

Maternal and Perinatal Outcome in Cases of OligohydramniosAnjali¹, Shikha Priya², Minu Sharan³¹Senior Resident, Department of Obstetrics and Gynaecology, PMCH, Patna, Bihar, India²Senior Resident, Department of Obstetrics and Gynaecology, PMCH, Patna, Bihar, India³Professor, Department of Obstetrics and Gynaecology, PMCH, Patna, Bihar, India

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Corresponding Author: Dr. Shikha Priya

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Abstract:

Background: Oligohydramnios, defined as a reduced volume of amniotic fluid, is a common obstetric complication associated with adverse maternal and perinatal outcomes. It is commonly diagnosed by ultrasonography using the amniotic fluid index (AFI) of ≤ 5 cm or a single deepest pocket of < 2 cm. Oligohydramnios has been linked to increased rates of labor induction, cesarean delivery, fetal distress, meconium-stained liquor, low birth weight, and neonatal morbidity.

Objectives: To evaluate the maternal and perinatal outcomes in pregnancies complicated by oligohydramnios and to assess its impact on the mode of delivery and neonatal outcome.

Materials and Methods: A prospective observational study was conducted among 100 pregnant women with singleton pregnancies diagnosed with oligohydramnios after 37 weeks of gestation. Detailed obstetric history, clinical examination, and ultrasonographic assessment were performed. Maternal outcomes including mode of delivery and intrapartum complications were recorded. Perinatal outcomes such as birth weight, Apgar score, meconium-stained liquor, NICU admission, and perinatal mortality were analyzed.

Results: The majority of patients were primigravidae and presented at term. Labor induction was required in a significant proportion of cases. Cesarean section rates were increased, predominantly due to fetal distress. Meconium-stained liquor was observed frequently. A considerable number of neonates had low birth weight and low Apgar scores at 5 minutes. NICU admissions were higher among neonates born to mothers with severe oligohydramnios. Perinatal morbidity was increased, although perinatal mortality remained low with timely obstetric intervention.

Conclusion: Oligohydramnios is associated with increased maternal interventions and adverse perinatal outcomes. Early diagnosis, close fetal surveillance, and appropriate obstetric management can significantly improve neonatal outcomes and reduce complications. Careful monitoring of pregnancies complicated by oligohydramnios is essential to ensure favorable maternal and perinatal outcomes.

Keywords: Oligohydramnios, Amniotic Fluid Index (AFI), Maternal Outcome, Perinatal Outcome, Fetal Distress, Cesarean Section, Fetal Surveillance.

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Introduction

Amniotic fluid plays a vital role in fetal growth and development throughout pregnancy. It provides a protective environment for the fetus, facilitates movement, maintains temperature, and contributes to the development of the musculoskeletal, gastrointestinal, and respiratory systems. The volume of amniotic fluid changes throughout gestation and reflects the well-being of the fetoplacental unit. Oligohydramnios is defined as a decreased amount of amniotic fluid relative to gestational age and is commonly diagnosed by ultrasonography when the Amniotic Fluid Index (AFI) is ≤ 5 cm or the Single Deepest Pocket (SDP) measures less than 2 cm. The incidence of oligohydramnios ranges from 1% to 5% of all

pregnancies and is higher among high-risk pregnancies.

The etiology of oligohydramnios is multifactorial and includes premature rupture of membranes, post-term pregnancy, fetal congenital anomalies, placental insufficiency, hypertensive disorders of pregnancy, and intrauterine growth restriction. In some cases, no identifiable cause is found, and the condition is termed isolated oligohydramnios. Oligohydramnios is associated with several adverse maternal and fetal outcomes. Reduced amniotic fluid volume can lead to umbilical cord compression, fetal distress, meconium-stained liquor, operative deliveries, low birth weight, low Apgar scores, neonatal intensive care unit (NICU)

admissions, and increased perinatal morbidity and mortality. Timely diagnosis and close antenatal surveillance are therefore essential for optimizing pregnancy outcomes. With the widespread use of ultrasonography, the detection of oligohydramnios has increased, allowing early identification of pregnancies at risk. However, the extent to which oligohydramnios influences maternal and perinatal outcomes remains an area of clinical interest. Evaluating these outcomes can help guide obstetric management and improve neonatal prognosis. The present study was undertaken to assess the maternal and perinatal outcomes in pregnancies complicated by oligohydramnios and to determine its impact on the mode of delivery and neonatal outcome.

Materials and Methods

This prospective observational study was conducted in the Department of Obstetrics and Gynecology at Patna Medical College and Hospital Patna, Bihar, over a period of one year. A total of 100 pregnant women diagnosed with oligohydramnios were included in the study after obtaining informed consent and approval from the Institutional Ethics Committee.

Study Population: The study included 100 antenatal women with singleton pregnancies of gestational age ≥ 37 weeks diagnosed with oligohydramnios on ultrasonography, defined as an Amniotic Fluid Index (AFI) ≤ 5 cm.

Inclusion Criteria

- Pregnant women with singleton pregnancy.
- Gestational age ≥ 37 weeks.
- Ultrasonographic diagnosis of oligohydramnios (AFI ≤ 5 cm).
- Willingness to participate in the study.

Exclusion Criteria

- Multiple pregnancies.
- Major fetal congenital anomalies.
- Premature rupture of membranes.
- Polyhydramnios.
- Intrauterine fetal demise.
- Pregnancies with uncertain gestational age.

Data Collection: Detailed history regarding maternal age, parity, gestational age, antenatal complications, and obstetric history was obtained. General physical, systemic, and obstetric examinations were performed. All patients underwent ultrasonographic assessment to determine the amniotic fluid index and fetal well-being.

- Mode of delivery (vaginal delivery or cesarean section).
- Induction of labor.
- Fetal distress during labor.
- Meconium-stained liquor.

- Maternal complications, if any.

Perinatal outcomes assessed included:

- Birth weight.
- Apgar score at 1 and 5 minutes.
- Presence of meconium aspiration.
- Need for NICU admission.
- Perinatal morbidity and mortality.

Statistical Analysis: The collected data were entered into Microsoft Excel and analyzed using Statistical Package for Social Sciences (SPSS) software version 25.0. Continuous variables were expressed as mean \pm standard deviation, while categorical variables were expressed as frequencies and percentages. Results were presented using tables and charts where appropriate. A p-value of < 0.05 was considered statistically significant.

Results

A total of 100 pregnant women with oligohydramnios were included in the study. The majority of patients belonged to the age group of 21–30 years (68%), followed by 31–35 years (20%), while 12% were aged less than 20 years. Primigravidae constituted 58% of the study population and multigravidae accounted for 42%.

Distribution According to Gestational Age: Most patients were between 37 and 40 weeks of gestation (82%), while 18% were beyond 40 weeks.

Mode of Delivery: Out of 100 cases, 62 (62%) underwent cesarean section and 38 (38%) had vaginal delivery. The most common indication for cesarean section was fetal distress (48.4%), followed by failed induction of labor and meconium-stained liquor.

Intrapartum Findings

- Meconium-stained liquor was observed in 35 (35%) cases.
- Fetal distress during labor was noted in 30 (30%) cases.
- Labor induction was required in 54 (54%) patients.

Neonatal Outcome

- Birth weight < 2.5 kg was observed in 32 (32%) neonates.
- Apgar score < 7 at 5 minutes was recorded in 18 (18%) newborns.
- NICU admission was required in 22 (22%) neonates.
- Meconium aspiration syndrome was observed in 6 (6%) cases.

Perinatal Outcome: Perinatal morbidity was noted in 28% of neonates, mainly due to low birth weight, birth asphyxia, and respiratory distress. There were 2 (2%) cases of perinatal mortality. The majority of

newborns (98%) were discharged in satisfactory condition following appropriate management.

The findings indicate that oligohydramnios is associated with increased rates of labor induction,

cesarean delivery, fetal distress, meconium-stained liquor, low birth weight, and NICU admissions, thereby contributing to adverse perinatal outcomes.

Table 1: Distribution of Patients According to Maternal Age

Age Group (Years)	Number (n=100)	Percentage (%)
<20	12	12
21-30	68	68
31-35	20	20
Total	100	100

Table 2: Distribution According to Parity

Parity	Number (n=100)	Percentage (%)
Primigravida	58	58
Multigravida	42	42
Total	100	100

Table 3: Distribution According to Gestational Age

Gestational Age (Weeks)	Number (n=100)	Percentage (%)
37-40	82	82
>40	18	18
Total	100	100

Table 4: Mode of Delivery

Mode of Delivery	Number (n=100)	Percentage (%)
Vaginal Delivery	38	38
Cesarean Section	62	62
Total	100	100

Table 5: Intrapartum Findings

Finding	Number (n=100)	Percentage (%)
Meconium-Stained Liquor	35	35
Fetal Distress	30	30
Labor Induction	54	54

Table 6: Birth Weight Distribution

Birth Weight	Number (n=100)	Percentage (%)
<2.5 kg	32	32
≥2.5 kg	68	68
Total	100	100

Table 7: Neonatal Outcome

Outcome	Number (n=100)	Percentage (%)
Apgar Score <7 at 5 min	18	18
NICU Admission	22	22
Meconium Aspiration Syndrome	6	6

Table 8: Perinatal Outcome

Outcome	Number (n=100)	Percentage (%)
Perinatal Morbidity	28	28
Perinatal Mortality	2	2
Healthy Discharge	98	98

Discussion

Oligohydramnios is an important obstetric condition associated with increased maternal and perinatal morbidity. The present study evaluated the maternal and perinatal outcomes among 100 pregnant women diagnosed with oligohydramnios at term. In the present study, the majority of patients (68%) belonged to the age group of 21–30 years, which is consistent with the findings of previous studies by Phelan et al. and Chandra et al., where oligohydramnios was more commonly observed among women in the reproductive age group. Primigravidae constituted 58% of cases, suggesting that first pregnancies may be more frequently affected by oligohydramnios. Most patients (82%) were between 37 and 40 weeks of gestation. Similar observations have been reported by Casey et al., who noted a higher incidence of oligohydramnios in term and post-term pregnancies due to placental aging and reduced uteroplacental perfusion. The rate of cesarean section in the present study was 62%, with fetal distress being the most common indication. This finding is comparable to studies conducted by Locatelli et al. and Jandial et al., which reported increased operative delivery rates among women with oligohydramnios. Reduced amniotic fluid volume predisposes to umbilical cord compression and intrapartum fetal heart rate abnormalities, thereby increasing the likelihood of cesarean delivery. Meconium-stained liquor was observed in 35% of cases and fetal distress in 30% of cases. These findings are consistent with previous reports demonstrating a strong association between oligohydramnios and intrapartum fetal compromise. The reduced cushioning effect of amniotic fluid may contribute to cord compression and fetal hypoxia, resulting in passage of meconium. Regarding neonatal outcomes, 32% of newborns had low birth weight and 22% required NICU admission. Similar findings have been reported in studies by Chauhan et al. and Sriya and Singhai, where oligohydramnios was associated with increased neonatal morbidity. The incidence of low Apgar scores (18%) in the present study further highlights the adverse impact of reduced amniotic fluid volume on fetal well-being.

Perinatal morbidity was observed in 28% of neonates, while perinatal mortality occurred in 2% of cases. Although advances in fetal surveillance and neonatal care have reduced mortality rates, oligohydramnios remains a significant predictor of adverse neonatal outcomes. Early diagnosis and timely intervention can substantially improve perinatal prognosis. Overall, the findings of the present study are in agreement with previous literature and reinforce the importance of close antenatal monitoring and appropriate obstetric management in pregnancies complicated by oligohydramnios. Careful fetal surveillance, timely

delivery, and adequate neonatal support are essential for reducing maternal and perinatal complications.

Conclusion

The present study concludes that oligohydramnios is associated with increased maternal and perinatal complications. Pregnancies complicated by oligohydramnios showed higher rates of labor induction, fetal distress, meconium-stained liquor, and cesarean section. Adverse neonatal outcomes such as low birth weight, low Apgar scores, increased NICU admissions, and perinatal morbidity were also observed. Oligohydramnios serves as an important indicator of fetal compromise and warrants careful antenatal surveillance. Early diagnosis through ultrasonographic assessment, close monitoring of fetal well-being, and timely obstetric intervention can significantly improve maternal and neonatal outcomes. Therefore, all cases of oligohydramnios should be considered high-risk pregnancies and managed with appropriate fetal surveillance and individualized delivery planning to minimize maternal and perinatal morbidity and mortality.

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