INTRODUCTION

The American College of Obstetricians and Gynecologists (ACOG) has defined oligohydramnios as an amniotic fluid index (AFI) of ≤5 cm. AFI is calculated by adding the depth in centimetres of the largest vertical pocket in each of four equal uterine quadrants in ultrasonography. We aimed to evaluate the predictive value of amniotic fluid index (AFI) (≤5 cm) for mode of delivery, associated complications, perinatal outcome, birth weight, meconium staining and APGAR scores.

Methods: This was a prospective study of 100 antenatal women who presented at our antenatal OPD at GMERS Medical College and Civil Hospital, Sola, Ahmedabad, Gujarat with gestational age between 34 and 41 weeks over a 1-year duration from 2020 to 2021. The women’s history was taken, clinical examination done, and AFI was measured, and results were tabulated.

Results: Prevalence was most among the 20-30 age group. Most patients delivered vaginally. Anaemia and gestational hypertension were the most common associated complications. There was no neonatal death in this study. No significant correlation was found between oligohydramnios and low birth weight babies.

Conclusions: Oligohydramnios has a significant correlation with caesarean section for foetal distress and low birth weight babies.

Keywords: AFI, APGAR scores, Birth weight, Caesarean delivery, Meconium staining, Oligohydramnios
amniotic fluid quantification was done by the four-quadrant technique as described by Phelan et al to determine AFI and we sought to determine if an antepartum AFI of 5 cm or less is a predictor of adverse perinatal outcome in terms of meconium staining, mode of delivery, birth weight, low APGAR scores.\(^3\)\(^7\)

**METHODS**

This was a prospective study carried out at the GMERS Medical College and Civil Hospital, Sola, Ahmedabad, Gujarat after approval from the ethics committee. The study participants included 100 antenatal women selected from those who presented in our OPD with gestational age between 34 and 41 weeks, admitted for delivery over a duration of 1 year from 2020 to 2021. Informed consent was taken from all patients.

**Inclusion criteria**

Antenatal women with AFI <5 cm and delivered at our hospital; women with a singleton, term non-anomalous foetus with intact membranes at the time of antepartum testing.

**Exclusion criteria**

Gestational age <34 weeks and >41 weeks; women with premature rupture of membranes; with known foetal or chromosomal anomalies; intrauterine death; placental anomalies; multiple pregnancy; uterine anomalies.

After admission, comprehensive history taking and clinical examination were performed to assess causative factors and associated complications. History regarding antenatal drug intake was taken. Ante partum foetal surveillance reports, investigations and other obstetric factors were also deciding factors for labour induction and elective/emergency caesarean section.

Amniotic fluid index was determined using the Phelan’s technique within 7 days of delivery or at the onset of labour after informed written consent.\(^4\) Non stress test (NST) was performed for all patients. Women were selected based on their AFI (done within 7 days of delivery).

Once oligohydramnios was confirmed by measuring AFI, routine management in the form of rest in left lateral position, oral and intravenous hydration was given and simultaneously evaluated for underlying etiological factor and corrected if identified. Ante partum foetal surveillance was done by USG, NST and modified biophysical profile. Umbilical artery (UA) Doppler studies were also done if required.

A note was made of meconium staining of amniotic fluid, the ultimate mode of delivery, birth weight, APGAR score at 1 and 5 minutes and NICU admission measured at the time of birth.

**RESULTS**

Oligohydramnios was observed mainly in the age group of 20-30 years. No significant difference was found in terms of parity. 37-40 weeks showed the maximum incidence of oligohydramnios. Anaemia and gestational hypertension were the most common associated complications in this study.

| Table 1: Maternal demographic and obstetric characteristics. |
|---------------------------------------------------------------|
| **Maternal age** | **AFI ≤5 (n=100)** | **Percentage** |
| <20 years | 21 | 21 |
| 20-30 years | 57 | 57 |
| >30 years | 22 | 22 |
| **Gravidity** | | |
| Primigravida | 43 | 43 |
| Multigravida | 57 | 57 |
| **Gestational age (weeks)** | | |
| 34-37 | 33 | 33 |
| 37-40 | 42 | 42 |
| 40-41 | 25 | 25 |
| **Associated complications** | | |
| Gestational hypertension | 17 | 17 |
| Anaemia | 23 | 23 |
| Fever | 7 | 7 |
| IUGR | 11 | 11 |
| Malpresentation | 9 | 9 |
| Prolonged labour | 18 | 18 |
| Post-partum haemorrhage | 4 | 4 |

| Table 2: Intrapartum observations. |
|-----------------------------------|
| **Foetal heart rate (FHR) tracing** | **AFI ≤5 (n=100)** | **Percentage** |
| Normal | 66 | 66 |
| Abnormal (<110/bpm or >160/bpm) | 34 | 34 |
| **Liquor** | | |
| Clear | 63 | 63 |
| Meconium stained | 37 | 37 |
| **Mode of delivery** | | |
| Vaginal delivery | 74 | 74 |
| Spontaneous | 28 | 28 |
| Induced | 46 | 46 |
| Instrumental delivery | 01 | 01 |
| Lower segment caesarean section (LSCS) | 26 | 26 |

Only 34% developed abnormal FHR tracing. MSL was observed in 37% cases. 74% patients delivered vaginally, whereas LSCS was done in 26%.
**Table 3: Perinatal outcome.**

| AFI ≤5 (n=100) | Percentage |
|----------------|------------|
| 1 minute <7    | 7          | 7          |
| 5 minutes <7   | 4          | 4          |
| Birth weight   |            |            |
| ≤2.5 kg        | 39         | 39         |
| >2.5 kg        | 61         | 61         |
| Admission to NICU |          |            |
| Yes            | 41         | 41         |
| No             | 59         | 59         |

Only 7% of neonates had and APGAR score <7, 59% of neonates weighed >2.5 kg, 41% required NICU admission.

**DISCUSSION**

Al Chalabi et al, reported that women in the low AFI group had increased rate of LSCS.\(^8\)

Manzanares et al, found that women in the low AFI group when induced found to have increased incidence of LSCS and instrumental delivery.\(^8\) According to Manzanares et al, irregular FHR tracing is found to be significantly higher in the oligohydramnios group when induced.\(^8\)

Medel et al, reported that, there is no significant difference in the meconium-stained liquor in between low AFI and NL group.\(^8\)

Singhal et al study significantly higher induction of labour was seen in low AFI group 72% as compared to control group 12%.\(^9\)

Mathuriya et al study 65% of the study cases and only 10% of controls underwent LSCS.\(^9\)

In Ranjita et al study caesarean section rate was 54% in the oligohydramnios group as compared to control group 26%.\(^10\)

Chaudhary et al study reported 51% underwent LSCS in cases, while 22% underwent LSCS in control.\(^10\)

Chauhan et al in 1999 found that both antepartum and intrapartum oligohydramnios was associated with an increased risk of caesarean delivery for foetal distress and 5-min Apgar score <7.\(^11\)

Ek and colleagues randomly assigned 54 patients beyond 40 weeks to either induction of labour or expectant management. No differences were found for any important maternal or neonatal outcome.

Leeman and Almond noted that isolated term oligohydramnios has not been shown to be associated with poor maternal or foetal outcomes.

Rossi and Prefumo concluded that IO in uncomplicated term pregnancies is associated with an approximately 2-fold increase in operative delivery because of NRFHR.\(^12\)

In Donald et al, the incidence of oligohydramnios was 60% in primigravida whereas it was 43% in the present study.\(^13\)

Sir Gangaram Hospital study showed 68% vaginal deliveries in induced patients of oligohydramnios and 32% by caesarean section which is comparable to our study.\(^14\)

Manzanares et al shows 84% vaginal deliveries in induced patients of oligohydramnios and 16% by caesarean section.\(^15\)

**CONCLUSION**

Oligohydramnios was prevalent in 57% of women in the age group of 20-30 years. The gestational age group of 37-40 weeks showed to have maximum frequency of oligohydramnios. Anaemia and gestational hypertension were the most common associated complications, followed by IUGR, malpresentation and fever. Prolonged labour was observed in some cases. Abnormal FHR was developed by 34% of patients. 37% had meconium-stained liquor. Emergency LSCS was done in 26% of patients, while 74% successfully delivered vaginally. There was no neonatal death in this study as 41% of the neonates admitted in NICU were discharged, while 59% required no NICU admission. No significant correlation was found between oligohydramnios and low birth weight babies.

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**Ethical approval: The study was approved by the Institutional Ethics Committee**

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