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## Prevalence of oligohydramnios among the third trimester pregnant women and its perinatal outcome

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### Abstract

**Objective:** To describe oligohydramnios in terms of age, parity, gestational age wise distribution, maternal morbidity and perinatal morbidity.

**Methods:** A prospective study was carried out in Department of OBG, Govt Kilpauk Medical College Hospital, and Chennai. History, clinical examination and Ultrasound carried out to determine Amniotic fluid index for 12000 third trimester antenatal mothers in the study period. 150 patients detected with oligoamnios were followed up and analysis of outcome carried out.

**Results:** The mean gestational age was 36.7+/- 4.1 weeks. The mean amniotic fluid index was 3 +/- 1.04cm. Gestational hypertension was present in 24% cases. 20% had postdated pregnancy. Incidence of intra uterine growth restriction was 14%. The rate of cesarean section was 63% and that of vaginal delivery was 35%. APGAR score of less than 7 at 1minute was noted in 16.66% and 5 minutes in 17.33% newborns. The gross perinatal mortality was 2.6%.

**Conclusion:** All cases of oligohydramnios need careful antenatal evaluation, parental counseling, individualized decision regarding timing and mode of delivery. Continuous intrapartum fetal surveillance and good neonatal care are necessary for better perinatal outcome.

**Keywords:** oligohydramnios, perinatal outcome, maternal outcome

### Introduction

Oligohydramnios means reduced liquor which is defined as Amniotic Fluid Index (AFI) of  $\leq 5$  cm. Oligohydramnios presents a threat to the fetus and has been associated with increased risk of intrauterine growth restriction, meconium aspiration syndrome, severe birth asphyxia, low Apgar scores and congenital anomalies. Sequel from prolonged oligohydramnios includes pulmonary hypoplasia and fetal compression syndrome which can be devastating. It is associated with increased perinatal morbidity and mortality [1]. Therefore early detection of oligohydramnios and its management is very important.

Oligohydramnios is a relatively common complication of pregnancy. As a complication, oligohydramnios is present in approximately 2.3% of all pregnancies. After 40 weeks, oligohydramnios is more common in pregnancies, as the amniotic fluid volume normally starts decreasing at term. Etiologies for oligohydramnios include congenital anomalies, intrauterine growth restriction, premature rupture of membranes, drugs, post term pregnancy [1].

Perinatal morbidity and mortality are both significantly increased in pregnancies complicated by oligohydramnios. Successful management requires a thorough search for the cause of the decreased amniotic fluid volume, and close antenatal surveillance.

### Aim of the study

1. To study the Bio- social characteristics associated with oligohydramnios
2. To study the most common cause associated with oligohydramnios.
3. To study about the maternal morbidity in the form of operative deliveries and induction of labour.
4. To study perinatal morbidity in the form of low Apgar score, birth weight.

### Objectives

To describe oligohydramnios in terms of,

- Age and Parity wise distribution,
- Gestational age wise distribution,

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- Associated maternal complications
- Maternal morbidity in the form of mode of delivery.

To describe perinatal morbidity in terms of

- by birth weight
- Apgar score

**Materials and Methods**

**Study design:** Descriptive study.

**Place of the study:** Department of Obstetrics and gynecology, Govt Kilpauk Medical College Hospital, Chennai-10.

**Study population:** Patients attending the Outpatient clinics, Antenatal ward, Labour ward of the Department of Obstetrics and gynecology, Govt Kilpauk Medical College & hospital, Chennai

**Study period:** 6 months

**Inclusion criteria**

1. USG proven cases of oligohydramnios with AFI < 5cm
2. With gestational age more than 28 weeks
3. Singleton pregnancy

**Exclusion criteria**

1. AFI > 6cm
2. Spontaneous rupture of membranes
3. Multiple gestation

**Method**

On admission, a detailed history was taken and clinical examination was performed. Ultrasound screening for Amniotic fluid index was determined by sum of vertical depth in all four quadrants.

**Results**

**Age distribution:** From the study it was observed that 64% women with oligohydramnios were in the age group of 20 – 29 years (Table1). Mean (+/- SD) maternal age was 22.8 +/- 4.2 years.

**Table 1:** Age groups

Age groups	Number	Percentage
<20yrs	32	21.3
20 – 29yrs	96	64
>= 30 yrs.	22	14.6
Total	150	100

**Gestational age**

By gestational age, 21% of women with oligohydramnios were in the gestational age group of 34- 36 weeks followed by 18.5% each in 38 – 40weeks and > 40 weeks (Table2). The mean gestational age was 36.7 +/-4.1 weeks.

**Table 2:** Gestational age

Gestational age	Number	Percentage
30- 32 weeks	16	11
32 – 34 weeks	22	14.6
34 – 36 weeks	32	21.3
36 – 38 weeks	24	16
38– 40 weeks	28	18.5
>40 weeks	28	18.5
Total	150	100

**Amniotic fluid index**

While assessing Amniotic fluid index, 27% of the study population had AFI of 4cm and 24% of cases had AFI of 2 cm and 18.5% cases had AFI of 5cm (Table3).

**Table 3:** Amniotic Fluid index

Amniotic fluid index	Number	Percentage
0	18	12
1	14	9.3
2	36	24
3	14	9.3
4	40	27
5	28	18.5
Total	150	100

**Parity**

54% women with oligoamnios are primigravidas and 46% are multigravidas (Table4).

**Table 4:** Parity

Parity	Number	Percentage
Primigravida	82	54
Multigravida	68	46
TOTAL	150	100

**Obstetric complications**

Gestational hypertension (22%), postdated pregnancy (20%) and intra uterine growth restriction (14%) were the complications observed in mothers with oligohydramnios (Table5).

**Table 5:** Obstetric complications

Complications	Number of cases	Percentage
Gestational hypertension	34	22.6
Postdated	30	20
Intrauterine growth restriction	22	14
GDM	4	2.6
Nil complications	60	40
total	150	100

**Mode of delivery**

5% of oligohydramnios mothers had normal vaginal delivery and 63% had operative (caesarean) deliveries (Table 6).

**Table 6:** Mode of Delivery

Mode of delivery	Number	Percentage
Vaginal delivery	53	35.33
Operative delivery	95	63.33
Instrumental deliveries	2	1.33
Total	150	100
Chi Square Value	9.649	P value 0.008

**Birth weight of newborn babies**

About 48.7% of babies had birth weight of 2 to 2.5 kg, 28% of babies had birth weight of 2.6 to 3 kg and 17.33% of babies had birth weight of more than 3 kg (Table7).

**Table7:** Birth weight

Birth weight	Number	Percentage
1 -2kg	9	6
2 -2.5kg	73	48.7
2.6 -3kg	42	28
>3kg	26	17.3
Total	150	100
Chi Square Value	42.857	P value 0.000

### Apgar score

Apgar score <7 at 1 min is observed in 13% and score <7 at 5 min is observed in 17% of the babies delivered. (Table8).

**Table 8:** Apgar score

Apgar score<7	Number	Percentage
at 1 minute	25	16.66
at 5 minute	26	17.33
Chi Square Value	7.926	P value 0.007

### Neonatal morbidity

About 59 babies got admitted in NICU. Of these about 35 babies needed admission for meconium aspiration and 9 babies each got admitted for LBW and RDS (Table9).

**Table 9:** NICU admission

NICU admission reasons	Number	Percentage	Chi square value	P value
Meconium aspiration	35	23	5.072	0.024
LBW	9	6	1.064	0.302
RDS	9	6	86.170	0.000
No. of admission	59	39	4.438	0.035
NIL admission	91	61		

### Perinatal mortality

In our study we have not observed any still birth among oligohydramnios patients; this is because of the close antepartum and intrapartum surveillance. But had 2.6% of neonatal death due to meconium aspiration syndrome resulting in primary pulmonary hypertension (Table10).

**Table 10:** Perinatal Mortality

Perinatal mortality	Number	Percentage
Still birth	0	0
Early neonatal death	4	2.6
Chi Square Value	0.340	P value 0.560

### Discussion

In the present study, 64% of cases were in the age group of 20 to 29 years, as compared to other age groups, with the mean maternal age of 22.8+/- 4.2 years. Studies by Chauhan *et al.* [2], Jun Zhang *et al.* [3] and Everett *et al.* [4] found that the mean maternal age were 23.6 +/- 6.5years, 28.4 +/- 3.4 years and 23.8 +/- 5.7 years respectively.

The mean gestational age in the present study 36.7 +/- 4.1 weeks. Studies by Jun Zhang *et al.* [3], Everett *et al.* [4], Casey B *et al.* [5] and Sandhyasri Panda *et al.* [6] found that the mean gestational age were 38.1 +/- 3.3 weeks, 37.5 +/- 2 weeks, 34.3 +/- 2.1 weeks and was 36.3 +/- 2 weeks respectively. These findings indicate that the problem of oligohydramnios was more common in later part of pregnancy. It is mainly due to the physiological or pathological causes of reduced placental perfusion near term.

Jun Zhang *et al.* [3], Divon M *et al.* [7], Elliot H *et al.* [9], Varma T R *et al.* [8] reported oligohydramnios incidence as 1.5%,1.2%, 3.9% & 3.1% in their studies respectively. In the present study, out of 12000 pregnant mothers, 150 pregnancies found to have AFI <5 giving incidence of 1.25%.

Chauhan P *et al.* [2] studied two groups of patients. First group had AFI less than 5cm and second with AFI less than 5<sup>th</sup> percentile for that gestational age. The mean Amniotic fluid index was 3.9 +/-2.1cm with AFI less than 5<sup>th</sup>percentile and 3 +/- 1.5cm in patients with less than 5cm. The mean amniotic fluid index in the present study was 3 +/- 1.04cm.

Obstetrical complications associated with oligohydramnios were Gestational hypertension, post-datism and intrauterine growth restriction. In the present study gestational hypertension is present in 22% cases. Golan A *et al.* [10], Mercer L J *et al.* [11], Chauhan P *et al.* [2] in their study, found that maternal hypertension in 22.1%, 24.7% and 12% of cases respectively.

In the present study 20% of oligoamnios patients had postdated pregnancy. Clement D *et al.* [12] studied 6 cases of postdatism in which amniotic fluid volume diminished abruptly over 24 hours. In a study by Brown Chattoor JS *et al.* [13] in fifty five postdated pregnancies, Oligohydramnios was noted in four (7.2%) cases.

In the present study incidence of intra uterine growth restriction in oligoamnios patients was 14%. In the study by Bangal VB *et al.* [14] 20% cases had IUGR.

In the present study, the rate of cesarean section in oligoamnios patients was 63% and that of vaginal delivery was 35%. Study by Casey B *et al.* [5] found that there was increased rate of induction of labour (42%) and caesarean section (32%) in oligohydramnios cases. Golan A *et al.* [10] found that the overall cesarean section was performed in 35.2% of pregnancies.

In the present study, the Apgar score at birth less than 7 at 1minute was noted in 16.66% and at 5 minutes in 17.33% of the new born babies of oligoamnios mothers. Out of 59 babies (39%) got admitted in NICU, 35babies (23%) had meconium aspiration. Four babies died during neonatal period. In a study by Casey B *et al.* [5] 6% (n=9) of babies had Apgar score of less than 3 at 5 mins. Out of these 9, 7 babies died during neonatal period. Jun Zhang *et al.* [3] found that an Apgar score of < 7 at 1 minute was present in fifteen babies and six babies had an Apgar score of < 7 at 5 minutes. In the study of Bangal VB *et al.* [14] sixteen babies (16%) had low Apgar score (less than 7 at 5 min). Out of 16 babies with low Apgar score, eight died during neonatal period.

In the present study, the gross perinatal mortality was 2.6%. Out of 4 perinatal deaths, 3 deaths were seen in unregistered cases. Chhabra S *et al.* [15] reported very high (87.7%) perinatal mortality in their study. Wolff F *et al.* [16] found that the perinatal mortality in their study was 7.2%. Apel-Sarid *et al.* [17] found that the perinatal mortality was 9.9%. Chamberlin PF *et al.* [18] calculated the gross and corrected perinatal mortality rate in patients with decreased qualitative amniotic fluid volume and found it to be 188/1000 and 109/1000 respectively. Overall, the perinatal mortality is markedly increased in patients with oligohydramnios. The lack of amniotic fluid allows compression of fetal abdomen, which limits the movement of the diaphragm.

### Conclusion

Oligohydramnios is being detected more often these days due to routinely performed obstetric ultrasonography. In our study we have observed that Oligohydramnios is most commonly found in primigravida. The time and mode of delivery of these cases depends on severity of oligohydramnios and status of fetal wellbeing. In our study patients have undergone Caesarean section mostly for fetal causes such as intrapartum fetal heart rate abnormalities not associated with any maternal causes. Due to early termination of pregnancy in view of severe oligohydramnios, it has resulted in low birth weight babies who are more prone for respiratory distress. The gross perinatal mortality was 2.6% in present study. But when compared to the earlier studies the percentage of neonatal death has drastically reduced due to the close intrapartum fetal surveillance and better neonatal set up. We conclude our study by saying that every case of oligohydramnios needs careful antenatal evaluation, parental counseling, individualized decision regarding timing

and mode of delivery, Close intrapartum fetal surveillance and good neonatal care for better perinatal outcome.

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