

DOI: <http://dx.doi.org/10.18203/2320-1770.ijrcog20190031>

## Original Research Article

# Maternal and perinatal outcome of oligohydramnios in term pregnancy in rural tertiary care centre

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**Received:** 08 December 2018

**Accepted:** 02 January 2019

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## ABSTRACT

**Background:** Disorders of amniotic volume is one of the commonest obstetric problem. Amniotic fluid acts as cushion to the foetus allowing musculoskeletal development and also helps in the differentiation of lungs and gastrointestinal tract. Decreased amniotic fluid, known as oligohydramnios, is known to be associated with adverse perinatal outcome. The objective is to study the maternal and perinatal complications of oligohydramnios in term pregnancy.

**Methods:** The present study was carried out in the Department of Obstetrics at rural tertiary care hospital in Maharashtra from February 2018 through October 2018. women with Oligohyamnios were studied for obstetrical and neonatal complications.

**Results:** The incidence of oligohyamnios was 7.6% in present study. The mean age of the study population was 22.6±3.6 years. Induction of labour was required in 44 (61.11%) patients out of which 23 patients underwent emergency LSCS. Low birth weight (birth weight<2.5kg) was found in 14 (19.44%) babies with 11 babies having intrauterine growth restriction. 5-minute APGAR (appearance, pulse, grimace, activity, respiration) score was <7 in 13.88% babies. 16 babies needed NICU admission out of which 1 neonate died.

**Conclusions:** Detection of oligohydramnios increases obstetrical interventions in term pregnancy.

**Keywords:** Induction of labour, Oligohydramnios, Perinatal outcome

## INTRODUCTION

Amnionic fluid serves to cushion the fetus, allowing musculoskeletal development and protecting it from trauma. It also maintains temperature and has a minimal nutritive function. Epidermal growth factor (EGF) and EGF-like growth factors, such as transforming growth factor, are present in amnionic fluid. Ingestion of fluid into the gastrointestinal tract and inhalation into the lung may promote growth and differentiation of these tissues.<sup>1</sup> The volume of amnionic fluid at each week is quite variable. In general, the volume increases by 10ml per week at 8 weeks and increases up to 60ml per week at 21 weeks, then declines gradually back to a steady state by 33 weeks.<sup>2</sup> Normally, amnionic fluid volume reaches 1

litre by 36 weeks and decreases thereafter to less than 200 mL at 42 weeks.<sup>1</sup> Diminished amniotic fluid is termed as oligohydramnios. Phelan and colleagues described ultrasonographic quantification of the amniotic fluid using the amniotic fluid index-AFI.<sup>3</sup> This is calculated by adding the vertical depths of the largest pocket in each of four equal uterine quadrants. Phelan defined oligohydramnios as amniotic fluid index (AFI) ≤5cm and borderline oligohydramnios as AFI between 5 and 8 cm between 36-42 weeks of gestation.<sup>3</sup> Oligohydramnios occurs in about 1-5% of pregnancies at term.<sup>4</sup> Oligohydramnios leads to maternal complications like prolonged labor, increased operative interference and fetal complications like abortion, deformity due to intra-amniotic adhesions, cord compression. Women with

oligohydramnios are more likely to have abnormal FHR tracings, increased incidence of fetal distress, and thus an increased incidence of caesarean sections.<sup>5</sup> The present study was carried out to study the incidence of oligohydramnios and its maternal and perinatal complications in rural tertiary care hospital.

## METHODS

The present study was carried out in the department of obstetrics at rural tertiary care hospital in Maharashtra from February 2018 to October 2018. The study was approved by Institutional Ethics Committee. All the patients were subjected to detailed history, clinical examination, relevant laboratory investigations and ultrasonography for AFI measurement and findings were entered in a predesigned proforma.

### Determination of amniotic fluid volume

- A. Clinical assessment: It is subjective with interobserver and intra observer variability
- B. Quantitative assessment

- *Single deepest pocket measurement*

Dimensions of the largest vertical pocket of amniotic fluid are measured and presence of <1cm pocket of fluid is defined as oligohydramnios.

- *Annual Fluid Index (AFI):<sup>3</sup>*
  - a. Divide the uterus into four quadrants using the linea nigra as the vertical axis and the umbilicus as the horizontal axis
  - b. The pocket with the largest vertical dimension is measured in each quadrant.
  - c. Sum of all four measurements=AFI
  - d. Values are labelled as follows: <5cm=very low (oligohydramnios), 5.1-8cm=low, 8.1-25cm=normal, >25cm=polyhydramnios.

In present study, AFI was calculated by ultrasonography for pregnant women with 37 completed weeks of gestation and those with AFI ≤5cm was diagnosed as oligohydramnios and included in the study.

### Inclusion criteria

- Women with singleton pregnancy >37 weeks gestation with cephalic presentation, AFI ≤5cm with intact membranes.

### Exclusion criteria

- Multiple gestation
- Malpresentations
- Fetal malformations
- PROM.

## Statistical analysis

The data was analyzed by Microsoft excel and Epi info version 7.

## RESULTS

There were 945 full term patients screened for presence of oligohydramnios over a period of 9 months. Oligohydramnios (AFI <5) was present in 72 (11.16%) patients. The mean age of the study population was 22.6±3.6 years. 53 (73.61%) patients belonged to the age group of 20-25 years. 47 (65.27%) patients were primigravida and 25 patients were multigravida. The mean gestational age in present study population was 38.3±1.6 weeks. The incidence of oligohydramnios in present study was 7.6%.

### Maternal complications

Induction of labour was required in 44 (61.11%) patients out of which 23 patients underwent emergency LSCS. 32 (44.44%) patients has non-reassuring NST and in 20 (27.77%) patients, amniotic fluid was meconium stained. 2 babies died in utero as depicted (Table 1).

**Table 1: Maternal outcome of women with oligohydramnios at term.**

Total patients with oligohydramnios	N=72	Percentage
Vaginal delivery	32	44.44
Induction of labour	44	61.11
Elective LSCS	17	23.61
Emergency LSCS	23	31.94
Meconium stained amniotic fluid	20	27.77
Non-reassuring NST	32	44.44
IUFD	2	2.77

### Fetal and neonatal complications

**Table 2: Fetal and neonatal outcome.**

Mother with oligohydramnios	N=72	Percentage
birth weight <2.5	14	19.44
SGA	11	15.27
IUFD	2	2.77
	<b>N=70</b>	
Meconium aspiration	9	12.85
APGAR < 7 at 5 min	10	14.28
NICU admission	16	22.85
neonatal Death	1	1.42

Low birth weight (birth weight <2.5kg) was found in 14 (19.44%) babies with 11 babies having intrauterine growth restriction. 5-minute APGAR (appearance, pulse, grimace, activity, respiration) score was <7 in 14.28%

babies. 16 babies needed NICU admission out of which 1 neonate died on 3<sup>rd</sup> day of life (Table 2).

## DISCUSSION

The study was undertaken in rural tertiary care hospital to study the maternal and perinatal complications of oligohydramnios at term. Pregnant women >37 weeks gestation age was screened for oligohydramnios and those with AFI <5 were studied for perinatal complications. The mean age of the pregnant women with oligohydramnios in present study is 22.6 years. The mean maternal age was 23.66 years in a study done by Jagatia et al.<sup>6</sup> In a study done by Casey B et al, mean maternal age of women with oligohydramnios was 23.9 years. In observations made by Chauhan et al and Jun zhang et al, mean maternal age was similar to present study.<sup>7,8</sup> 53 (73.61%) patients belonged to the age group of 20-25 years which is similar to findings made by Gabbe et al, and Gita et al.<sup>9,10</sup>

The mean gestational age in present study was 38.3±1.6 weeks. The mean gestation age in the study done by Vidyasagar et al, Jun zhang et al and Casey B et al, is 36.3 weeks, 38.1±3.3 weeks, 37.5±2 respectively.<sup>11</sup> 47 (65.27%) patients were primigravida in present study which is in contrast to study done by Bhattacharya et al, who found that one third patients were primigravidae.<sup>12</sup> The incidence of oligohydramnios was 7.6% which is higher than that detected by Divon M et al, (1.2%) Casey B et al (2.3%), Elliot H et al, (3.9%).<sup>5,13,14</sup>

Induction of labour was required in 61.11% patients of which 52.27% underwent emergency LSCS which is similar to findings by Locatelli et al.<sup>15</sup> Similar finding was noticed in the study done by Jandial et al, in which labour was induced 58% patients out of which 42% underwent LSCS.<sup>16</sup> Labour was induced in 86% of women of which 61% underwent LSCS in a study done by Bachhav et al.<sup>17</sup>

Low birth weight was found in 14 babies (19.44%) in contrast to 64% by Bachhav et al and 65.3% by Nazlima et al.<sup>17,18</sup> In 10 patients, APGAR score was less than 7 at 5 minutes and 22.85% babies needed NICU admission which is higher than that found by Umbre et al, (8.1%).<sup>19</sup> Low birth weight was seen in 48%, Apgar score <7 seen in 14% and 14% were admitted in NICU in study by According to Sowmya K et al, 34% required NICU admission and 20% had APGAR score <7 at 5 minutes in a study done by Madhavi K et al.<sup>20,21</sup> An APGAR score of <7 at 5 min was seen in 26.9% of babies in a study by Nazlima et al, 12% of babies in a study by Jandial et al.<sup>16,18</sup> Perinatal mortality was 4.1% which is comparable to that found by Nazlima et al, (2.4%).<sup>18</sup>

## CONCLUSION

Oligohydramnios is detected commonly now a days due to availability of Obstetric ultrasonography. Detection of

oligohydramnios increases the number of obstetric interventions like induction of labour, caesarean section which increases the maternal as well as neonatal morbidity. Close monitoring with NST is required once oligohydramnios is detected at term to prevent adverse perinatal outcome.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: Not required*

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**Cite this article as:** Kagne S, Chate S. Maternal and perinatal outcome of oligohydramnios in term pregnancy in rural tertiary care centre. *Int J Reprod Contracept Obstet Gynecol* 2019;8:389-92.