

PERINATAL OUTCOME IN PATIENTS WITH SEVERE OLIGOHYDRAMNIOS
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low birth weight, cesarean delivery, and oligohydramnios.

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Abstract

Overview: The evaluation of fetal health and the identification of pregnancies at risk of a poor postnatal result can be accomplished with the use of a number of techniques, including the nonstress test (NST), acoustic stimulation, Doppler velocimetry, fetal stimulation test, and fetal scalp blood pH estimate. Little research has been done and little information is accessible on this topic in Pakistan, a third-world nation with low resources overall for continuous electronic fetal monitoring and assessment instruments throughout labor.

Design of study: cross-sectional

Methodology: 83 patients between the ages of 18 and 40 who had an amniotic fluid index of ≤ 5 cm were included. Pregnant women with an amniotic fluid index greater than 5 cm and any obstetric complications, such as eclampsia, preeclampsia, multiple pregnancies, antepartum hemorrhage, ruptured membranes, malpresentation, or multiple gestations, were not included in the study. Demographic information and perinatal outcomes, such as meconium-stained amniotic fluid, low birth weight, APGAR score at 5 minutes, IUGR, NICU admission, and delivery method, were recorded on a pre-designed performa. Neonatologists attended every birth.

Results: The study found that among patients with oligohydramnios (amniotic fluid index ≤ 5 cm) at term pregnancies, the following perinatal outcomes were common: 56 patients (67.47%) had a cesarean section, 16 patients (19.28%) had meconium aspiration, 53 patients (63.86%) had low birth weight, 52 patients (62.65%) had an APGAR score < 7 at 5 minutes, 21 patients (25.30%) were admitted to the NICU, and 15 patients (18.07%) had IUGR.

Conclusion: In order to lower the fetus's morbidity and mortality, this study came to the conclusion that these high-risk patients should receive appropriate prenatal monitoring and care.

INTRODUCTION:

The developing embryo is surrounded and shielded by amniotic fluid. It makes it easier for the mother and the fetus to exchange water, nutrients, and metabolic products. Sufficient fetal growth and infection prevention depend on a normal volume of amniotic fluid. The most popular technique for measuring amniotic fluid volume during fetal ultrasound examination is the amniotic fluid index evaluation (AFI), which is calculated by adding the amniotic fluid volume

measurements from each of the four quadrants surrounding the fetus.¹ According to reports, the incidence of oligohydramnios ranges from 0.5 to 37%.^{2,3} Early development of oligohydramnios is usually associated with congenital fetal anomalies such as bilateral renal agenesis, pulmonary hypoplasia, bilateral polycystic kidney, bladder outlet obstruction, dysplastic kidney, etc. Intrauterine growth limitation, fascial deformation, and other anatomical abnormalities are examples of poor fetal outcomes. These women are

more vulnerable to maternal complications such as vascular diseases or preeclampsia, as well as placental anomalies. Compression of the umbilical cord and thick meconium fluid are the main symptoms of late-onset oligohydramnios.⁴ AFI assessment is a helpful screening tool for assessing adequate placental function and anticipating fetal distress during labor that requires a cesarean section.^{5,6}

A study found that fetal heart rate decelerations, meconium-stained liquor, Caesarean delivery, low Apgar score at 5 minutes, low birth weight <2.5 kg, and NICU hospitalization are all linked to an amniotic fluid index of < 5 cm found after 37 full weeks of gestation.⁷ A study conducted in Pakistan that assessed pregnancies with oligohydramnios revealed that 27 (14.8%) of the pregnancies ended in an emergency cesarean section, whereas 60 (43.2%) underwent induction of labor. Among women with oligohydramnios during term pregnancies, 10 babies (15.2%) had significantly lower neonatal birth weights, and 16 newborns (25.4%) had low APGAR scores (<7) five minutes after delivery. In 11 newborns (29.7%), early neonatal deaths were discovered.⁸ A total of 700 patients participated in another trial. 84 newborns (12%) had intrauterine growth restriction (IUGR), 42 babies (6%) had stillbirths, 125 babies (25%) had neonatal intensive care unit (NICU) admissions, and 42 babies (6%) had early neonatal deaths. 371 newborns (43%) had no negative perinatal outcomes. 336 patients (48%) had cesarean sections, whereas 364 patients (52%) had vaginal births.⁹ Another study results showed that women with oligohydramnios had higher rates of hemorrhage (5.7 % vs 1.7%), fetal malposition (5.7 % vs 1.9%), and cesarean delivery (28.7% vs 13.5%) than women without the condition. Additionally, they discovered that oligohydramnios was linked to poor fetal and neonatal outcomes, such as low birth weight (29.9% vs 11.7%), neonatal mortality within 28 days (7.5% vs 1.6%), and stillbirths (80.5% vs 14.9%).¹⁰ The evaluation of fetal health and the identification of pregnancies at risk of a

poor postnatal result can be accomplished with the use of a number of techniques, including the nonstress test (NST), acoustic stimulation, Doppler velocimetry, fetal stimulation test, and fetal scalp blood pH estimate.⁶ In Pakistan, a third-world country with limited resources overall for continuous electronic fetal monitoring and assessment tools throughout labor, little research has been conducted and little information is available on this topic. This results in a greater rate of cesarean sections and more newborn hospitalizations to intensive care units. The AFI determination can be combined with other fetal surveillance techniques. It assists in identifying infants who may have a poor perinatal outcome. Since the causes, therapies, and results of late-onset oligohydramnios differ from those of early-onset oligohydramnios, a group of women with oligohydramnios throughout term pregnancies is being included.

MATERIALS AND METHODS:

Between September 1, 2024, and February 28, 2025, 83 individuals with severe oligohydramnios (Amniotic fluid index of ≤ 5 cm) who were between the ages of 18 and 40 participated in this descriptive study. Assuming a 12% frequency of IUGR in patients with oligohydramnios, we computed a sample size of 83 with a 95% confidence level and a 7% margin of error.⁹ Openepi.com was used to calculate the sample size. Pregnant women with an amniotic fluid index greater than 5 cm and any obstetric complications, such as eclampsia, preeclampsia, multiple pregnancies, antepartum hemorrhage, ruptured membranes, malpresentation, or multiple gestations, were not included in the study.

Following ethical review committee approval, 83 patients who met the trial's inclusion requirements were added to the study. Name, age, parity, gestational age, and BMI were among the demographics that were noted. To rule out any concomitant medical conditions and gestational problems, a thorough medical and obstetric history was obtained. Demographic information and perinatal outcomes, such as meconium-stained amniotic fluid, low birth weight, APGAR score at 5

minutes, IUGR, NICU admission, and delivery method, were recorded on a pre-designed performa. Neonatologists attended every birth. Self-made Performa contained all of this information. Maintaining patient confidentiality and anonymity was of the highest importance.

Software called SPSS version 20 was used to enter and evaluate data. For quantitative variables that are regularly distributed, including as age, gestational age, BMI, apgar score, and birth weight, the mean and standard deviation were computed. The median and range were used for the non-normally distributed data. For qualitative variables including cesarean sections, low birth weight, poor Apgar, meconium staining, IUGR, and NICU hospitalization, frequency and percentage were computed.

RESULTS:

The study's participants ranged in age from 18 to 40, with a mean age of 28.86 ± 4.41 years. Of the 43 patients, the majority (51.81%) were in the 18–30 age range. An average gestational age of 38.47 ± 1.20 weeks was recorded. A BMI of 28.27 ± 2.53 kg/m² was the mean. $5.43 \pm 1/32$ was the mean apgar score. The average birth weight was 873.54 ± 1895.43 grams.

According to Table II, the frequency of perinatal outcomes among patients with oligohydramnios (amniotic fluid index ≤ 5 cm) at term pregnancies was as follows: 56 patients (67.47%) had a cesarean section, 16 patients (19.28%) had meconium aspiration, 53 patients (63.86%) had low birth weight, 52 patients (62.65%) had an APGAR score <7 at 5 minutes, 21 patients (25.30%), NICU admission, and 15 patients (18.07%) had IUGR.

Table I: Distribution of patients according to confounding variables (n=83)

Confounding variables		Frequency	%age
Age (years)	18-30	43	51.81
	31-40	40	48.19
Gestational age (weeks)	37-39	68	81.93
	40-41	15	18.07
Parity	Nulliparous	34	40.96
	Multiparous	49	49.04
BMI (kg/m ²)	≤ 30	61	73.49
	> 30	22	26.51

Table VI: Frequency of perinatal outcome among patients with severe oligohydramnios (amniotic fluid index ≤ 5 cm) at term pregnancies

Outcome	Frequency (%)	
	yes	no
Cesarean section	56 (67.47%)	27 (32.53%)
Low birth weight	53 (63.86%)	30 (36.14%)
Meconium aspiration	16 (19.28%)	67 (80.72%)
APGAR score <7 at 5 minutes	52 (62.65%)	31 (37.35%)
NICU admission	21 (25.30%)	62 (74.70%)
IUGR	15 (18.07%)	68 (81.93%)

DISCUSSION:

Measuring the level of amniotic fluid during pregnancy is a helpful way to detect people who might have a potentially adverse outcome for the fetus. Our study's objective was to evaluate how neonatal oligohydramnios affected the perinatal

outcome. It would help in determining which patients are at risk and in selecting the best delivery method, time, and options for neonatal care. It mostly handles referral cases because it is a tertiary hospital. To get the greatest prenatal treatment and the best fetal monitoring

and management methods, the majority of the patients in our study were sent to this specialist institution from other parts of our country.

The mean age of the expectant women (N=83) in our study was 28.86 ± 4.41 years. The bulk of the 43 patients (51.81%) were between the ages of 18 and 30. The majority of the patients in a similar analysis conducted in Bangladesh were between the ages of 21 and 30.¹¹ According to a Maharashtra study, almost 65% of patients were between the ages of 20 and 30.¹² According to a conflicting study, moms aged 25 to 34 accounted for the majority of those with oligohydramnios (51.3%).¹³ According to another analysis, the study participants' mean age was 26.4 years.¹⁴ According to another survey, the average age of the pregnant women was 26.6 years, with the majority being between 20 and 25 years old.¹⁵

81.93% of the women in our analysis had a gestational age between 37 and 39 completed weeks. According to a similar analysis, the mean (SD) gestational age was 38.8 (1.6) weeks, with a range of 35.3 weeks to 42.5 weeks.¹⁶ One study in Kathmandu found that eighty (74.1%) of the women had gestational ages between 37 and 40 weeks, thirteen (24.1%) between 40 and 42 weeks, and one (0.9%) over 42 weeks.¹⁷ In our study, 23 mothers (34, 40.96%) were nulliparous. A comparable study found that 75.7% of pregnant women in Jiangsu Province's Yangzhou City were nulliparous.¹⁸

Patients with oligohydramnios (amniotic fluid index ≤ 5 cm) during term pregnancies had the following incidence of perinatal outcomes based on pregnancy complications: 52 patients (62.65%) had an APGAR score <7 at 5 minutes, 21 patients (25.30%) were admitted to the NICU, 15 patients (18.07%) had IUGR, 56 patients (67.47%) had a cesarean delivery, 16 patients (19.28%) experienced meconium aspiration, and 53 patients (63.86%) had low birth weight. According to another similar research, there are a number of other things to consider during labor in a pregnancy that is complicated by

oligohydramnios. Fetal heart rate decelerations, cesarean delivery, meconium aspiration, compression of the umbilical cord, and nonreactive fetal tracings are among the risks that are increased.¹⁹

Only fourteen patients (16, 19.28%) had meconium-stained liquor in this current content, which was not statistically significant. Meconium-stained liquor (MSL) was found in 27.1% of the total cases, according to another related article.²⁰ According to a companion publication, 31.6% of patients had meconium-stained beverages.²¹

The current study's fetal outcome (N=83) revealed that 15 babies (18.07%) were admitted to the intensive care unit and 52 babies (62.6%) had birth asphyxia. Low umbilical artery pH, poor Apgar score, NICU admission, and death rates are not increased in pregnancies with normal amniotic fluid when oligohydramnios-induced fetal distress is present. This is demonstrated by another related article.²² It is dangerous when there is low amniotic fluid, or oligohydramnios. Given the baby's gestational age, it occurs when there is less amniotic fluid than one should expect. There is currently no known cure for this illness, not even with medical help.

Low AFI was linked to a much greater rate (65.5%) of low birth weight, according to another study.²³ The severe oligohydramnios group had a substantially higher APGAR score of less than 7 in 5 minutes, and the majority of the neonates had difficulties such as meconium aspiration (21%) and RDS (13%), which led to their admission to the neonatal unit (54%). Low AFI is somewhat associated with a worse prognosis for both the mother and the fetus. It is linked to a low birth rate, a low APGAR score, and an increase in neonatal problems. It also causes a noticeably greater likelihood of cesarean sections.²³

The results of a case control prospective comparative study²⁴, which included 200 randomly selected low-risk pregnant patients at term, showed that the incidences of MSL and FD were almost equal in both groups and that 35 more

LSCS procedures were performed in cases than in controls, with only 10 in the latter group. However, in order to improve the fetal prognosis, 17 women were scheduled for elective LSCS for a range of circumstances. Clinically, we disagree that the APGAR score of infants born to cases was noticeably low. There were almost twice as many babies with IUGR or FGR in this research.²⁴

A considerably higher risk of meconium aspiration syndrome was observed in infants born to mothers with oligohydramnios (RR = 2.83; 95% CI = 1.38-5.77), according to Rabie Net al²⁵. Furthermore, there was a higher chance of an infant with LBW in pregnant patients with oligohydramnios and other comorbidities (RR, 2.35; 95% CI, 1.27-4.34). Babar Shrikant A et al²⁶ demonstrated a significantly higher correlation between oligohydramnios patients and fetal distress, meconium-stained fluid, an Apgar score of less than 7, or admission to the Neonatal Intensive Care Unit. AFI ≥ 6 cm was also associated with a higher likelihood of CS for fetal distress.

CONCLUSION:

The frequency of perinatal outcomes among patients with oligohydramnios (amniotic fluid index ≤ 5 cm) at term pregnancies was determined by this study to be as follows: 56 patients (67.47%) had a cesarean section, 16 patients (19.28%) had meconium aspiration, 53 patients (63.86%) had low birth weight, 52 patients (62.65%) had an APGAR score < 7 at 5 minutes, 21 patients (25.30%) were admitted to the NICU, and 15 patients (18.07%) had IUGR. Therefore, in order to lower the fetus's morbidity and death, we advise that these high-risk patients receive appropriate prenatal monitoring and care.

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