



## Third Trimester Oligohydramnios With Maternal and Fetal Outcome: Study of 75 Cases

### KEYWORDS

oligoamnios, intrauterine growth retardation, pregnancy induced hypertension, Amniotic fluid index.

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**ABSTRACT** Pregnancies with oligohydramnios have a bimodal distribution. It is most common during the last trimester. The common complications are intrauterine growth retardation, preterm birth, labour complications such as cord compression, meconium stained fluid and caesarean section.

**Aims & Objectives:** To study the effects of oligohydramnios on labour, fetal outcome, early neonatal and maternal morbidity, mortality in the form of operative delivery and induced labour and to correlate Amniotic Fluid Index (AFI) with per operative findings of liquor quantity. **Materials and Methods:** Retrospective study of 75 cases of oligohydramnios in third trimester; Amniotic fluid index taken to classify the severity, the information regarding maternal and perinatal outcome, conditions associated with oligohydramnios, rate of caesarean section were collected and results were analyzed. **RESULTS:** The rate of oligohydramnios was more in primipara (60%). Most common cause being PIH (34.6%) and second common cause is post dated pregnancy (20%). All associated conditions with oligoamnios and labour outcome was noted. The rate of caesarean section is 76%. **CONCLUSION:** Oligohydramnios is the most frequent third trimester complication resulting in more number of caesarean sections due to maternal and fetal risks. Regular antenatal checkups, timely screening for AFI, with proper management helps to reduce unnecessary maternal morbidity and mortality.

### INTRODUCTION

The quantitative measurement of amniotic fluid volume plays a major role in ante partum fetal surveillance. Amniotic fluid is the product of complex and dynamic foetal and placental physiologic processes. Amniotic fluid production in the first half of pregnancy is derived from fetal and possibly maternal compartments. In the second trimester, it is exclusively through foetal urination. At term, a foetus produces on average from 500 to 700 ml / day with a slight decline in hourly fetal urine production after 40 wks gestation. <sup>(1)</sup> Disruption of this balance may result in overproduction or underproduction of fluid.

Brace and Wolf (1989) reviewed the literature and compiled 705 measurements of amniotic fluid between 8 and 43 weeks' gestation. <sup>(2)</sup> This mathematical modelling of amniotic fluid volume provides a statistical definition of oligohydramnios. They reported that amniotic fluid volume increased progressively until 33 weeks' gestation and then plateaued.

Sonographic assessment of the AFI was done in four quadrant method to assess the amount of amniotic fluid throughout the uterine cavity. This method calculates the maximum vertical pocket of amniotic fluid in each quadrant of the uterus. Severe degree of oligohydramnios was defined as an amniotic fluid index < 5.0 cm, <sup>(3)</sup> and AFI 5-7 cm are considered as borderline. <sup>(4)</sup>

Pregnancies with oligohydramnios have a bimodal distribution. patients with second trimester oligohydramnios have a higher prevalence of congenital anomalies (50.7% vs. 22.1%) and a lower survival rate (10.2% vs. 85.3%) than

those women with oligohydramnios in the third trimester. <sup>(5)</sup> It is remembered that isolated third trimester oligohydramnios is not necessarily associated with poor perinatal outcome. <sup>(6)</sup>

Oligohydramnios in second half of pregnancy is commonly caused by one of the following:

1. Pregnancy induced hypertension
2. post-term pregnancies
3. preterm rupture of the membranes
4. maternal systemic diseases
5. iatrogenic
6. idiopathic

Chronic or intermittent fetal hypoxia may develop due to above causes resulting in uteroplacental insufficiency or maternal hypoxia resulting in oligoamnios, where as prenatal cord compression may lead to either prolonged or repetitive episodes of acute hypoxia of varying intensity and duration.

About 12% of women with post dated pregnancies develop oligohydramnios due to declining placental function. <sup>(7)</sup>

Third trimester oligoamnios is commonly associated with foetal complications like cord compression, pulmonary hypoplasia. Intrauterine growth restriction and foetal distress. Though the definition of diminished amniotic fluid volume varies, this sign is considered by itself an indication for intervention in the near-term foetus resulting in increased risk of caesarean delivery for foetal distress, low APGAR score and high perinatal morbidity and mortality. Hence,

the present study was carried out to find out the incidence of oligohydramnios during pregnancy and its effect on maternal and perinatal outcome.

### Materials and Methods:

Present study is a retrospective study of 75 cases studied over a period from April 2015 to October 2015, in third trimester of pregnancy presenting with oligohydramnios selected serially in the department of obstetrics and gynecology, Government General Hospital, Ananthapuramu Medical College, a tertiary level health care hospital, in Ananthapuramu, Andhra Pradesh. Special emphasis was laid on residential status, parity, blood pressure and clinical data to identify the causes of oligoamnios. Both booked and unbooked cases selected on clinical suspicion, i.e. by palpation of gravid uterus with uterine height not corresponding to period of gestation, and objective feeling of decreased liquor, confirmed on ultrasound by measuring AFI with 4 quadrant method. AFI <5 considered as severe and AFI 5-7 taken as border line. Ultrasound findings were correlated with peroperative findings. Maternal morbidity concluded in form of operative delivery and induced labor. Decision of delivery by either induction or elective or emergency LSCS was done as per requirements. Some patients were induced and others went into spontaneous labor. Fetal outcome was noted in the form of fetal distress, growth retardation and NICU admissions.

### RESULTS

75 cases of oligohydramnios selected on basis of clinical and ultrasound findings were analysed. In our study rate of oligohydramnios was more in primipara (60%) (Table: 1). Most common associated condition is PIH (34.6%) and second common cause is post dated pregnancy (20%) (Table: 2). Among 26 cases of PIH, 21 had caesareans and 5 vaginal deliveries. In 15 cases of post dated pregnancies 10 vaginal deliveries and 5 cases caesareans noted. All associated conditions with oligoamnios and labour outcome listed in Table: 2. The high rate of LSCS in our study is due to fetal distress followed by IUGR and post LSCS (Table:6).

Amniotic fluid index is divided into severe oligohydramnios which is < 5cm and border line with AFI 5-7 cm. Severe oligoamnios are 64%. Out of them 89.6% resulted in caesarean sections and 10.4% ended in vaginal delivery. Borderline oligoamnios are 36%. Out of them 48.1% had normal deliveries and 51.9% had LSCS (Table: 4).

25 patients of oligoamnios with no associated complications and with AFI status of 5 to 7cms on ultra sound had induction of labour. Out of them 3 primi gravida and 22 multi gravida had induction of labour, resulting in 72% vaginal delivery and 28% caesarean section (Table:5).

Oligohydramnios was related to higher rate of growth retardation and NICU admissions (Table: 3) though all babies survived in our study and discharged uneventfully. The incidence of low birth babies is higher in oligohydramnios. In our study 74% babies were AGA and 26 % were SGA. This high percentage of SGA babies suggests correlation of IUGR with oligohydramnios. (Table:3). 24% of cases are admitted in NICU due to birth asphyxia and low APGAR score of < 7.

**Table: 1. PARITY AND OUT COME OF LABOUR**

Parity	No.of Cases(%)	Vaginal delivery (%)	Caesarean section (%)
Primi Para	45(60%)	3(6.6%)	42(93.3%)
Multi Para	30(40%)	15(50%)	15(50%)
Total	75(100%)	18(24%)	57(76%)

**TABLE: 2 ASSOCIATED CONDITIONS AND OUTCOME OF LABOUR**

ASSOCIATED CONDITIONS	TOTAL NUMBER OF CASES	VAGINAL DELIVERY	CAESAREAN SECTION
Pregnancyinduced hypertension	26(34.6%)	5	21
Post dates	5(20%)	10	5
Post LSCS	15(20%)		15
IUGR	20.(26.7%)	-	6
CPD	5(6.6%)	-	5
Idiopathic	3(4%)	3	-
Others (mal presentations)	5(6.6%)	-	5
Total	75	18(24%)	57(76%)

**TABLE: 3 FOETAL OUTCOME**

OUT COME	NO OF BABIES (%)
Growth retardation	AGA -55(73.3%) SGA - 20(26.6%)
NICU admission	18 (24%)

**TABLE: 4 AFI LEVELS VS PREGNANCY OUT COME**

AFI Levels	No.of cases	vaginal delivery	caesarean section	% of patients
< 5 cms	48	10.4%	89.6%	64%
5-7 cms	27	48.1%	51.9%	36%
Total	75	24%	76%	100%

**TABLE : 5 INDUCED LABOUR & OUT COME OF LABOUR**

S NO	No. of cases with induced labour	vaginal delivery	caesarean section
1	25	18 (72%)	7(28%)

**TABLE: 6 INDICATIONS FOR CAESAREAN SECTION**

S.NO	INDICATIONS	NO. OF PATIENTS
1	FOETAL DISTRESS	27
2	IUGR	20
3	POST LSCS	15
4	POST DATES	5
5	MALPRESENTATIONS (BREECH)	5
6	CPD	5

### DISCUSSION

Oligohydramnios is seen in 2.4 - 3.9% of all pregnancies .Late onset oligohydramnios is associated with maternal diseases like chronic hypertension, pre eclampsia, utero-placental insufficiency, hypovolemia, drugs, twin pregnancy, fetal demise, ruptured membranes and post term pregnancy. Isolated oligohydramnios is diagnosed when no other unfavourable maternal and fetal condition coexists.

In our study, 60% of primigravida are affected which is comparable with Bhat s et al study which is 54%.<sup>(8)</sup>

Oligoamnios with associated complications ended in 76% of caesarean sections in our study which is comparable to Krishna jagatia et al showing 83% of section rate

in 100 cases.<sup>(9)</sup> Most common associated condition is PIH 34.6% in our study. Although there is an increased incidence of caesarean section for fetal distress and low birth weight, there was no associated increase in perinatal morbidity or mortality in our centre. Oligoamnios is frequently associated with non reassuring foetal heart rate pattern, meconium aspiration syndrome and neonatal death and operative morbidity. They are due to umbilical cord compression, potential uteroplacental insufficiency and increased incidence of meconium stained amniotic fluid in oligohydramnios. Each of the risk factors associated with late onset oligohydramnios can predispose the foetus to adverse outcome.

Sir Ganga ram hospital study<sup>(10)</sup> shows 68% vaginal deliveries in induced patients of oligohydramnios and 32 % by caesarean section which is comparable to our present study in 25 patients of induced labour resulting in 72 % vaginal deliveries and 28% Caesarean Sections, which may be due to booked status of patients with good monitoring and no associated complications.

Zhang *et al* and colleagues in their study showed that isolated oligohydramnios was not associated with an increased incidence of operative delivery or increased perinatal morbidity, though these fetuses were lighter by 100 gm at birth.<sup>(6)</sup> They also noted that oligohydramnios with unfavourable maternal and foetal conditions (such as IUGR, anomalies or hypertension) leads to a much worse perinatal outcome than a normal amniotic fluid volume with the same conditions. In these cases, oligohydramnios may be an indicator of a more severely impaired placental function, foetal compromise and worse maternal or foetal conditions as in our study.

The percentage of small for gestational age and average gestational age as per Brain M Casey *et al*<sup>(11)</sup> is 75.5% AGA and 24% SGA, in Philipson EH *et al*<sup>(12)</sup> 60% AGA and 40% SGA, in Manning *et al*<sup>(13)</sup> 64% AGA and 36% SGA, in Raj Sariya *et al*<sup>(14)</sup> 83.4% AGA and 16.6% SGA. In our study 73.3% AGA and 26.6% SGA is close to the results of M Casey *et al*.

Various studies shows different rates of LSCS in pregnant women with amniotic fluid index of <5 cm. Chate P *et al* .study shows 64% section rate.<sup>(15)</sup>

In our study LSCS was done in 89.6%, which is on higher side possibly due to more number of primi gravida included.

Amniotic fluid index of  $\leq 5$  cm detected is an indicator of poor peri-natal outcome.

24% newborns were admitted in NICU for various morbidities like jaundice, septicemia, IUGR, birth asphyxia etc in our study.

**Conclusion:** Oligohydramnios is the most frequent third trimester complication mostly due to maternal causes and often associated with other maternal and fetal complications, resulting in more number of caesarean sections. Regular antenatal checkups, timely screening for AFI under ultrasound with timely decision between vaginal delivery and caesarean sections to prevent and reduce unnecessary maternal morbidity and mortality is essential.

#### Abbreviations:

1. AFI---Amniotic fluid index

2. PIH---Pregnancy induced hypertension
3. IUGR---Intrauterine growth retardation
4. NICU---Neonatal intensive care unit
5. SGA---Small for gestational age
6. AGA---Adequate for gestational age

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