

International Journal of Clinical Obstetrics and Gynaecology



ISSN (P): 2522-6614
ISSN (E): 2522-6622
© Gynaecology Journal
www.gynaecologyjournal.com
2019; 3(2): 26-29
Received: 17-01-2019
Accepted: 20-02-2019

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A prospective study of maternal and fetal outcome in oligohydramnios in a tertiary care hospital

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DOI: <https://doi.org/10.33545/gynae.2019.v3.i2a.08>

Abstract

Background: Amniotic fluid surrounding the fetus is an important biophysical marker of fetal wellbeing. Oligohydramnios defined as AFI<8cm can result in adverse maternal and perinatal outcomes.

Aims & Objectives: The aim of study is to analyze the maternal and fetal out come in pregnant women with oligohydramnios at term.

Materials & methods: A prospective study was conducted of all ANC'S admitted in labor room from the year august 2017 to July 2018. Out of 5800 patients 400 women at term with AFI of less than 8cms were included in the study. Outcome was observed in terms of AFI, type of delivery, Apgar score, birth weight, and NICU admissions.

Results: The incidence of oligohydramnios was 6.89% in our hospital, in which moderate oligohydramnios was 4.58% & severe oligohydramnios 2.31%. Doppler changes were found in 3.2% on USG. The rate of LSCS was 28.5%. SGA was seen in 33% of which 11% had IUGR. NICU admissions were 28% and perinatal deaths 2%.

Conclusion: Prevention, early detection and intervention of antenatal complications can probably reduce the incidence of oligohydramnios and improve maternal and fetal outcome.

Keywords: oligohydramnios, amniotic fluid index, maternal and perinatal outcome

Introduction

Quantitative estimation of amniotic fluid volume is a part of routine obstetric scan. Semi quantitatively the amount of amniotic fluid is described using the amniotic fluid index. Oligohydramnios occurs in about 1% to 5% of pregnancies at term.

Amniotic fluid surrounds the developing fetus. Its existence plays an essential role in fetal development [1]. At first, amniotic fluid is mainly water with electrolytes, but by about the 12-14th week the liquid also contains proteins, carbohydrates, lipids and phospholipids and urea, all of which aid in the growth of the fetus [2]. The amniotic fluid volume varies with the gestational age from 200ml at 16weeks, 1000ml at 28 weeks, 900ml at 36 weeks and 800ml at 40 weeks of gestation. A good clinical examination can pick up most subjects of abnormal liquor volume and can be confirmed ultrasonographically [3]

As per definition of liquor assessment an AFI less than 5cm is known as oligohydramnios, AFI from 5 to 8 cm has been termed borderline AFI. Oligohydramnios is associated with increased fetal malformations and in the absence of malformations, to be complicated by fetal growth restriction, maternal morbidity and adverse perinatal outcome [5]. Hence every case of oligohydramnios needs careful antenatal evaluation, parental counseling, individualized decision regarding timing and mode of delivery, continuous intrapartum fetal monitoring and good neonatal care for optimum perinatal outcome [6].

Aims & objectives

The aim of study is to analyze the maternal and fetal out come in pregnant women with oligohydramnios at term.

Materials & methods

A prospective study was conducted of all ANC'S admitted in labor room in Obstetrics and Gynaecology, SDM College of Medical Sciences and Hospital, Dharwad from the year august 2017 to July 2018. All the admitted term patients underwent ultrasound examination to assess

the liquor. Amount of liquor was calculated using four quadrant method where deepest pockets in each quadrant was measured and their sum gives the AFI. Out of 5800 patients four hundred antenatal women at term had AFI of less than 8cms and were included in the study.

Maternal & neonatal outcome was observed in terms of AFI, obstetric complications, mode of delivery, Apgar score at delivery, birth weight, NICU admission and perinatal morbidity and mortality.

Inclusion Criteria

Gestational age 37-42 weeks of gestation Amniotic fluid Index: <8 cm Fetus with no obvious congenital anomaly Intact membranes at the time of admission.

Exclusion Criteria

Women with Premature Rupture of Membranes before admission. Multiple pregnancies Gestational age < 37 weeks. Antepartum hemorrhage. Fetal anomalies Maternal risk factors

Results

Out of 5800 patients 400 antenatal women at term were included in the study with AFI of less than 8cms. Maternal & neonatal outcome was observed in terms of AFI, amniotic fluid characteristics, type of delivery, Apgar score at delivery, birth weight, NICU admission, perinatal morbidity and mortality.

Table 1: Maternal characteristics

		No of patients with AFI <8 cm	Percentage
Maternal age	<20 years	34	8.5%
	20 to 29 years	239	59.75%
	>30 years	127	31.75%
Parity	Primigravida	202	50.5%
	Multigravida	198	49.5%
Gestational age	37 to 40 weeks	326	81.5%
	40 to 42 weeks	74	18.5%

Table 1: In our study 59.75% of women were aged between 20-29 years, 31.75% were >30 years and only 8.5% were less than 20 years. Number of Primigravidas and multigravidas were almost equal each being 50.5% and 49.5% respectively. Majority of the cases were between 37 to 40 weeks of gestation constituting 81.5% and 18.5% were between 40 to 42 weeks.

Table 2: Obstetric complications

Complications	No of patients with AFI < 8 cm	Percentage
Malpresentation	13	3.25%
IUGR	44	11%
NST-non reassuring	142	35.5%
Prolonged labor	182	45%
Fetal anomalies	6	1.5%
PPH	12	3%

Table 2.Shows the obstetric complications encountered. Out of 400 antenatal women Non-reassuring NST was seen in 35.5% of cases, 45% had prolonged labour, intrauterine growth restriction was found in 11%, malpresentations were seen in 3.25%, fetal anomalies in 1.5% and 3% had postpartum hemorrhage.

Table 3: Amniotic fluid characteristics

Amniotic fluid	No of patients	percentage
AFI 5-8 cm	266	66.5%
AFI <5 cm	134	33.5%
Clear	311	77.75%
Thin meconium	68	17%
Thick meconium	21	5.25%

Table 3: Borderline AFI was seen in 66.5% and 33.5% had severe oligohydramnios. Clear liquor was demonstrated in 77.75% of cases, thin meconium stained liquor was seen in 17% and 5.25% had thick meconium stained liquor

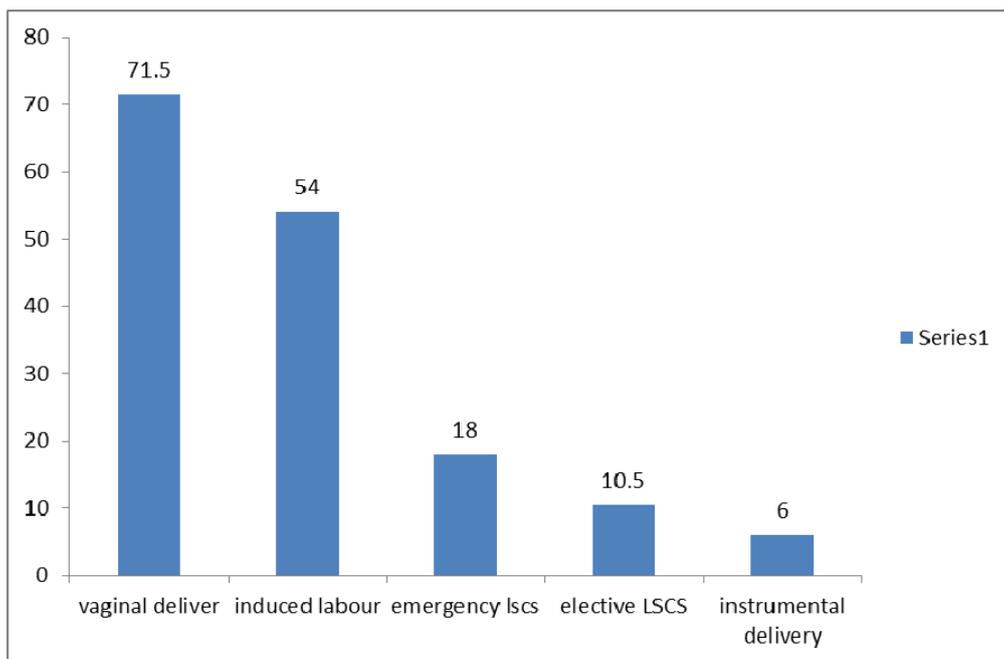


Fig 1: This figure shows different modes of delivery

Figure 1:Out of 400 patients 286 had vaginal delivery(71.5%) of which 216 were induced labours, 24 needed instrumental

delivery (6%), 72 underwent emergency LSCS(18%) and elective LSCS was done for 42 patients (10.5%).

Table 4: Indications for cesarean section

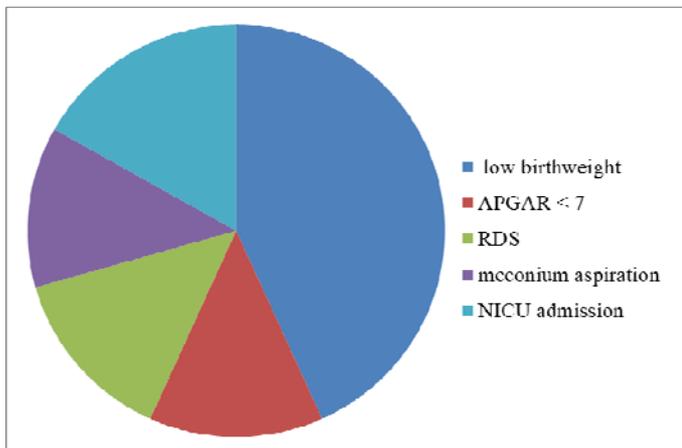
Indications for cesarean	No of patients with AFI < 8 cm	Percent (%)
Fetal distress	64	16%
CPD	23	5.75%
Mal-presentation	13	3.25%
Deep transverse arrest	2	0.5%
Failed induction	12	3%
Total	114	28.5%

Table 4: Out of 400 patients 114 underwent cesarean section i.e. 28.5%. Fetal distress was seen in 16%, CPD in 5.75%, 3.25% of malpresentations, 3% had failed induction and deep transverse arrest occurred in 0.5%

Table 5: Perinatal and Neonatal outcomes

Outcomes	Number	Percentage (%)
Birth weight		
1 – 2 kg	86	21.5%
2 - 3 kg	202	50.5%
>3 kg	112	28%
Apgar scores < 7	90	22.5%
Nicu Admissions	112	28%
Observation for 48 hrs	64	16%
RDS	92	23%
Mechanical ventilation	14	3.5%
Sepsis	36	9%
Jaundice	12	3%
Anomalies	06	1.5%
Death	08	2%

Table 5: Out of 400 babies delivered birth weight was >3kg in 112 neonates (28%), 202 (50.5%) were between 2 to 3 kgs and 86 (21.5%) between 1 – 2 kg. low agar scores i.e. <7 was seen in 90 newborns (22.5%) and 112 (28%) babies required NICU admission.

**Fig 2:** Pie chart showing perinatal outcome after delivery

Pie chart 1: NICU admission was required for 112 newborns (28%), 64 babies were kept just for observation and shifted back to mother side after 48 hrs, RDS was seen in 23%, 9% developed sepsis, 3.5% required mechanical ventilation, and jaundice requiring phototherapy in 3%. Anomalies were seen in 6 babies (1.5%) and 8 babies had neonatal death (2%)

Discussion

Oligohydramnios is a common complication seen during pregnancy. The finding of oligohydramnios can be associated

with fetal anomalies, pre mature rupture of membranes, uteroplacental insufficiency (e.g. growth retardation, postdatism, abnormal placentation, maternal systemic illness etc.), and multiple pregnancies or can be idiopathic. Ultrasound detection of this complication should prompt the clinician to thoroughly evaluate the mother for hypertension, diabetes or other medical comorbidities. In addition, a thorough fetal anatomic survey focusing on the genitourinary tract and an attempt at visualizing free amniotic bands should be performed with ultrasound. Oligohydramnios and perinatal morbidity and mortality has been well established by Manning et al. [7]

The incidence of oligohydramnios was 6.89% among the 5800 number of deliveries in our hospital in contrast to 3.8% observed by Rhoades JS et al. [8] The incidence of moderate oligohydramnios was 6.9% & of severe oligohydramnios was 1.3%. In our study population among the 400 pregnant women 202 women were primigravida & 198 were multigravida. In this study 28.5% percent of women were delivered by caesarean section. Results of Umber A and Jandial et al. showed significantly increased incidence of Caesarean section i.e 32% and non-reassuring fetal heart rate in women with low AFI [9]. Golan et al reported a low Apgar score at 5minute in 4.6% babies in contrast to a figure of 9.9% noted in our study. Casey et al reported 6.4% perinatal death. In our study perinatal mortality was 2%. [10]

Conclusion:

To conclude Oligohydramnios is associated with high rate of pregnancy complications and increased perinatal morbidity and mortality. AFI assessed ante partum, and intrapartum would help to identify women who need increased ante partum surveillance for pregnancy complications. Women with oligohydramnios usually have lower birth weight babies but can expect a safe and good outcome with proper fetal surveillance and timely intervention.

Proper antenatal care with emphasis on clinical, ultra sonographic assessment of liquor and preventing or early detection of antenatal complications like pregnancy induced hypertension, post term pregnancies etc. can probably reduce the incidence of oligohydramnios. Early interventions in the form of induction of labor, close intrapartum monitoring, artificial rupture of membranes in active phase of labor and early decision making regarding the mode of delivery can prevent poor maternal and perinatal outcome. In low resource settings timely referral to tertiary care centers with NICU facility will improve neonatal outcome.

Ethical approval: The study was approved by the Institutional Ethics Committee

Conflict of interest Authors declare that there is no conflict of interest

Statistical analysis: percentage was calculated out of total no. of deliveries in the study period.

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