

### **Fetomaternal Outcomes in Cases of Oligohydramnios At Term**

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#### **Abstract**

**Introduction:** Oligohydramnios is a term used to describe amniotic fluid volumes that are below the minimum for gestational age. A subjective estimate of reduced amniotic fluid volume is also acceptable. It is detected by ultrasound examination, preferably based on an objective measurement such as AFI (Amniotic fluid volume)  $\leq 5$ cms or DVP (Deepest vertical pocket)  $< 2$ cms. About 4.4% of all pregnancies at term are complicated by oligohydramnios, although its frequency is just about 1% in preterm pregnancies.

**Objectives:** To evaluate the effects of isolated oligohydramnios on labour, delivery mode and its neonatal outcome in term pregnancies.

**Materials and Methods:** This was a case control study conducted in 100 pregnant women having oligohydramnios after 37 weeks of gestation compared with 100 controls with no oligohydramnios. Outcome was observed in the form of mode of delivery, caesarean indications & neonatal outcomes which include birth weight, APGAR Score, NICU Admission, intrapartum fetal distress, meconium aspiration syndrome and perinatal death. After collection of data the Statistical

package for social sciences (SPSS) version 20.0 was used for data analysis.

**Results:** In the present study majority of the participants (62% in study group and 52% in control group) were in the age group  $> 30$  years and most of the subjects were primigravida in both groups (61% and 68% respectively).

**Conclusion:** The study concluded that oligohydramnios is associated with increased risk of cesarean section and poor neonatal outcomes.

**Keywords:** Fetal outcome, Maternal outcome, Oligohydramnios, Amniotic fluid volume and Cesarean section.

#### **Introduction**

Amniotic fluid (AF) is a part of baby’s life support system. It aids in development of muscles, limbs, lungs and digestive system. AF is produced soon after amniotic sac is formed at about 12 days after conception. It is first made up of effusion that is provided by the mother’s circulation and then around the 20<sup>th</sup> weeks, fetal urine becomes the primary substance<sup>1</sup>

Oligohydramnios complicates about 4.4% of all pregnancies at term, while its incidence is  $< 1\%$  in preterm pregnancies<sup>2</sup>. Oligohydramnios refers to amniotic fluid volume that is less than minimum

expected for gestational age. It is diagnosed by ultrasound examination, preferably based on an objective measurement such as AFI (Amniotic fluid volume)  $\leq 5$ cms or DVP (Deepest vertical pocket)  $< 2$ cms, but a subjective assessment of reduced amniotic fluid volume is also acceptable. Some cases have an identifiable maternal, fetal or placental cause, the remainder are idiopathic. Some clinicians classify oligohydramnios as **mild** (AFI 4.1 to 5cms), **moderate** (AFI 2.1 to 4cms) and **severe** (AFI 0 to 2cms)<sup>3</sup>.

In order to prevent antepartum stillbirth, the American College of Obstetricians and Gynecologists (ACOG) recommends induction of labour between 36 0/7 and 37 6/7 weeks in pregnancies complicated with oligohydramnios<sup>4</sup>.

**Aim:** To evaluate mode of delivery and neonatal outcomes in women with isolated oligohydramnios in labour.

#### **Materials and methods**

This study was carried out in the department of obstetrics and gynecology, Government Lal Ded Hospital, GMC Srinagar over a period of 6 months from August 2022 – February 2023 after achieving clearance from institutional ethical committee. Proper counselling and consent was taken from all the participants in the study.

**Inclusion criteria:** Pregnant women with singleton pregnancy  $\geq 37$  weeks of gestation with reduced and normal liquor volume in cephalic presentation, with intact membranes, no systemic or pregnancy induced diseases, not having any fetal malformations or IUGR, not having previous Caesarean and having no contraindication for vaginal delivery. After selection of cases, detailed history and complete physical examination was done. Clinical evidence of oligohydramnios was looked for and confirmed by

ultrasound examination. Patients included in study were divided into 2 groups-

**Group 1 (Study group)-** cases with oligohydramnios (AFI $<5$ )

**Group 2 (Control group)-**cases with normal liquor volume (AFI 5-20).

Following ACOGs' recommendations, oligohydramnios study group were induced after  $\geq 37$  weeks and augmentation was done accordingly after assessment of bishops score. Proper partograph was maintained and fetal heart monitoring was done. Once active uterine contractions were established, cardiotocography was done. Due to huge rush of patients in our hospital and scarcity of CTG machines, continuous fetal heart monitoring couldn't be done and hence Intermittent fetal heart auscultation was done. Fetal distress was diagnosed according to International Federation of Gynecology and Obstetrics (FIGO)<sup>5</sup>. After 4 cms of dilatation, ARM (Artificial rupture of membranes) was done and cases with thick meconium-stained liquor were taken up for emergency caesarean. Failure of progression was diagnosed as active phase arrest in 1<sup>st</sup> stage of labour with  $>6$ cms dilatation and ruptured membranes who fail to progress despite 4 hours of adequate uterine activity, or at least 6 hrs of oxytocin administration with adequate uterine activity and no cervical change. 2<sup>nd</sup> stage arrest was diagnosed after 2hrs of pushing in multiparous and 3 hours in primigravida. These patients were taken up for caesarean.

Outcome was observed in the form of mode of delivery, caesarean indications & neonatal outcomes which include birth weight, APGAR Score, NICU Admission, intrapartum fetal distress, meconium aspiration syndrome and perinatal death.

**Statistical analysis:** After collection of data the Statistical package for social sciences (SPSS) version

20.0 was used for data analysis. Firstly, the data will be keyed in MS Excel © 2007 before converting it into SPSS for analysis. The results were expressed as frequency and percentages. Descriptive statistics, Students t test and Pearson’s correlation was used for data analysis with a predetermined statistical significance level of 5%.

**Results**

This study was conducted on 100 pregnant women with AFI <5 and has completed 37 weeks of gestation and is compared with 100 pregnant women with amniotic fluid index between 5 cm to 20 cm in term pregnancies.

Table 1: Age distribution

Age in years	Group 1 (N=100)	Group 2 (N=100)
<20 years	06 (6%)	9 (9%)
20-30 years	32 (32%)	39(39%)
>30 years	62 (62%)	52(52%)

Table 1 depicts the age distribution among participants in study group and control group. In both the groups it was observed that majority of the participants (62% in study group and 52% in control group) were in the age group > 30 years.

Graph 1: Age Distribution

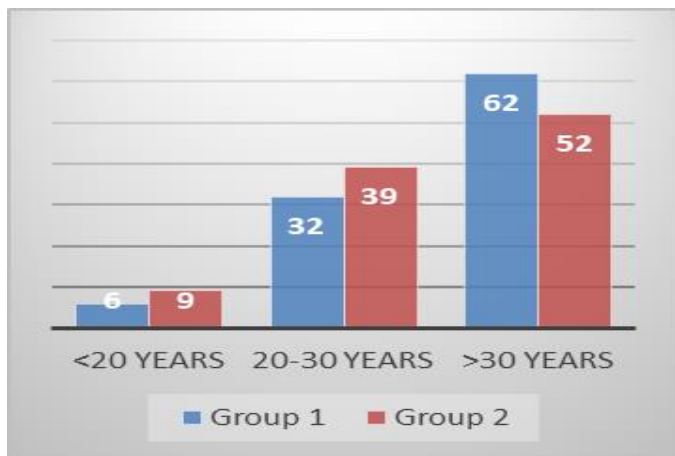


Table 2: Gravidity

Gravidity	Group 1 (N=100)	Group 2 (N=100)
Primi	61 (61%)	68(68%)
Multi	39 (39%)	32 (32%)

Table 2 depicts the gravidity among study participants. In both the groups primigravida was observed among majority of the participants i.e. 61% in study group whereas 68% in control group.

Table 3: Mode of Delivery

Mode of Delivery	Group 1 (N=100)	Group 2 (N=100)
Vaginal Delivery	30 (30%)	55 (55%)
LSCS	67 (67%)	41 (41%)
Instrumental Delivery	3 (3%)	4 (4%)

Table 3 depicts the mode of delivery among study participants. In study group the rate of LSCS (67%) was significantly higher due to oligohydramnios in comparison to control group (41%). Further, the rate of vaginal delivery was higher (55%) in control group as compared to study group i.e. 30%.

Graph 2: Mode of Delivery

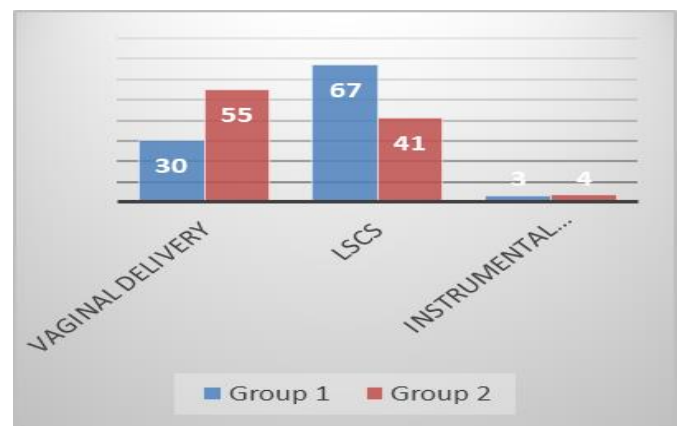


Table 4: Caesarean Indications

Caesarean indications	Group 1 (N=100)	Group 2 (N=100)
Fetal distress / NRCTG	38 (38%)	15 (15%)

Failure of Progression	7 (7%)	13 (13%)
Meconium Stained Liquor (MSL)	20 (20%)	10(10%)
2 <sup>nd</sup> Stage arrest	2 (2%)	2(2%)

Table 4 depicts caesarean indications among the participants. Fetal distress/ Non-reactive CTG was observed among 38% participants in study group (oligohydramnios) and 15% participants in control group, Meconium-stained liquor was observed among 20% participants in study group and 10% participants in control group, failure of progression was observed among 13% participants in control group and 7% participants in study group. Further, 2<sup>nd</sup> stage arrest was observed among 2% participants in both the groups.

Graph 3: Caesarean Indications

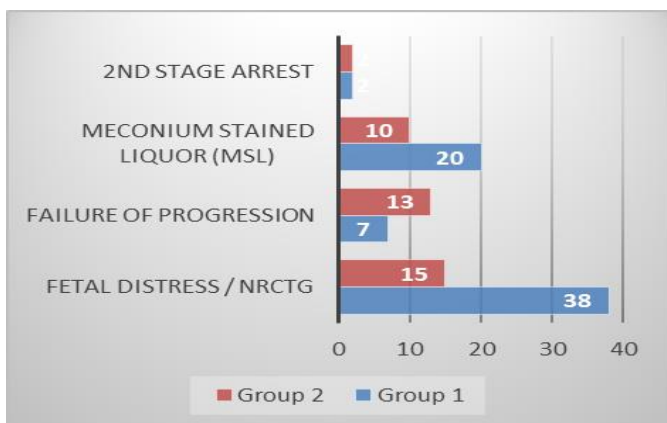


Table 5: Neonatal Outcomes

Category	Group 1 (N=100)	Group 2 (N=100)
APGAR Score (5 min APGAR≤6)	10	5
NICU Admission	12	8
Meconium Aspiration Syndrome	8	3
Perinatal Death	2	0
Birth weight <2.5 kgs	31	22

Table 5 depicts the neonatal outcomes among the participants. It was observed that 5 minute APGAR ≤ 6,

NICU admission rates, Meconium Aspiration syndrome, Birth weight < 2.5 kgs and perinatal deaths were significantly higher in study group (oligohydramnios) as compared to control group having AFI 5-20 centimeters.

**Discussion**

The data was analyzed and discussed with previously available literature. In the present study majority of the participants (62% in study group and 52% in control group) were in the age group > 30 years and most of the subjects were primigravida in both groups (61% and 68% respectively). These results are correlated with the study conducted by Sharma N (2018) reported that the most of the study subjects were in the age group of 20-30 years (70% & 62.1% respectively in group A and group B).<sup>6</sup> In similar study performed by Nankali A et al. (2017) observed that the mean age of the study group and control group was 27.06 years and 27.41 years respectively.<sup>7</sup> In another study done by Yenigul NN et al. (2005) found that the mean age of the study and control group was 27.1± 5.6 years and 26.2±5.1 years respectively.<sup>8</sup>

In study group the rate of LSCS (67%) was significantly higher due to oligohydramnios in comparison to control group (41%). Further, the rate of vaginal delivery was higher (55%) in control group as compared to study group i.e. 30%. Fetal distress/ Non-reactive CTG was observed among 38% participants in study group (oligohydramnios) and 15% participants in control group, Meconium-stained liquor was observed among 20% participants in study group and 10% participants in control group, failure of progression was observed among 13% participants in control group and 7% participants in study group. These results are in accordance with the study carried out by Dr. Shahreen H. (2020) observed that majority of the study subjects had cesarean section (42%). The most common indication of

cesarean section was severe oligohydramnios (30%) followed by fetal distress (22%), failure of induction & severe IUGR (18.5% respectively each) and malpresentation (11%).<sup>9</sup> In another study conducted by Sowmya K et al. (2014) found that caesarean section was performed in 50% of cases of fetal distress, 26.47% of cases of IUGR with doppler alterations, 14.7% of cases of unsuccessful induction, and 8.82% of cases of cephalopelvic disproportion.<sup>10</sup>

The current study observed that 5 minute APGAR  $\leq 6$ , NICU admission rates, Meconium Aspiration syndrome, Birth weight  $< 2.5$  kgs and perinatal deaths were significantly higher in study group (oligohydramnios) as compared to control group having AFI 5-20 centimeters. These findings are correlated with the study conducted by Talesara H et al. (2021) reported that the most common fetal outcomes in oligohydramnios was low birth weight (39%) followed by respiratory distress (30%), meconium aspiration & congenital anomaly (12% respectively) and intrauterine fetal death (10%).<sup>11</sup> In other study performed by Bashir S et al. (2015) found that in 61% of cases, an emergency C-section was performed. Neonatal birth weight was considerably lower in 66 infants (22%) than in the general population. A low APGAR score (7) was present in 63 infants (21%), five minutes after birth. 37 infants (12.3%) had early neonatal deaths.<sup>12</sup>

### **Conclusion**

The present study concluded that oligohydramnios is associated with an increased risk of cesarean section and poor neonatal outcomes. Antepartum fetal assessment tests, proper intrapartum monitoring, timely intervention & neonatology backup can improve perinatal outcomes.

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