

## ORIGINAL ARTICLE

## Fetal Outcome in Pregnancy with Oligohydramnios

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## ABSTRACT

**Objective:** The purpose of this study was to calculate the frequency of adverse fetal outcomes in oligohydramnios pregnancies.**Study Design:** Descriptive study**Place and Duration:** Department of Obstetrics and Gynaecology, PUMHS Nawabshah Hospital. August 2018-February 2019**Methods:** A total of 164 pregnant women with oligohydramnios were included in this study. Diagnosis was established after detailed history and abdominal examination. An extensive obstetric ultrasound was performed to verify the presence of alcohol, the baby's viability, the presence of two congenital defects, and the presence of the fetal heartbeat using Doppler ultrasonography. Information will then be filled in the performa. SPSS 22.0 was used to analyze all data.**Results:** The average age of the women was 25.76±4.18 years. Out of 164 cases, fetal growth retardation was observed in 39.02%, low birth weight 34.15%, NICU admission 30.5%, birth asphyxia 27.44%, respiratory distress syndrome 12.8%, Apgar scores <7 at 1 minutes 43.35% and at 5 minutes 23.2%, meconium aspiration syndrome 4.27% and perinatal mortality was observed in 4%.**Conclusion:** Assessment of AFI in the first part of the third trimester helps to identify women who need greater antepartum surveillance, and hence, correct care, to enhance perinatal outcome.**Keywords:** Oligohydramnios, Birth asphyxia, Low birth weight

## INTRODUCTION

Obstetricians face a difficult situation when they discover preterm oligohydramnios, also known as a low amniotic fluid volume. Although oligohydramnios is most frequent in the third trimester, it can appear at any time throughout pregnancy. There is oligohydramnios if the greatest height of the vertical pockets of fluid is less than 2 centimetres, or if the anterior foetal index is less than 5 centimetres, or if the baby is below the 10th percentile. [2,3] Anhydramnios is diagnosed when there is no detectable amount of amniotic fluid in the uterus. Borderline AFI occurs when the AFI measurement is between 5 cm and 8 cm. [3, 4]

The amniotic fluid's primary mechanical role is to cushion the umbilical cord. The cord may be compressed during contractions or foetal movement if there is no cushion between the foetus and the uterine wall. It is estimated that 12 percent of pregnant women experience oligohydramnios due to decreased placental function in pregnancies that last more than two weeks over the due date [5]. Oligohydramnios occurs alongside a wide variety of reproductive problems, including as foetal abnormalities and functional disorders affecting the mother, foetus, and placenta. Several developmental concerns, including pulmonary hypoplasia and intrauterine growth restriction, have been linked to a lack of amniotic fluid, particularly in the third trimester. Fetal distress during labour is a potential outcome of oligohydramnios because of the risk of umbilical cord compression. There is a correlation between oligohydramnios and perinatal morbidity and mortality, namely the need for an emergency caesarean section due to foetal distress and a low Apgar score. Idiopathic (56%) and PIH (24% of cases) were the most common causes of oligohydramnios. Fetal distress was the most frequent indication for an emergency caesarean section. Increased rates of growth retardation and admission to the neonatal intensive care unit were shown to be associated with oligohydramnios [6]. As reported by Moses V. and Thakre S., the Apgar score was taken at 1 and 5 minutes post birth. 16.3% of infants had an Apgar score of 7 or lower [9]. 5 One crucial part of foetal surveillance is the monitoring of amniotic fluid levels. AFI should be monitored during pregnancy because it is a reliable predictor of foetal prognosis on its own.

The purpose of this study is to determine the rate of foetal outcome in pregnancies complicated by oligohydramnios, since previous research has indicated that this rate varies from one

population to the next. This is because of the inherent genetic and geographical differences between populations, as well as the fact that ours is a developing nation with few medical resources and a low level of public awareness. Researchers hope that by learning more about the current magnitude of foetal outcome among oligohydramnios in our population, they can better prepare for the future and address foetal difficulty on an earlier basis.

## MATERIAL AND METHODS

This descriptive study was conducted at Department of Obstetrics and Gynaecology, PUMHS Nawabshah Hospital and comprised of 164 females. Presented cases of age 18-35 years, gestational age between 24-42 weeks evaluate by ultrasound, women presenting with decrease AFI (AFI<5cm) after 24th week of pregnancy evaluate by ultrasound, singleton gestation with cephalic presentation evaluate by ultrasound, booked and non-booked cases were included.

Patients with medical conditions such as diabetes, pulmonary hypertension, or cardiac disease, as well as those with a gestational age less than 24 weeks or greater than 42 weeks, a ruptured membrane, an intrauterine death, a congenital anomaly detected by ultrasound, or a ruptured membrane were not included.

After obtaining informed and written agreement, all eligible patients were enrolled in the study during the prenatal period (weeks 24-28 of pregnancy, whether booked or unbooked) and monitored until birth. After taking a thorough medical history and performing an abdominal examination, a diagnosis was reached. We performed a thorough obstetric ultrasound to determine the alcohol content, the baby's viability, the presence of any birth defects, and the presence of the foetal heartbeat with Doppler. The performa will be updated accordingly. Other metrics were Doppler ultrasound, CTG foetal monitoring, steroid use for lung maturity if necessary, birth method, postpartum weight, Apgar score at 1 and 5 minutes, NICU admission, mortality rate, and defined morbidity.

The analysis was conducted entirely with social science statistical software (Version-22.0; SPSS, Inc., Chicago, IL). Age and gestational age were among the numerical variables used to calculate means and standard deviations. Booking status, mode of delivery, indication for caesarean section, CTG, steroids, and foetal outcome were all analyzed for frequency and percentage

(Fetal growth retardation, Meconium Aspiration Syndrome, Respiratory distress syndrome, Birth asphyxia, birth weight, Apgar scores at 1 minute and 5 minutes, NICU admission, Perinatal Mortality).

## RESULTS

The average age  $25.76 \pm 4.18$  and gestational age  $36.63 \pm 2.14$  weeks of the women was respectively. Most of the cases were booked. Caesarean section was observed in 67.07% (110/164) case, normal vaginal delivery was 32.9% (54/164) in which 6 were experienced with forcep and 9 were vacuum delivery. Out of 164 patients, 8 (4.88%) CTG were non-reactive. Steroid was used in 43.29% (71/164) cases. (table 1)

Table-1: Baseline characteristics of enrolled cases

Variables	Frequency	Percentage
Mean age (years)	25.76±4.18	
Mean Gestational age (weeks)	36.63±2.14	
Types of Cases		
Booked	135	82.3
Non-booked	29	17.7
Mode of Delivery		
C-section	102	67.1
Vaginal Delivery	62	32.9
CTG Reactive		
Yes	8	4.88
No	156	95.12
Use of Steroids		
Yes	71	43.29
No	93	56.71

Fetal Distress, Pre C/S and non-progress of labour were the commonest indication of caesarean section. (table 2)

Table-2: Indication of C-section =110

Variables	Frequency	Percent
Fetal Distress	25	22.7%
Pre C/S	25	22.7%
Non Progress of labour	22	20.0%
Breech	9	8.2%
IUGR	8	7.3%
Preterm Labour	6	5.5%
Scanty Liquor	6	5.5%
Grade III Meconium	4	3.6%
Grade II Meconium	2	1.8%
Grade IV Meconium	1	0.9%
Maternal Wished	1	0.9%
Pre 2 Abortion	1	0.9%

Out of 164 cases, fetal growth retardation was observed in 39.02%, low birth weight 34.15%, NICU admission 30.5%, respiratory distress syndrome 12.8%, Apgar scores <7 at 1 minutes 43.35% and at 5 minutes 23.2%, meconium aspiration syndrome 4.3%, and perinatal mortality was observed in 4.3%. (table 3)

Table-3: Association of fetal outcomes

Variables	Frequency (n=164)	Percentage
fetal growth retardation	64	39.02
low birth weight	56	34.15
NICU admission	50	30.5
respiratory distress syndrome	21	12.8
Low Apgar score at 1minutes	71	43.3
Low Apgar score at 5minutes	38	23.2
meconium aspiration syndrome	7	4.3
perinatal mortality	7	4.3

Stratification analysis was performed and observed that rate of fetal outcome in pregnancy with oligohydromnios was reported with respect to maternal age groups (table 4), booked and un booked cases (table 5).

Table-4: Fetal outcome in pregnancy with oligohydromnios by age groups

Fetal Outcome	Age Groups		P-Value
	18-25 years n=88	26-35 years n=76	
Fetal Growth Retardation	38(43.2%)	26(34.2%)	0.24
Meconium aspiration syndrome	5(5.7%)	2(2.6%)	0.335
Respiratory distress syndrome	14(15.9%)	7(9.2%)	0.200
Birth Apxphsia	26(29.5%)	19(25%)	0.515
Low Birth Weight	32(36.4%)	24(31.6%)	0.519
Low Apgar score at 1 minutes	41(46.6%)	30(39.5%)	0.359
Low apgar score at 5 minutes	17(19.3%)	21(27.6%)	0.208
NICU Admission	26(29.5%)	24(31.6%)	0.778
Perinatal Mortality	2(2.3%)	3(3.9%)	0.534

Table-5: Fetal outcome in pregnancy with oligohydromnios by booking status

Fetal Outcome	Booking Status		P-Value
	Un booked n=29	booked n=135	
Fetal Growth Retardation	14(48.3%)	50(37%)	0.260
Meconium aspiration syndrome	1(3.4%)	6(4.4%)	0.810
Respiratory distress syndrome	3(10.3%)	18(13.3%)	0.662
Birth Apxphsia	7(24.1%)	38(28.1%)	0.661
Low Birth Weight	12(41.4%)	44(32.6%)	0.365
Low Apgar score at 1 minutes	13(44.8%)	58(43%)	0.854
Low apgar score at 5 minutes	7(24.1%)	31(23%)	0.892
NICU Admission	9(31%)	41(30.4%)	0.994
Perinatal Mortality	2(6.9%)	3(2.2%)	0.184

## DISCUSSION

Oligohydramnios is defined as a low amniotic fluid volume for the gestational age of the foetus. A portion of the fetus's sustenance comes from the AF, or amniotic fluid. When the amniotic sac forms, around 12 days after conception, the body begins to create amniotic fluid. After the first 20 weeks, foetal pee has replaced effusion as the main component of the fluid. [10] Oligohydramnios is diagnosed when the AF is too low. Polyhydramnios occurs when the amniotic fluid (AF) level is abnormally high. [11] In the absence of a pocket measuring at least 2 1 cm, or an Amniotic fluid index (AFI) of less than 5, oligohydramnios was diagnosed. [12] Phelan et al. (1997) established a method for estimating amniotic fluid utilising AFI with four quadrant approaches during transabdominal USG that allows for more accurate identification of foetuses at high risk. [13]

According to some estimates, between 1 and 5 percent of all pregnancies are affected with oligohydramnios, making it a frequent pregnancy problem. [14] The use of ultrasonography during pregnancy has allowed for the precise identification of oligohydramnios. Although it can happen at any point during pregnancy, it often does so in the third trimester. By the time a pregnant woman is 42 weeks along, almost half of her amniotic fluid has been shed. Around 12% of pregnancies that last longer than 41 weeks are complicated by oligohydramnios. [15]

The severity of placental hypoperfusion and intrauterine growth restriction (IUGR) is typically correlated with the extent of Oligohydramnios (Intra Uterine Growth Restriction). Infants with IUGR are more likely to have oligohydramnios due to reduced urine production. [16] A decrease in AFI is linked to a number of maternal and foetal risk factors.

Having insufficient amniotic fluid, particularly in the third trimester, has been linked to an increased risk of stillbirth, cord compaction, musculo - skeletal malformations like facial deformations as well as clubfoot, restricted intrauterine growth, low birth weight, fetus's anguish in labour, meconium aspiration symptoms, serious birth asphyxia, apgar scores, NICU admittance, congenital abnormalities, and other birth defects. [17] In the present study, the mean maternal age was  $25.76 \pm 4.18$  years which is comparable to study done by Kaur T et al and Ahmar et al in which it was 25.8 years and 26.1. [18]

According to research by Golan A. et al., caesarean sections were done in 35.2% of births. [19] Almost half of the participants in the research by Bansal D et al. had caesarean sections. [20] There

was a little increase in the rate of caesarean sections, with 67.07% of patients opting for that procedure.

Increased rates of growth retardation and admission to the newborn critical care unit were shown to be associated with oligohydramnios [6]. As reported by Moses V. and Thakre S., the Apgar score was taken at 1 and 5 minutes after delivery. 16% of newborns had an Apgar score of 7 at 1 and 5 minutes, 14% were in foetal distress, 8% had failed induction, 9% had UGR with Doppler abnormalities, and 42% had LSCS. [7] According to Jay Y. Modi et al. [8] conducted the study in 2016 and reported that Fetal growth retardation 82%, Apgar scores <7 at 1-5 15%, NICU admission 22%, Perinatal Mortality 4%.

In our study fetal growth retardation was observed in 39.02%, meconium aspiration syndrome 4.27%, respiratory distress syndrome 12.8%, birth asphyxia 27.44%. Whilst all of the kids in our research survived and were released without incident, Sree IP and their colleague observed that Oligohydramnios was associated with a greater likelihood of growth retardation and NICU hospitalisations. A greater rate of low birth weight infants is observed in cases of oligohydramnios. Overall, 74% of infants were born AGA and 26% were born SGA. This high incidence of small-for-gestational-age infants (SGA) is consistent with a possible link between IUGR and oligohydramnios. In 24% of instances, admission to the NICU is required because of birth hypoxia and an Apgar score of less than 7 [9].

In present study low birth weight was 34.15%, in Kansal et al study [21] mean birth weight was 2.33kg and Ott W study., 2005 with reported mean birth weight being 2.4 kg [18]. The incidence of low birth weight is high especially when there are associated high risk factors like severe preeclampsia, congenital anomalies, severe oligohydramnios AFI < 2 cm or anhydramnios.

In present study Apgar scores <7 at 1 minutes 43.35% and at 5 minutes 23.2%. Patients with an APGAR SCORE 7 at 5 minutes were seen in 27.8% of the study by Ahmar et al. [18]. 15 percent of infants with an APGAR score of 7.22 were reported in Manning et al. Sariya R et al. found a rate of 38. [22]

A higher percentage of patients (30.5% vs. 18%) were admitted to the NICU in this research than in the study by Ahmar et al. A similar percentage (20%) was seen in a study by Jhonson JM et al [23]. Research by Zhang J. et al. [24] found that 29.4% of babies who were born prematurely were admitted to a neonatal intensive care unit. [25] In our study, perinatal death occurred in 3% of mothers. According to a study by Wolff F et al., perinatal mortality was 7.2%. Comparing the results of studies by Ahmar et al. [18] and [26], we find a difference of 7.7 percent.

With Oligohydramnios, newborns are more likely to be born prematurely or with a low birth weight than in other conditions, with the possible exception of post maturity. Of the infants studied by Julie Johnson et al. [23], 92.6% were AGA and 7.4% were SGA. There was 75.5% AGA and 24.0% SGA in the study by Brain M. Casey et al. [27], 60% AGA and 40% SGA in the study by Philipson E.H. et al. [33], 64.0% AGA and 36.0% SGA in the study by Manning et al. [28], and 83.4% AGA and 16.6% SGA in the study by Raj Sariya et al. There is a strong association between IUGR and oligohydramnios, which may explain the high prevalence of small for gestational age infants. Twenty percent of infants required admission to a neonatal intensive care unit (NICU) in the study by Julie M. Jhonson et al. [30], 43 percent in the study by Manning et al. [31], and 88.88% in the study by Raj Sariya et al. [29]. In births of individuals with oligohydramnios, Golan et al. [32] found that infant mortality was 6.3%.

## CONCLUSION

Frequent incidence of oligohydramnios necessitates close fetal monitoring and appropriate antepartum and intrapartum treatment. Assessment of AFI in early third trimester helps identify women who require greater ante partum surveillance so that adequate care may be done to enhance maternal and perinatal outcome, and is thus a significant component of biophysical profile score. Rates of caesarean section are on the rise because of

complications during labour and the high rate of perinatal morbidity and death. Therefore, it is important to weigh the risks and benefits of vaginal birth and caesarean section carefully to reduce the risk of maternal morbidity.

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