



MATERNAL AND FETAL OUTCOME IN CASES OF OLIGOHYDRAMNIOS AT TERTIARY CARE CENTRE

Obstetrics & Gynaecology

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ABSTRACT

Background: Oligohydramnios is a common pregnancy complication characterized by a diminished amount of amniotic fluid. The objectives of the study was to find out the prevalence of oligohydramnios, to observe maternal complications associated with oligohydramnios, to detect neonatal morbidities and mortalities in oligohydramnios. **Materials & Methods:** A observational study was conducted in the in-patient department of Obstetrics and Gynaecology at Terna Medical College and Research Centre for 6 months, from February 2024 to August 2024. The study involved monitoring 60 patients. **Results:** This study included a total of 60 patients. The largest age group was 20-25 years, comprising 41.6% of the patients. Out of the 60 patients, 28 (46.6%) had vaginal deliveries, while 32 (53.3%) underwent lower segment caesarean sections (LSCS). The rate of lower segment caesarean section (LSCS) was higher in primigravida patients. Among the 29 primigravida patients, 10 (34.4%) had vaginal deliveries, while 19 (65.5%) underwent LSCS. In contrast, among the 31 multigravida patients, 18 (58%) delivered vaginally, and 13 (41.9%) underwent LSCS. The most common cause of oligohydramnios was idiopathic which was present in 32 patients (53.3%). The other causes were postdated pregnancy (15%); pregnancy induced hypertension (25 %) etc. Oligohydramnios was associated with; APGAR SCORE <7 after 5 mins in 24 babies (40%); NICU admission of 17 babies (28.3%). 2 babies (3.3%) had congenital anomalies. Out of those, 1 baby had urinary tract obstruction, intrauterine growth retardation in 14 babies (23.3%). Oligohydramnios caused death of 3 babies during postnatal period (5%). **Conclusion:** No significant association was found between maternal systemic illness and oligohydramnios. Occurrence of caesarean sections and unfavourable neonatal outcomes were found high in oligohydramnios.

KEYWORDS

Oligohydramnios, Amniotic fluid index(AFI), Lower segment caesarean section (LSCS), APGAR score

INTRODUCTION:

Oligohydramnios is a common pregnancy complication characterized by a diminished amount of amniotic fluid. Amniotic fluid is part of the baby's life support system, initially produced from the mother's circulation and later primarily from fetal urine around the 20th week of gestation. Amniotic fluid is crucial for providing a supportive and protective environment for fetal development. Normally, amniotic fluid levels peak around 36 weeks of pregnancy and gradually decrease as birth approaches. Oligohydramnios is defined when the amniotic fluid index (AFI) on ultrasound measures less than 5 cm (the normal index is 5-25 cm) and the maximum deepest vertical pocket (MVP) is less than 2 cm.^{1,2} The incidence of oligohydramnios ranges from 2% to 14%.^{3,4,5}

Oligohydramnios can occur in various high-risk maternal conditions such as chronic hypertension, preeclampsia, diabetes, lupus, post-term pregnancy, and uteroplacental insufficiency. Fetal factors like congenital kidney anomalies, obstructive uropathy, decreased renal perfusion, and premature rupture of membranes also contribute to oligohydramnios.^{6,7} In many cases, the cause is idiopathic. Decreased amniotic fluid volume is particularly concerning when it occurs alongside fetal structural anomalies, intrauterine growth retardation (IUGR), or prolonged pregnancies, leading to worse maternal and neonatal outcomes.

When oligohydramnios is diagnosed at term, pregnancy is often terminated via induction of labour or caesarean section, even in otherwise uncomplicated pregnancies.⁸ Reduced amniotic fluid increases the rate of cesarean delivery, often due to non-reassuring fetal heart rates.⁹ Other indications for cesarean sections include malposition, malpresentation, and other obstetric factors. Amniotic fluid volume is a vital parameter in assessing fetal well-being, and oligohydramnios is associated with adverse perinatal outcomes like fetal distress, stillbirth, meconium aspiration syndrome, low birth weight, and fetal malformations. It also increases the rate of admission to neonatal intensive care and neonatal morbidity and mortality.

Oligohydramnios can occur at any time during pregnancy but is most common in the last trimester. Amniotic fluid levels decrease by half at 42 weeks gestation, and oligohydramnios complicates 12% of pregnancies that go past 41 weeks. The degree of oligohydramnios often correlates with the severity of placental hypoperfusion and IUGR, with decreased fetal urine output being a likely cause.

Numerous maternal and fetal risk factors are associated with reduced AFI. Particularly in the third trimester, decreased amniotic fluid is linked with multiple fetal risks such as cord compression, musculoskeletal abnormalities, IUGR, low birth weight, fetal distress in labour, meconium aspiration syndrome, severe birth asphyxia, low APGAR scores, NICU admission, congenital abnormalities, and stillbirths. Long-standing oligohydramnios can result in pulmonary hypoplasia, Potter's syndrome, clubfoot, and hip dislocation.

However, some studies suggest that AFI is a poor predictor of adverse outcomes. Early detection and management of oligohydramnios may reduce perinatal morbidity and mortality and decrease cesarean deliveries. Oligohydramnios can be associated with congenital fetal abnormalities, premature rupture of membranes, uteroplacental insufficiency, growth retardation, postdatism, chronic abruptio placentae, maternal illnesses like hypertension and preeclampsia, twinning abnormalities, and certain drug histories. Common causes include preeclampsia, IUGR, and post-dated pregnancies. This study aimed to determine the significance of oligohydramnios in predicting maternal and perinatal outcomes in pregnant women with third-trimester oligohydramnios, examining fetal outcomes like distress, growth retardation, NICU admission, APGAR scores, congenital malformations, and neonatal mortality, as well as maternal morbidity in terms of operative delivery and induced labour.^{10,11}

MATERIALS & METHODS:

A observational study was conducted in the department of Obstetrics and Gynaecology at Terna Medical College and research centre over 6 months period from February 2024 to August 2024. Pregnant women with a gestational age of 36 weeks or more and diagnosed with oligohydramnios via ultrasonography were purposively recruited for the study. Using real-time B-scanning, the amniotic fluid index (AFI) was measured as the sum of the vertical diameters of the largest pockets in each of the four quadrants. Oligohydramnios was defined as an AFI $\leq$ 5 cm. Detailed obstetric histories were obtained through face-to-face interviews with the patients and general, systemic and obstetrical examinations were performed. Parameters of fetal well-being were recorded, and the APGAR scores of the newborns were noted at 1 and 5 minutes after birth. Data were analysed using SPSS version 19, with statistical significance calculated using the Chi-square test. A p-value of <0.05 with a 95% confidence interval (CI) was considered significant.

Inclusion Criteria:

- Pregnant women with a gestational age of 36 weeks or more and diagnosed with oligohydramnios via ultrasonography.

Exclusion Criteria:

- Patients with a gestational age of less than 36 weeks.
- Twins and multiple pregnancies.
- Premature rupture of membranes.
- Intrauterine death of the fetus.

A detailed history and examination were conducted, and all necessary investigations were performed to confirm oligohydramnios by measuring the AFI. Routine management included rest, left lateral positioning, oral and intravenous hydration, and addressing any present etiological factors. Fetal surveillance was performed using ultrasound, modified biophysical profiles, and Doppler studies. Decisions regarding delivery, either through induction or elective or emergency cesarean section (LSCS), were made as required. Some patients were already in labour, while others were allowed to go into spontaneous labour. The cases were then studied for maternal and perinatal outcomes. All information was recorded in a proforma, analysed, and observations were made, leading to subsequent discussion and recommendations.

RESULTS:

Table: 1. Age distribution of patients.

Age	No. of Patients	Percentage
< 20	1	1.6
20-25	25	46.1
26-30	18	30
>30	16	26.6

Our study included a total of 60 patients. The largest age group was 20-25 years, comprising 41.6% of the patients (Table 1).

Table: 2. Mode of delivery.

	No. of Patients	Percentage
Vaginal	28	46.6
Caesarean	32	53.3

Out of the 60 patients, 28 (46.6%) had vaginal deliveries, while 32 (53.3%) underwent lower segment caesarean sections (LSCS) (Table 2).

Table: 3. Parity And Mode Of Delivery.

	Vaginal	Caesarean	Total
Primigravida	10 (34.4%)	19(65.5%)	29(48.3%)
Multigravida	18(58%)	13(41.9%)	31(51.6%)

The rate of lower segment caesarean section (LSCS) was higher in primigravida patients. Among the 29 primigravida patients, 10 (34.4%) had vaginal deliveries, while 19 (65.5%) underwent LSCS. In contrast, among the 31 multigravida patients, 18 (58%) delivered vaginally, and 13 (41.9%) underwent LSCS. (Table 3).

Table: 4. Causes Leading To Oligohydramnios.

	No. of Patients	Percentage
Post dated	9	15
Pregnancy induced hypertension	15	25
Idiopathic	32	53.3
Other causes	4	6.6

The most common cause of oligohydramnios was idiopathic which was present in 32 patients (53.3%). The other causes were postdated pregnancy (15%); pregnancy induced hypertension (25%) etc (Table 4).

Table: 5. Method Of Delivery.

	No. of Patients	Percentage
Spontaneous	13	21.6
Induced	15	25
LSCS	32	53.3

In present study maximum number of patients underwent into LSCS (53.3%). 13 patients (21.6%) went in spontaneous labour and 15 patients (25%) were induced with cerviprime gel (Table 5).

Table: 6. Perinatal Outcome.

	No. of Patients	Percentage
APGAR Score < 7 after 5 mins	24	40

NICU admission	17	28.3
Congenital anomaly	2	3.3
Growth retardation	14	23.3
Dead	3	5

Oligohydramnios was associated with; APGAR SCORE <7 after 5 mins in 24 babies (40%); NICU admission of 17 babies (28.3%). 2 babies (3.3%) had congenital anomalies. Out of these, 1 baby had urinary tract obstruction, intrauterine growth retardation in 14 babies (23.3%). Oligohydramnios caused death of 3 babies during postnatal period (5%) (Table 6).

DISCUSSION:

In the current study, the average maternal age was 26.1 years, which is similar to the 25.8 years reported by Kaur T et al.¹² Additionally, 48.3% of the patients were primigravida, aligning with the 52% found by Jagatia K et al.¹³ Golan A et al¹¹ documented that caesarean sections were performed in 35.2% of pregnancies, whereas Bansal D et al²² reported a rate of 47%. Our findings showed that 53.3% of patients underwent caesarean sections.

Preeclampsia was present in 25% of oligohydramnios cases in our study, comparable to the 31% found by Sriya R et al.¹⁴ In Bansal D et al's¹⁵ study, 17% of cases involved postdated pregnancies, similar to our 15%. Idiopathic causes accounted for 53.3% of cases in our study, which is close to the 52% reported by Jagatia K et al.¹³

According to Casey B et al,¹⁶ labour induction occurred in 42% of oligohydramnios cases, while in our study, it was 25%. Despite non-reactive NST results, 21.6% of our patients had vaginal deliveries, which is similar to the 25% reported by Jagatia K et al.¹³ Caesarean sections were more frequent in 80% of patients with non-reactive NST, similar to the findings of Jandial C and Jagatia K et al^{17,13}, who reported 75%. Non-reactive NST combined with AFI <5 indicated fetal risk, leading to more operative interventions, reflecting the findings of Clark et al's¹⁸ revised Biophysical profile scoring.

Our study found a significant increase in operative intervention at 53.3%. Weiss et al¹⁹ and Kwon JY et al²⁰ reported rates of 71% and 69.7%, respectively, which are comparable to our results. In terms of IUGR, 23.3% of babies in our study were affected, which is similar to the 16.6% reported by Sariya R et al, and to the 24% and 36% reported by Casey BM et al and Manning et al^{14,16}, respectively. An APGAR score of less than 7 after 5 minutes was observed in 40% of our patients, compared to 15% in Manning et al²¹ and 38% in Sariya R et al.¹⁴

NICU admissions were observed in 28.3% of our cases, closely aligning with the 20% reported by Johnson JM et al²² and the 29.4% reported by Zhang J et al.²³ Our study's perinatal mortality rate was 5%, similar to the 7.2% reported by Wolff F et al.²⁴

CONCLUSION:

Oligohydramnios is a common condition that requires careful fetal monitoring and appropriate care before and during labour. Assessing the Amniotic Fluid Index (AFI) as part of the biophysical profile in the early third trimester can help identify women who need closer monitoring. This approach allows for better management and improves maternal and perinatal outcomes. While caesarean section rates are rising due to complications and high perinatal morbidity and mortality, it is important to balance the decision between vaginal delivery and caesarean section to avoid unnecessary maternal health issues.

Ethical Approval: The study was approved by the Institutional Ethics Committee.

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