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Original Research Article

## Perinatal outcome in cases of severe oligohydramnios

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### ABSTRACT

**Background:** Oligohydramnios is defined as when on ultrasonography the single largest pocket in horizontal and vertical diameter is less than 2cm or amniotic fluid index is less than 5cm. Normal amniotic fluid index is 5-25cm. The overall incidence is 0.5 to more than 5%. However, the incidence increases in post dated pregnancies as many as 11%. It is increasing these days because of changes in lifestyle and also reduced maternal fluid intake.

**Methods:** A prospective randomized study was done in Dept of Obstetrics and Gynaecology, MGMMC and MYH, Indore during the period of 6 months from 1<sup>st</sup> July 2017 to 31<sup>st</sup> December 2017. It included 200 cases from all the antenatal patients attending Antenatal OPD in routine and emergency and who are admitted in MYH beyond 28 weeks of pregnancy.

**Results:** Most of the perinatal cases nearly 64% of babies were handover, 26% were IUDs (intra uterine devices) and rest 10% requiring neonatal care in nursery. The color Doppler changes showed normal flow in 54% in cases with 26% showing early fetal hypoxia and 14% showing uteroplacental insufficiency. Rest of the 6% cases were IUD. Incidence of IUGR was 50% in babies most commonly being constitutionally small. About 8% cases were found to be associated with abruption and 24% cases were found to be associated with pregnancy induced hypertension. Most common mode of delivery was vaginal delivery in 68% cases. However, 32% cases underwent LSCS.

**Conclusions:** There has been reported cases of sudden IUD in severe oligohydramnios presenting with loss of fetal movements.

**Keywords:** Abruption, Amniotic fluid index, Color Doppler, IUGR (intrauterine growth restriction), NICU (neonatal intensive care unit), Oligohydramnios, Pregnancy induced hypertension, TSVD (term spontaneous vaginal delivery), VBAC (vaginal birth after caesarean)

### INTRODUCTION

Manning et al, defined Oligohydramnios when the largest pocket on ultrasound in its largest diameter measured less than 1cm.<sup>1</sup> Subsequently they revised this criterion to a single pocket measuring 2cm in both vertical and horizontal planes. Phelan who described amniotic fluid index defined Oligohydramnios as an AFI less than 5cm.<sup>2</sup> Quantitatively, Oligohydramnios is defined as an AFV <300-500ml after the midtrimester. The reported incidence of Oligohydramnios varies between 0.5 to 5% this complicates 2.3 to 3.9% of pregnancies.

Oligohydramnios may be due to a variety of conditions, including urinary tract abnormalities such as renal agenesis, bilateral renal obstruction, bilateral renal dysplasia, and posterior urethral valves or atresia; and prerenal abnormalities, including utero placental insufficiency leading to IUGR, preterm premature rupture of the membranes (PROM), and post-term pregnancy. The common clinical features are smaller symphysis fundal height, fetal malpresentation, undue prominence of the fetal parts and reduced amount of AF. Usually the degree of Oligohydramnios is proportional to the severity of placental hypo perfusion and IUGR (intra uterine

growth restriction). The most likely cause of oligohydramnios in IUGR babies is decreased urine output.<sup>3</sup> Complications may include cord compression, musculoskeletal abnormalities such as facial distortion and clubfoot, pulmonary hypoplasia and intrauterine growth restriction. Amnion nodosum is also frequently present (nodules on the fetal surface of the amnion). Even a moderate reduction in AFV is associated with abnormal FHR, meconium stained liquor which often requires CS and may result in perinatal morbidity and/or mortality.<sup>4</sup> The amniotic fluid volume rises progressively during gestation until approximately 32 weeks. From 32 weeks to term the mean amniotic fluid volume is relatively constant about 700-800ml. After 40 weeks there is progressive decline in amniotic fluid volume average of about 400 ml at 42 weeks. Amniotic fluid volume along with gestational age, it also correlates with fetal and placental weight. The severity of oligohydramnios is associated with degree of IUGR and it reflects the placental dysfunction.<sup>5</sup>

Phelan et al, have recommended that labor induction be considered in patients with oligohydramnios (AFI <5cm) to reduce the increased risk of fetal death and morbidity.<sup>2</sup> An antepartum amniotic fluid index (AFI) of 5cm or less is a predictor of adverse perinatal outcome in terms of meconium staining, cesarean section for fetal distress, birth weight, low Apgar scores and cord pH.<sup>6</sup> AFI of >18cm is taken as cut-off point for normal limit of AFI. Pregnancy complicated with polyhydramnios is also classified as high risk. AFV can be measured by dye-dilution techniques and by direct quantification at the time of caesarean delivery, but both methods are invasive, require laboratory support, and when measured at the time of operative abdominal delivery, cannot be used serially to evaluate high-risk pregnancies.<sup>7</sup> The limitation of the direct AFV measurement led to the use of ultrasonic AFV estimation. Ultrasonography is noninvasive and can clinically quantitate the AFV. There are various reported ultrasonographic modalities to assess AFV like (1) single deepest pocket (2) 2-diameter pocket, and (3) AFI by 4-quadrant method. Since the introduction of AFI by Phelan et al, a rapid semi-quantitative assessment of AFV can be performed quickly, is easily taught, and is reproducible.<sup>6</sup>

The aim and objectives of this study were to study the perinatal outcome in cases of severe oligohydramnios; to study the Color Doppler changes evident in cases of severe oligohydramnios; to study the incidence of IUGR babies in cases of severe oligohydramnios; to study the incidence of High risk factors e.g. Abruption, preeclampsia in association with severe oligohydramnios and to study the pattern of mode of delivery in cases of severe oligohydramnios.

**METHODS**

A prospective randomized study was conducted in Department of Obstetrics and Gynaecology in a tertiary

care hospital in MGMMC and MYH, Indore during the period of 6 months from 1st July 2017 to 31st December 2017. The cases were allocated as per inclusion and exclusion criteria. It was a prospective randomized study. Sample size consists of 200 cases.

**Inclusion criteria**

- All the antenatal patients attending Antenatal OPD in routine and emergency and who are admitted in MYH beyond 28 weeks of gestation with diagnosis of oligohydramnios on USG.

**Exclusion criteria**

- All the antenatal patients with less than 28 weeks of gestation.

**RESULTS**

Table 1 showing the association of parity with oligohydramnios; with increasing parity, Incidence of oligohydramnios decreases. The incidence was 42% in primigravida followed by 23% in third gravida patients.

**Table 1: Parity status in cases with oligohydramnios.**

Parity status	Number of cases	Percentage of cases
G1P0	84	42
G2P1	32	16
G3P2	46	23
G4P3	24	12
G5P4	14	7

Table 2 showing the association of age with oligohydramnios; with increasing age, Incidence of oligohydramnios decreases. The incidence was highest of 35% in between age group of 20-25years.

**Table 2: Age group in cases with oligohydramnios.**

Age group (in years)	Number of cases	Percentage of cases
<20	34	17
20-25	70	35
25-30	46	23
30-35	32	16
>35	18	9

Table 3 showing the association of mode of delivery with oligohydramnios; Most common used mode of delivery was normal vaginal delivery in 43% followed by LSCS in 41%.

Table 4 showing perinatal outcome in cases with oligohydramnios; 64% of the babies were alive and healthy and about 26% were NICU admissions.

**Table 3: Mode of delivery in cases with oligohydramnios.**

Mode of delivery	Number of cases	Percentage of cases
Normal labour	86	43
LSCS	82	41
Preterm labour	16	8
VBAC	6	3
TSVD	20	10

**Table 4: Perinatal outcome in cases with oligohydramnios.**

Perinatal outcome	Number of cases	Percentage of cases
Alive and healthy	128	64
Intrauterine deaths	20	10
NICU admissions	52	26

**Table 6: Color Doppler changes in umbilical artery and middle cerebral artery.**

Color Doppler changes	Umbilical artery	Umbilical artery (in percentage)	Middle cerebral artery	Middle cerebral artery (in percentage)
Normal	128	64	120	60
Increased	36	18	36	18
Decreased	4	2	44	22
Reversal of flow	32	16	-	-

Table 7 showing causes associated with oligohydramnios; most common cause of oligohydramnios was constitutional (50%) followed by Pregnancy induced hypertension in 44% of cases. Even on applying statistical tests it was found to be significant with p-value less than 0.05.

**Table 7: Causes associated with oligohydramnios.**

Causes of oligohydramnios	Number of cases	Percentage of cases
Abruption	16	8
Pregnancy induced hypertension	88	44
PROM	46	23
Congenital anomalies	12	6
Post term pregnancy	38	19
Constitutional	100	50

Some risk factors may overlap

Table 8 showing association of IUGR with oligohydramnios; about 61% of cases were IUGR and AFI was found to be less than 5cm and even on applying statistical tests it was found to be significant with p-value less than 0.05.

Table 5 showing color Doppler changes in cases with oligohydramnios; most cases (54%) had normal color flow pattern. However, 26% cases showed early fetal hypoxia and 14 % showed Uteroplacental insufficiency.

**Table 5: Color Doppler changes.**

Color Doppler	Number of cases	Percentage of cases
Normal flow	108	54
Early fetal hypoxia	52	26
Uteroplacental insufficiency	28	14

Table 6 showing color Doppler changes in cases with oligohydramnios; about 64% and 60% had normal color flow pattern in umbilical artery and middle cerebral artery respectively. However, 18% showed increased flow pattern and reversal of flow in 16% cases in umbilical artery.

**Table 8: Association of degree of oligohydramnios with IUGR.**

Degree of oligohydramnios	Number of cases	Percentage of cases
Normal AFI (8.1-12cm)	6	3
Moderate oligo (5.1-8cm)	72	36
Severe oligo (<5cm)	122	61

**Table 9: Complaints in cases with oligohydramnios.**

Chief complaints	Number of cases	Percentage of cases
Leaking	74	37
Loss of fetal movements	84	42
Bleeding per vaginum	60	30

Some cases may have more than 1 complaint

## DISCUSSION

In present study the incidence of IUGR with age group of 20 to 25 years of age comprising 37 % of total number of cases. Malik Rajesh et al, also reported that most of the

cases IUGR were belong to 21 to 25 years of age, comprising 47% of the total number of cases of IUGR. The mean maternal age in my study was 22.5 years however, in the study by Krishna et al, mean maternal age was 23.66 years. Incidence of oligohydramnios was more in primipara (42%) however incidence was highest in primipara (52%) in study by Krishna et al. However, In my study incidence of IUGR was 50% most commonly being constitutionally small.<sup>8</sup> In study by Krishna et al, most common cause of oligohydramnios is idiopathic (52%) followed by PIH in 25% of pregnancies while in my study it was PIH in 44% of pregnancies followed by PROM in 23 % of pregnancies.<sup>9</sup>

In present study oligohydramnios had significant correlation with IUGR. 61% cases of IUGR (100 cases) associated with severe oligohydramnios. This marks as oligohydramnios is a screening tool for IUGR. Casey et al, mentioned that oligohydramnios is associated with a significant increased risk of caesarean delivery for fetal distress, a low Apgar score at 5 min and neonatal acidosis.<sup>10</sup> Manning et al, studied that oligohydramnios was an exceptionally reliable predictor for IUGR.

In present study, most common reason to perform caesarean was fetal distress which was either due to cord compression or IUGR. 7% patients were found with fetoplacental insufficiency on Doppler study. Oligohydramnios was related to higher rate of growth retardation and NICU (neonatal intensive care unit) admission.<sup>11</sup> The operative morbidity is significantly higher in patients with altered Doppler study. In Weiss et al, and Yound HK et al, it was 71% and 69.7% respectively which was comparable to this study.<sup>12,13</sup> In present study, operative morbidity was 41%.

## CONCLUSION

There has been reported cases of sudden IUD in severe oligohydramnios presenting with loss of fetal movements.

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