



SUCCESS OF PREGNANCY IN PATIENTS WITH BORDERLINE AMNIOTIC-FLUID-INDEX AT A TERTIARY CARE HOSPITAL IN MADAN.

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Abstract:

Background: Amniotic fluid is linked to both maternal and fetal morbidity and mortality and signals the health of the fetus.

Objective: Determining the pregnancy outcome in patients with borderline AFI is the study's goal.

Study Design: A Descriptive Cross-Sectional Study

Duration and place of study: From January 1, 2023, to August 1, 2023, research was carried out in the Department of Obs & Gyne MMC, Mardan

Methods: The Mardan Medical Complex Obstetrics & Gynecology Department conducted a descriptive cross-sectional study. At term (37–40 weeks), 179 random subjects were investigated. Patients with normal (amniotic-fluid) AFI of 8–20 cm and borderline of 5–8 cm were tracked until delivery, and pregnancy outcomes such as cesarean section, poor APGAR score, and NICU stay were documented.

Results: Most patients (92, 51.40%) had ages ranging from 18 to 30 years old, with a mean age of 28.99 ± 4.38 years. The average age gestational age was (38.38 ± 1.22) weeks. AFI averaged 18.63 ± 3.65 cm. Patients with dubious (amniotic-fluid) had different perinatal outcomes: 39 (21.7%) had an APGAR score of less than 7 at five minutes, 13 (7.2%) had meconium-stained liquor, and 19 (10.6%) were admitted to the NICU. Cesarean sections and low Apgar scores <7 did not significantly increase in borderline AFI people (P-value = 0.360 and $p = 0.102$, respectively). The borderline group had more NICU admissions ($p = 0.001$) and greater meconium stains ($p = 0.01$) than those with normal (amniotic fluid).

Conclusion: Our study suggests that borderline (amniotic-fluid) patients should get prenatal monitoring and treatment to reduce newborn morbidity and death. Meconium staining of liquor and neonatal problems enhance perinatal morbidity in these individuals.

Keywords: Oligohydramnios, Perinatal outcome, amniotic-fluid-Index

The amniotic fluid is an essential part of the fetus's growth and has several functions, including nourishment and support¹. Essential for the umbilical cord's normal functioning, it also helps the fetus's lung development and acts as a cushion for the baby. The amount of amniotic fluid varies during pregnancy, reaching its highest point at 38 weeks of gestation and gradually decreasing as the baby approaches term³. Low amniotic fluid volume about gestational age is known as

oligohydramnios, one of the most important concerns in obstetrics. Birth asphyxia, low APGAR ratings, low birth weight, and increased rates of maternal morbidity are some of the negative effects linked to this disease⁴. Cesarean sections caused by unsettling patterns in the fetal heart rate and meconium-stained amniotic fluid are all potential causes of these issues. Two approaches are utilized to measure the amount of amniotic fluid: the Amniotic Fluid Index (AFI) and the Deepest Vertical Pocket (DVP)⁵. DVP measures the deepest unobstructed vertical pocket of amniotic fluid, while AFI entails adding the depths of amniotic fluid in four uterine quadrants. When the amniotic fluid index (AFI) is less than 5 cm, oligohydramnios is identified⁶. Borderline oligohydramnios are described when the AFI is between 5.1 and 8 cm.

There is inconclusive evidence that these diagnostic methods improve perinatal outcomes⁶, despite their usage⁷. Oligohydramnios may be caused by several different things, including fetal urinary system abnormalities, placental insufficiency (typically caused by hypertension or later in pregnancy), and premature membrane rupture. Serious consequences include stillbirth, limb deformities, Potter syndrome, and lung hypoplasia that may result from these abnormalities⁸. Amniotic fluid volume reduction has also been linked to certain maternal variables, including ACE inhibitor use⁸. Medical history, medication review, family history, and physical examination are all part of a thorough assessment necessary to diagnose oligohydramnios⁹. During this procedure, ultrasound is crucial for measuring the amount of amniotic fluid and detecting fetal abnormalities, especially in the areas of the renal system and in fetuses with growth restrictions¹⁰. Factors such as the etiology, gestational age, and maternal and fetal health dictate the course of treatment and outcome for oligohydramnios. There is a significant improvement in the likelihood of survival from the second to the third trimester¹¹. Although the ideal date is debatable, current standards recommend considering delivery at 37 weeks of gestation in situations with isolated oligohydramnios¹². These situations increase the likelihood of labor difficulties such as irregular fetal heart rate patterns, meconium-stained amniotic fluid, cesarean birth, and compression of the umbilical cord. One option to reduce the risk of cord compression during childbirth is amnioinfusion, which involves injecting fluid into the amniotic sac¹³.

MATERIAL AND METHOD:

A study was carried out on 179 patients from emergency and OPDD clinics who were selected at random. The study included individuals with singleton pregnancies between 37 and 40 weeks but excluded patients with congenital disabilities, intrauterine deaths, past cesarean sections, multiple pregnancies, and medical disorders. Patients with normal (amniotic-fluid) (AFI of 8–20 cm) and borderline (amniotic-fluid) (AFI of 5–8 cm) were tracked until birth and the pregnancy outcome, which included NICU hospitalization, meconium-stained liquor, low APGAR score, and cesarean section.

STATISTICAL ANALYSIS:

The data was imported into SPSS IBM version 25.0, which was then utilized for statistical analysis. Age, gestational age, parity, (amniotic-fluid) Index), and APGAR score were shown along with their respective means and standard deviations. Parity, cesarean delivery, low APGAR score, meconium-stained (amniotic-fluid), and NICU stay (yes/no). The post-stratification of pregnancy outcomes based on the (amniotic-fluid) Index) was established using Chi-square analysis. When p-values were less than 0.05, we considered them statistically significant.

RESULTS:

This research had a mean age of 28.99 ± 4.38 years, with an age range of 18 to 45 years. Most of the 92 patients (51.40%) were in the 18–30 age range. Age at gestation was 38.38 ± 1.22 weeks on average. 40.78% of patients were primigravida, while 59.2% were multiparous. AFI averaged 18.63 ± 3.65 cm. Table I. Table II displays the frequency of various perinatal outcomes depending on (amniotic-fluid) Index). Among them, 125 (68.16%) had a cesarean delivery, 111 (62.01%) had an APGAR score of less than 7 at five minutes, 46 (25.70%) had meconium-stained liquor, and 34

(18.99%) children were admitted to the NICU. Table III displays the stratification of perinatal outcomes according to AFI.

Table 1: Demographic Characteristics

Parameter	Mean/Percentage
Age (years)	28.99 ± 4.38
Gestational Age	38.38 ± 1.22
Primigravida (%)	40.78%
Multiparous (%)	59.2%
AFI (cm)	18.63 ± 3.65

Table II: Frequency of different perinatal outcomes based on ((amniotic-fluid) Index) (AFI) N=179

Perinatal outcome	Frequency (%)	
	yes	no
Cesarean section	125 (68.16%)	54 (31.84%)
APGAR score <7 at 5 minutes	111 (62.01%)	68 (37.99%)
NICU admission	34 (18.99%)	145 (81.01%)
Meconium Stained amniotic fluid	46 (25.70%)	133 (74.30%)

Table III: Stratification of perinatal outcome concerning AFI N=179

Perinatal outcome		AFI = 5-8cm N=55	AFI= 9-25cm N=124	P- Value
C Section for no reassuring CTG	YES	41	84	.360
	NO	14	40	
Meconium stained liquor	YES	13	21	.0001
	NO	42	103	
NICU Admission	YES	19	15	.0001
	NO	36	109	
APGAR Score <7	YES	39	72	.102
	NO	16	52	

DISCUSSION:

Luo et al. found that borderline AFI had a greater C-section rate but no change in baby outcome. Thirteen pregnant women in an Indian study by Ray P et al. reported maternal morbidity (7.4%). Newborn morbidity was high at 66.3%. Unsettling NST (31.7%), meconium aspiration (0.9%), respiratory distress (6.5%), and a five-minute Apgar score below 7 (3.7%). Half of all pregnant women had cesarean procedures due to fetal discomfort. 75% of instances had meconium-stained fluids, which is a very high percentage. Chaudhary, R. 14. Meconium staining was more prevalent in the oligohydramnios group (33% vs. 10%), and non-reactive NST was more common in that group (40% vs. 12%). With LSCS, 51%.¹⁵

Research at LRH by Karim R et al. indicated that patients with AFI <5cm had higher rates of labor induction, meconium-stained fluid, and cesarean delivery for fetal distress but no difference in mortality (16).

A case-control prospective comparative investigation by Mathuriya et al. found practically comparable MSL and FD rates in both groups and 35 LSCS in cases compared to 10 in the control group.

For non-reassuring fetal heart rate tests ($p = 0.513$), meconium-stained (amniotic-fluid) ($p = 0.641$), NICU hospitalization ($p = 0.368$), or a 5-minute Apgar score less than 7 ($p = 1.00$), Chore S et al. did not find a link between borderline AFI and cesarean birth. 18. Fetal heart rate concerns, poor Apgar scores, meconium-stained fluid, intrauterine growth restriction, cesarean birth, and hospitalization to the newborn critical care unit are all increased risks of borderline fluid, according to the research by Magann et al.¹⁹

Gumus et al. reported that the borderline group had higher rates of intrauterine growth restriction, meconium-stained (amniotic fluid), intrapartum fetal distress, and admission to the newborn intensive care unit ($P < 0.05$). The borderline AFI group had a higher rate of cesarean sections than the normal group (28 (51.8%) vs. 14 (26%), P -value = 0.003). In keeping with our findings, there was a greater incidence of meconium-stained (amniotic fluid) in the borderline AFI group (28 (51.9%) compared to 13 (24.1%), P -value 0.003.²⁰

Ahmad et al. discovered no variation in groups' five-minute low Apgar scores. Individuals with low AFI had an earlier gestational age at delivery than the control group due to iatrogenic premature birth.²¹ Nazlima et al., where the ages of study participants were the most common factor. It was sixteen years old on average. According to Magann et al. (19, 22), the average age of oligohydramnios patients was 24.9 years. Participants in our research ranged in age from 18 to 45, with a mean age of 28.99 ± 4.38 years.

Researchers from Bangladesh discovered a noteworthy increase in the prevalence of cesarean sections, low birth weight combined with a low APGAR score, newborn sequelae, respiratory distress syndrome (RDS) (13%), and low birth weight (65.5%).²²

An Iranian study related oligohydramnios to increased newborn morbidity and mortality and pregnancy problems. In labor, 23 meconium-stained liquors were statistically significant ($p < 0.05$). Otherwise, maternal and perinatal outcomes were not significantly different between cases and controls.²³

CONCLUSION

The study emphasizes how crucial it is for expectant mothers with borderline ((amniotic-fluid) Index) (AFI) to have the proper prenatal treatment and monitoring. The borderline AFI group had a greater rate of NICU hospitalizations and meconium staining of liquor, but there was no discernible rise in cesarean sections or poor APGAR ratings. These results highlight the need to use focused therapies in these situations to lower newborn morbidity and death.

REFERENCES:

1. Mulvihill SJ, Stone MM, Debas HT, Fonkalsrud EW. The role of amniotic fluid in fetal nutrition. *Journal of pediatric surgery*. 1985 Dec 1;20(6):668-72.
2. Gupta T, Singh S, Gupta S, Gupta N. Normal implantation, placentation, and fetal development. *Recurrent Pregnancy Loss*. 2018;13-40.
3. ElAwni HE. *Assessment of Amniotic Fluid Volume in Second and Third Trimester by Ultrasound in Pregnant Women* (Doctoral dissertation, Sudan University of Science and Technology).
4. Magann EF, Chauhan SP, Hitt WC, Dubil EA, Morrison JC. Borderline or marginal amniotic fluid index and peripartum outcomes: a literature review. *Journal of Ultrasound in Medicine*. 2011 Apr;30(4):523-8.
5. FARID IH, TAHA S. Borderline Amniotic Fluid Index, Fetal Doppler Indices and Non-Stress Test as Predictors of Poor Perinatal Outcomes. *The Medical Journal of Cairo University*. 2021 Dec 1;89(December):2473-9.
6. El-Sayed YA, Mohammed ME, Kewan AE, Hamed BM. Assessment of Perinatal Outcomes in Pregnant Women with Borderline Amniotic Fluid Index. *The Egyptian Journal of Hospital Medicine*. 2023 Jan 1;90(2):2026-31.
7. Baron C, Morgan MA, Garite TJ. The impact of amniotic fluid volume assessed intrapartum on perinatal outcome. *American journal of obstetrics and gynecology*. 1995 Jul 1;173(1):167-74.

8. Kashanian M, Eshraghi N, Moslemi S, Sheikhsari N. The effect of sildenafil on amniotic fluid volume in cases of borderline oligohydramnios in uncomplicated pregnancies: a randomized clinical trial.
9. Brost BC, Scardo JA, Newman RB, Van Dorsten JP. Effect of fetal presentation on the amniotic fluid index. *American journal of obstetrics and gynecology*. 1999 Nov 1;181(5):1222-4.
10. Harman CR. Amniotic fluid abnormalities. In *Seminars in perinatology* 2008 August 1 (Vol. 32, No. 4, pp. 288-294). WB Saunders.
11. Ansari SN, Baral J, Gurung G, Jha A. Comparison of Outcome of Borderline and Normal Amniotic Fluid Index in Term Pregnancy. *Kathmandu University Medical Journal*. 2021 Mar 31;19(1):17-21.
12. Ulker K, Ozdemir I. P14. 07: The relationship of intrapartum amniotic fluid index and perinatal outcomes. *Ultrasound in Obstetrics & Gynecology*. 2010 Oct;36(S1):219-.
13. Alexander JM, McIntire DD, Leveno KJ. Forty weeks and beyond pregnancy outcomes by a week of gestation. *Obstet Gynecol*. 2000;96:291–294
14. Ray P, Chandra Mouli A., Bulusu R, Konar C, A prospective study on the fetomaternal outcome in cases of borderline ((amniotic-fluid) Index) at term in a rural hospital. *Indian J Obstet Gynecol Res* 2017;4(1):89-91 15. Choudary R, Singh S, Sharma V, Singh M, Correlation of reduced ((amniotic-fluid) Index) with the maternal outcome. *Indian J Obstet Gynecol Res* 2017;4(2):141-145
15. Karim R, Jabeen S, Pervaiz F, Wahab S, Yasmeen S, Raees M. Decreased ((amniotic-fluid) Index) and adverse pregnancy outcome at term. *JPMI*. 2010;4:307–311. 10.
16. Mathuriya G, Verma M, Rajpoot S. Comparative study of maternal and fetal outcome between low and normal ((amniotic-fluid) Index) at term. *Int J Reprod Contracept Obstet Gynecol*. 2017;6:640-4.
17. Choi SR. Borderline ((amniotic-fluid) Index) and perinatal outcomes in the uncomplicated term pregnancy. *J Matern Fetal Neonatal Med*. 2016;29:457–60.
18. Magann EF, Chauhan SP, Hitt WC, Dubil EA, Morrison JC. Borderline or marginal ((amniotic-fluid) Index) and peripartum outcomes: a literature review. *J Ultrasound Med*. 2011 Apr;30(4):523-8.
19. Anamika M, Ram Prasad et al. Perinatal outcomes of pregnancies with borderline versus normal ((amniotic-fluid) Index): A prospective study. *Journal of General Practice and Emergency Medicine of Nepal*. Issue 9: 2020: 2363-1168
20. Ahmad H, Munim S. Isolated oligohydramnios does not indicate adverse perinatal outcome—*Journal of the Pakistan Medical Association*. 2009;59(10):691.
21. Nazlima N, Fatima B. Oligohydramnios at third trimester and perinatal outcome. *Bangladesh Journal of Medical Science*. 2012;11(1):33-6.
22. Rezaie Kahkhaie K, Keikha F, Rezaie Keikhaie K, Abdollahimohammad A, Salehin S. Perinatal outcome after diagnosis of oligohydramnios at term. *Iran Red Crescent Med J*. 2014;16(5):e11772. 63.