common in both the oligohydramnios (52.1%) and polyhydramnios (54.3%) groups, while normal vaginal delivery was more frequent among women with normal Amniotic fluid index (AFI). NICU admissions were markedly higher for neonates born to mothers with abnormal AFI levels, with 57.7% of babies in the oligohydramnios group and 32.6% in the polyhydramnios group requiring intensive care. Furthermore, polyhydramnios was associated with a higher incidence of macrosomia (17.4%) and maternal conditions like gestational diabetes mellitus (21.7%). In contrast, gestational hypertension was predominantly linked to oligohydramnios (23.9%). Interestingly, a large portion of both abnormal AFI cases were idiopathic in nature—46.5% for oligohydramnios and 67.4% for polyhydramnios.

Overall, the results underscore the importance of Amniotic fluid index (AFI) as a predictive tool for perinatal risk. They confirm that both low and high Amniotic fluid index (AFI) values are associated with significant maternal and neonatal complications, including caesarean - section delivery, preterm labor, abnormal liquor, low APGAR scores, and NICU admissions. Therefore, regular Amniotic fluid index (AFI) monitoring, especially in the third trimester, is crucial for early detection of at-risk pregnancies and appropriate clinical management to improve maternal and neonatal outcomes.

The study concludes that monitoring the Amniotic Fluid Index (AFI) is a valuable, non-invasive tool in predicting and improving perinatal outcomes. Amniotic fluid index (AFI) measurement, especially in the third trimester, can guide clinicians in deciding the timing and mode of delivery. The authors suggest incorporating regular AFI assessment into standard prenatal care, particularly for high-risk pregnancies, to mitigate complications through timely intervention.

CONCLUSION

Present study suggests Amniotic Fluid Index (AFI) is a good predictor of neonatal morbidity. The Amniotic Fluid Index is the good predictor of fetal distress in intrapartum Period. The possibility of fetal distress is higher in Amniotic fluid index (AFI) group of ≤5 cm. Pregnancies with diagnosis of oligohydramnios and compromised fetuses are most likely to be delivered earlier than pregnancies with normal Amniotic fluid index (AFI). Any possibility of worsening fetal condition may prompt immediate delivery. The information that is mentioned in present study is consistent with other studies mentioned above.

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