

Original Research Article

Oligohydramnios: A Prospective Study of Foetal and Neonatal Outcomes

Lalita Bansal^{1*}¹Medical Officer (Gynaecology and Obstetrics), Regional Hospital Kullu, X446+MJ7, College Rd, Dhalpur, Kullu, Himachal Pradesh 175101, India

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Abstract: Liquor amnii plays important role both in the development of the fetus and antenatal assessment of the fetal wellbeing. Its cushioning effect protects the fetus from external trauma whereas a decrease in liquor may lead to flexion contracture in the fetus. A decrease in the liquor volume, with intact membranes, in the third trimester indicates decreased utero-placental flow and maybe the indication for early termination of pregnancy. This prospective study was conducted in the department of Obstetrics and Gynecology at Dr. Rajendra Prasad Government Medical College Kangra at Tanda, Himachal Pradesh from January 2018 to December 2018, where 90 expectant mothers with oligohydramnios were studied with an aim to evaluate perinatal outcome after all required formalities. Oligohydramnios was associated with an increased incidence of induction of labor, non-reactive NST, meconium-stained liquor and CS. Neonates born to women with oligohydramnios had increased incidence of a low Apgar score, respiratory distress, LBW and NICU admission.

Keywords: Liquor amnii, external trauma, pregnancy, Oligohydramnios.

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INTRODUCTION

Modern obstetrics is the clinical practice concerned with the health and wellbeing of both mother and fetus. Identification and quantification of fetal risk, further balancing the fetal risk against the neonatal complications of premature birth, determining the optimal time of intervention and quantification of maternal morbidity associated with intervention are the basis of management in obstetrics [1].

Amniotic fluid provides a protected milieu for growing fetuses, cushioning the fetus against mechanical and biological injury, supplying nutrients and facilitating growth and movement. The quantity of amniotic fluid at any time in gestation is the product of water exchange between the mother, fetus, and placenta, and is maintained within a relatively narrow range. Disorders of this regulatory process can lead to either polyhydramnios or oligohydramnios, in which too much or too little fluid exists, respectively [2]. Oligohydramnios is defined as an amniotic fluid index (AFI) of less than or equal to 5 cm [1]. Certain fetal anomalies lead to the reduction of amniotic fluid volume and also lead to poor visibility and restricted evaluation of these anatomical structures. An adequate volume of amniotic fluid is critical to allow normal fetal movement and growth and to cushion the fetus and umbilical cord. Oligohydramnios is associated with an

increased risk of small for gestational age (SGA) and also the incidence of cesarean section, meconium-stained liquor, low APGAR score, and neonatal intensive care (NICU) admission [3, 4]. Oligohydramnios usually dictates induction of labor when pregnancy reaches term and its incidence varies from 1-5% at term [5, 6]. Oligohydramnios can be found in an otherwise uncomplicated pregnancy or as an additional finding in a complicated pregnancy (hypertensive disorders, decreased fetal movement). The diagnosis of oligohydramnios alters pregnancy management and maybe an indication for delivery. Depending on the gestational age, induction may increase the risk of cesarean delivery along with risks associated with late preterm/early-term deliveries [7, 8]. Therefore, it is important to delineate the risks of oligohydramnios and the benefits of prompt delivery. To address this need, we conducted a prospective data collection study to determine the impact of oligohydramnios on fetal, neonatal and maternal outcomes.

MATERIAL AND METHODS

Pregnant women admitted to an antenatal ward, with abnormal Amniotic fluid index (AFI), in the Department of Obstetrics and Gynecology at Dr. Rajendra Prasad Government Medical College Kangra at Tanda (HP) were recruited in the study after fulfilling

*Corresponding Author: Lalita Bansal

Medical Officer (Gynaecology and Obstetrics), Regional Hospital Kullu, X446+MJ7, College Rd, Dhalpur, Kullu, Himachal Pradesh 175101, India

inclusion and exclusion criteria. Ninety patients with oligohydramnios which fulfilled the inclusion criteria were included in the present study. On admission, detailed menstrual and obstetrical history of the patient was taken and clinical examination was performed. Dating of pregnancy was done by the last menstrual period if the patient is sure of dates. If a pregnant woman was not sure of dates then it was calculated from first-trimester ultrasound or early second-trimester ultrasound. An ultrasound at 34-36 weeks for various fetal parameters including AFI was done as a routine and repeat ultrasound for AFI was done if indicated. In patients with abnormal AFI, AFI assessed within one week prior to spontaneous/induced labor between 34 weeks to 40 weeks of pregnancy was taken into consideration. AFI was calculated by using the four-quadrant technique as described by Phelan *et al.*, [9].

Pregnant women with oligohydramnios were further evaluated for fetal wellbeing by non-stress test (NST) and fetal doppler studies if indicated. The NST result was considered reactive if 2 accelerations of >15 beats/min from baseline and lasting >15 seconds were present during a 20-minute period. NST was considered abnormal if baseline variability was less than 5 beats/min or absent accelerations or presence of late decelerations with spontaneous uterine contractions.

If NST was normal, close fetal surveillance was done by 48 hourly NST and weekly Doppler studies if indicated until the 37th week of gestation. Patients with abnormal NST and/or Doppler studies at the time of diagnosis or any time during fetal surveillance were considered for termination of pregnancy. Termination of pregnancy in oligohydramnios was done according to standard institutional labor room protocol. The labor was monitored partographically.

The perinatal outcome was assessed in terms of:

1. Perinatal mortality
2. Gestational age at birth
3. Birth weight
4. APGAR scores at 1 and 5 min
5. Admission in NICU
6. Condition at discharge/referral

Means and proportions were calculated for continuous and categorical variables respectively. The difference in proportions was tested for statistical significance in difference using the chi-square test. A p-value <0.05 was considered statistically significant. Data entry was done using MS Excel 2013 and data analysis was carried out using SPSS version 20.

RESULTS AND DISCUSSION

Table 1: Distribution of women with abnormal AFI in relation to age (n=100)

Age groups (years)	Oligohydramnios [n (%)]
20-24	29 (32.2)
25-29	46 (51.1)
30 and above	15 (16.7)

As shown in Table 1, we observed that the majority of patients with oligohydramnios (n=46, 51.1%) were in the age group 25-29 years followed by 32.1% (n=29) in the age group 20-24 and 16.7% (n=15) in 30 years and above age group. the mean age of the

mothers in the oligohydramnios group was 26.2 years. While it was reported 24 in a similar study conducted by Magann *et al.*, [10]. In another similar study conducted by Kaur T *et al.*, mean maternal age for oligohydramnios was 25.8 years [11].

Table 2: Distribution of women with abnormal AFI women in relation to gestational age at delivery (n= 100)

Period of gestation	Oligohydramnios [n (%)]
34	2 (2.2)
35	6 (6.7)
36	8 (8.9)
37	22 (24.4)
38	23 (25.6)
39	24 (26.7)
40	5 (5.6)

As shown in Table 2, In the present study, in the oligohydramnios group, 17.8% (n=16) delivered

before 37 weeks, while 82.2% (n=74) delivered after 37 weeks of gestation.

Table 3: Fetal status assessment by NST

NST	Oligohydramnios [n (%)]
Non-reactive	23 (25.6)
Reactive	67 (74.4)

As shown in Table 3, non-reactive NST was found in 25.6% of cases in the oligohydramnios group. Chate P *et al.*, and Kumar A *et al.*, also observed a 38% occurrence of non-reactive NST in their studies which

is consistent with our study [12, 13]. Magann *et al.*, found 29% of cases with NST traces influencing delivery in polyhydramnios group while 18% cases with similar traces in the oligohydramnios group [10].

Table 4: Indication for Cesarean

Indication of Cesarean	Oligohydramnios [n (%)]
Fetal distress	51 (56.7)
Failed induction	2 (2.2)
NPOL	6 (6.7)
Cord Prolapse	nil

As shown in Table 4, in patients with oligohydramnios 56.7% (n=51) cesarean sections were done for fetal distress followed by non-progress of labor and failed induction in 6.7% (n=6) and 2.2% (n=2) respectively.

In our study, no significant difference was found between the occurrence of AFI abnormalities and

low APGAR score at 1 min but the occurrence low APGAR score at 5 min was statistically significant. APGAR score below 7 at 5 minutes was found in 8.9% neonates in the cases of oligohydramnios. In concordance with our study similar observation was made by Sriya *et al.*, in their study of 9.72% cases with low APGAR score in the oligohydramnios group [14].

Table 5: Neonatal complications

Neonatal Complications	Oligohydramnios [n (%)]
Congenital pneumonia	1 (1.1%)
Neonatal jaundice	5 (5.5%)
Respiratory distress	12 (12.3%)
Congenital malformation	nil
Normal	72 (80%)

Neonates born to mothers having oligohydramnios were found to have respiratory distress (n=12), neonatal jaundice (n=5), and congenital pneumonia (n=1). Out of 90 neonates, NICU admissions were reported in 26.7% (n=24) neonates. In concordance with our study, Jagatia K *et al.*, Bansal *et al.*, and Bhagat *et al.*, reported 22%, 36% and 36% NICU admissions respectively in their study [14-16]. Magann *et al.*, reported an incidence of 18% in the oligohydramnios group [10]. Kaur T *et al.*, in their study reported 58.8% and 50% NICU admissions in oligohydramnios and polyhydramnios groups respectively [11]. Higher NICU admissions in their study may be due to the higher number of complicating factors in their study.

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