

Clinical Significance of Oligohydroaminos in Term PregnancySurbhi Verma¹, Archana Sharma², Rajkumar Gurjar³, P K Bhatnagar⁴, Rambabu Sharma⁵¹PG Resident, Department of Obstetrics and Gynecology, PIMS, Udaipur²Associate Professor, Department of Obstetrics and Gynecology, PIMS, Udaipur³Assistant Professor, Department of Obstetrics and Gynecology, PIMS, Udaipur⁴Brigadier, Professor & Head, Department of Obstetrics and Gynecology, PIMS, Udaipur⁵Assistant Professor, Department of Microbiology, PIMS, Udaipur

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Conflict of interest: Nil

Abstract:

Background: Reduced amniotic fluid volume (AFV) for gestational age is known as oligohydramnios. Throughout the course of pregnancy, the volume of amniotic fluid varies, rising linearly until 34 to 36 weeks gestation, when the AFV levels off (about 400 mL) and stays stable until term. After 40 weeks of gestation, the AFV then starts to gradually decline, which results in post-term gestations having a smaller capacity. This pattern makes it possible to use fundal height measures and ultrasound scanning to clinically assess AFV during pregnancy.

Aims & Objectives: To Study mode of delivery and perinatal outcome in term pregnancy with borderline AFI.

Methodology: A prospective comparative study was conducted among 350 pregnant women admitted in ward of Obstetrics & Gynaecology, Pacific Institute of Medical Sciences, Umarda, Udaipur.

Results: Most of study participants were belonged to 21-25 years of age group. Only 13 patients in group A and 5 patients in group B were aged more than 30 years. There was no statistically significant difference found between mean age group among study participants. There was no association found between gestational age and presence of oligohydroaminos. In group A 10 patients and in group B 22 patients had required NICU admission. There was a statistically significant association found between NICU admission and presence of Oligohydroaminos.

Conclusion: Oligohydramnios, when equated with normal liquor volume is associated with increased incidence of Meconium staining of Amniotic fluid, Fetal distress and Caesarean delivery, as well as chances of mortality is also high.

Keywords: Amniotic fluid volume, Oligohydroaminos, Gestation, Complications.

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Introduction

Reduced amniotic fluid volume (AFV) for gestational age is known as oligohydramnios. Throughout the course of pregnancy, the volume of amniotic fluid varies, rising linearly until 34 to 36 weeks gestation, when the AFV levels off (about 400 mL) and stays stable until term. [1] After 40 weeks of gestation, the AFV then starts to gradually decline, which results in post-term gestations having a smaller capacity. This pattern makes it possible to use fundal height measures and ultrasound scanning to clinically assess AFV during pregnancy. [2]

Depending on the institution, the maximum vertical pocket (MVP) or the amniotic fluid index (AFI) are used in the transabdominal ultrasonography examination of AFV. MVP typically ranges from 2 to 8 cm; in both singleton and multifetal gestations, a pocket smaller than 2 cm is referred to as oligohydramnios [3,4] The definition of polyhydramnios is

an MVP > 8. An additional method of evaluating AFV is the amniotic fluid index (AFI). After 20 weeks of gestation, the uterus can be divided into four quadrants through the umbilicus, and the MVP in each quadrant can be used to calculate the AFI. The AFI is equal to the sum of the four largest vertical pockets. An AFI of less than 5 cm is in line with oligohydramnios. [5]

The balance between fluid production and fluid outflow from the gestational sac determines the amount of amniotic fluid present. Most of the amniotic fluid produced during the first 20 weeks is produced by lung secretions and the hydrostatic and osmotic transfer of maternal plasma through the foetal membranes. Foetal urine output starts to grow about week 16, when the foetal kidneys start to work and mostly replace amniotic fluid production until the gestation is at term. [6]

Oligohydramnios complicates 4.4% of all pregnancies at term. The incidence of oligohydramnios is less than 1% in preterm pregnancies. [7] In light of the finding that oligohydramnios, or reduced amniotic fluid content, when combined with other risk factors, is linked to an increased risk of neonatal morbidity and mortality, so measures of amniotic fluid volume have become common place in the assessment of high-risk pregnancies and foetal observation. When oligohydramnios is discovered in clinical settings involving foetal growth restriction, pregnancies that postdate or are complicated by maternal disease, it may be used as an indication for delivery because it may raise the risk of intrauterine foetal death or neonatal morbidity. The physiology of amniotic fluid volume, clinical techniques for measuring amniotic fluid volume, and clinical management of pregnancies compromised by oligohydramnios are all areas of significant controversy.

However, delivery has become standard practice following the discovery of oligohydramnios in otherwise straightforward term gestations, regardless of the existence of a reassuring foetal examination or the lack of maternal illness. In our evaluation, this could be considered overtreatment, which would have a negative impact on maternal morbidity, particularly when it comes to surgical delivery for unsuccessful (and potentially unwarranted) labour inductions. The clinical significance of oligohydramnios, the prediction of an increased adverse perinatal outcome, physiological dynamics and factors that may affect amniotic fluid volume, potential pitfalls in the sonographic assessment of amniotic fluid volume, and the mystery surrounding the clinical management of isolated oligohydramnios at term are all covered in this editorial. [8] Therefore this study aims to provide a light on association between borderline oligohydramnios and pregnancy outcome.

Aims & Objectives: To Study mode of delivery and perinatal outcome in term pregnancy with borderline AFI.

Methodology: A prospective comparative study was conducted among 350 pregnant women admitted in ward of Obstetrics & Gynaecology, Pacific Institute of Medical Sciences, Umarda, Udaipur.

Sample Size: 350 cases (175patients each for the 2 groups) (Group A –normal ANC women, and Group B – Oligohydroaminos) At α error 0.05 and power 95%, assuming difference in mean to be detected 0.5 with SD 0.95 as per seed article, so for

study purpose sample size 175 was taken for each group. Estimated for each group using following formula.

Formula: $n = Z^2 (SD)^2 / L$

Where- n =Sample size $Z=1.96$ (standard value), $SD=0.95$ (standard deviation), $L=0.12$ (length of confidential interval).

Inclusion Criteria:

- 1) Mother Age - 18-40 years.
- 2) Singleton Gestation with cephalic presentation.
- 3) Gestational Age: 37- 42 weeks.
- 4) Intact membranes.
- 5) AFI 5-8 cm & AFI 8-24 cm as controls

Exclusion Criteria:

- 1) Gestational Age <37 weeks.
- 2) High risk pregnancy
 - a) Preeclampsia
 - b) Diabetes
 - c) Chronic renal disease
 - d) Connective tissue disorder
- 3) Mal presentation
- 4) Uterine scar due to previous LSCS, myomectomy.

All pregnant female with normal AFI: 8.1 -24 cm and women with borderline oligohydramnios i.e AFI 5.1-8cm were selected. The informed written consent was obtained for the study. Detailed history & complete clinical examination was done. Both groups were followed up during labour & delivery & adverse perinatal outcomes like, Rates of Meconium Stained Amniotic Fluid (MSAF), Birth Weight <2.5 kg, Incidence of Fetal Distress, Rates of NICU Admissions and Neonatal deaths were noted. This study was approved by Institutional Ethical Committee of this institute. Written informed consent was taken prior to the study of each participants.

Data Collection and Analysis: Data was collected by case record form and entered into MS excel 2016. Data analysis was done in SPSS Software version 26.

Results

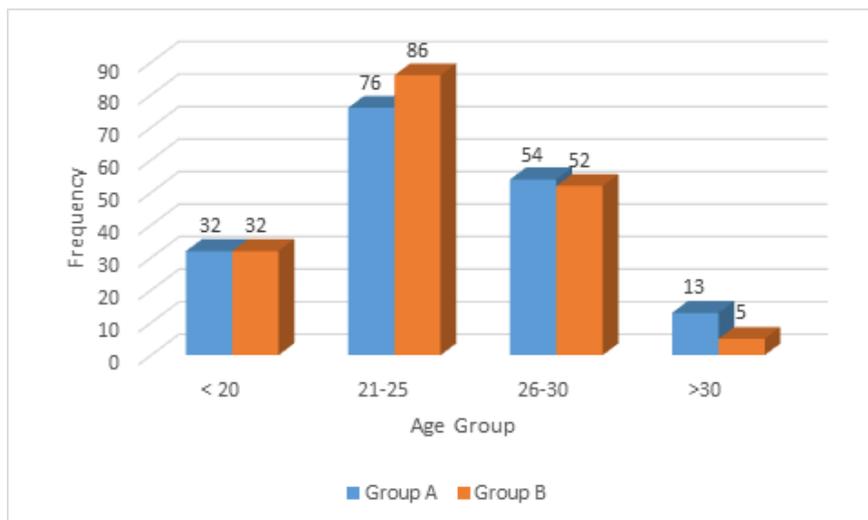


Figure 1: Age group wise distribution

Most of study participants were belonged to 21-25 years of age group. Only 13 patients in group A and 5 patients in group B were aged more than 30 years. [Figure 1]

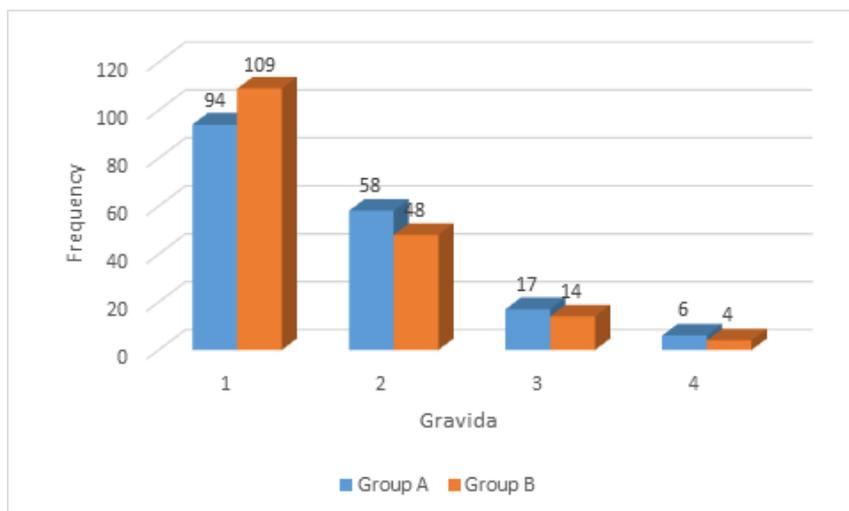


Figure 2: Gravida

Among the study participants, 53.7% in group A and 62.3% in group B had first gravida. Only 6 and 4 patients, respectively in group A & B had 4th Gravida. There was no association found between gravida and presence of oligohydroamios. [Figure 2]

Table 1: Mode of Delivery among study participants

Mode of Delivery	Group A		Group B		p-value
	Frequency	Percentages	Frequency	Percentages	
Assisted	31	17.7	21	12	0.0009
LSCS	26	14.9	55	31.4	
Normal	118	67.4	99	56.6	

Of total, in group A 17.7%, 14.9% and 67.4% cases ad respectively, assisted, LSCS and Normal mode of delivery. While in group B 12%, 31.4% and 56.6% cases ad respectively, assisted, LSCS and Normal mode of delivery. There was a significant association found between mode of delivery and presence of Oligoydroamios. [Table 1]

Table 2: Indication of LSCS among study participants

Indication of LSCS	Group A		Group B		p-value
	Frequency	Percentages	Frequency	Percentages	
CPD	9	5.1	10	5.7	0.180
Deep transverse arrest	1	0.6	4	2.3	
Fetal Distress	7	4	16	9.2	
Non progression of labour	7	4	10	5.7	
Non reassuring FHR	2	1.1	15	8.6	

Majority of cases in group A indicated LSCS due to CPD and in group B indicated LSCS due to fetal distress. 15 patients in group B had non reassuring FHR on examination so, indicated LSCS in emergency. There was no association found between indication of LSCS and presence of oligohydroaminos. [Table 2]

Table 3: Presence of MSAF among study participants

MSAF	Group A		Group B		p-value
	Frequency	Percentages	Frequency	Percentages	
Present	31	17.7	55	31.4	0.0028
Absent	144	82.3	120	68.6	

Out of total, in group A, 31(17.7%) and in group B 55(31.4%) cases had presence of Meconium-stained amniotic fluid. There was a significant association found between presence of MSAF and presence of Oligohydroaminos. [Table 3]

Table 4: Birth weight among study participants

Birth weight (in kg)	Group A		Group B		p-value
	Frequency	Percentages	Frequency	Percentages	
≤ 2	7	2	9	2.5	0.307
2.1-2.5	10	2.8	14	4	
2.6-3	134	38.2	138	39.4	
> 3	24	6.8	14	4	

Among the study participants, majority around 40% cases had birth weight in between 2.6-3kgs in both group. Only 7 cases in group A and 9 cases in group b had less than 2 kg birth weight. There was no association found between birth weight and presence of oligohydroaminos. [Table 4]

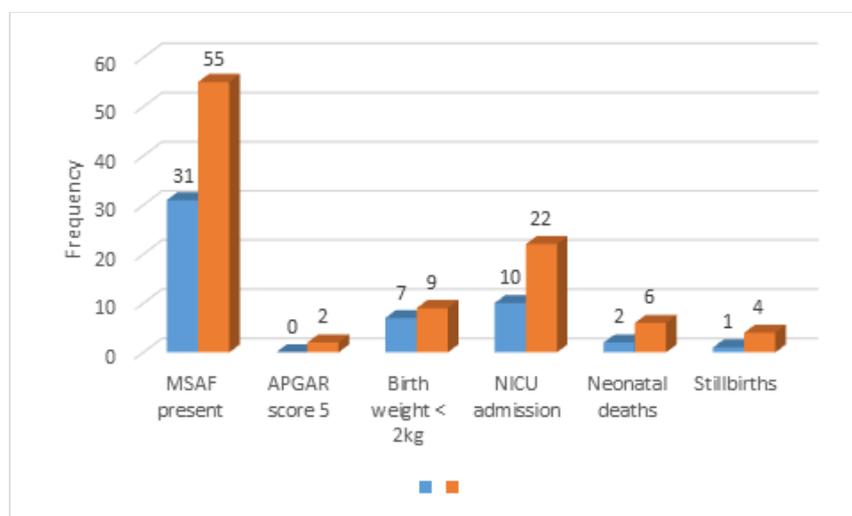


Figure 3: Outcome parameters

Among group A, total 31 cases had presence of MSAF, 7 cases had birth weight less than or equal to 2 kgs, 10 cases required NICU admission and 2 neonatal deaths and 1 stillbirth noted. Among group B, total 55 cases had presence of MSAF, 9 cases had birth weight less than or equal to 2 kgs, 22 cases required NICU admission and 6 neonatal deaths and 4 stillbirths noted. [Figure 3]

Discussion

Two groups were created out of the study population. Women with Normal AFI (5–25 cm) made up the first group, and women with Less AFI (5–8 cm) made up the second. Women were monitored throughout their prenatal and, crucially, intrapartum periods. CTG assisted in monitoring their

course of labour. At the time of the admission, all instances had spontaneous labour that was permitted to continue on its own. None of the study population required a labour induction. The ladies were only accelerated with syntocinon once they reached the active phase of labour. For every case, partograms were plotted, and labour was effectively monitored. For women whose amniotic fluid contained meconium staining and a reassuring CTG pattern during the active phase of labour, amnio-infusion was performed. The postpartum period was observed to track the newborn's condition at birth, including birth weight, APGAR score, and rates of NICU admissions. Quantification of amniotic fluid content is an essential component of prenatal foetal observation.

A study done by Kwon et al, [9] the reported incidence of Borderline Oligohydramnios was 6%, while in Jeng et al [10] and by Ulker et al [11] found the incidence of Borderline oligohydramnios was 10%. Meconium staining of amniotic fluid was a significant predictor of foetal discomfort. In our investigation, the rates of MSAF in women with borderline oligohydramnios during labour were 31.4%, which is more than the rates in women with normal AFI. According to studies by Nazlima et al., the rates of MSAF were 30.76% [12]. Research by Conway et al. [13] and Ghike et al. [14] revealed an incidence of 24% and 26.98%, respectively. According to this research, women with borderline oligohydramnios had greater incidences of MSAF than did women with normal AFI. Study by Kwon et al [9] did not reveal any significant difference in rates of meconium staining of amniotic fluid between women with borderline Oligohydramnios and women with normal AFI.

The current study found that the rate of caesarean sections among women with borderline oligohydramnios was 31.4%, which was substantially higher than the rates among women in the normal AFI group. Research by Patel et al [15] indicated that among women with borderline oligohydramnios, the rate of caesarean sections was 40.8% and 44%, respectively. According to research by Jamal et al, [16] women with borderline amniotic fluid volume had greater incidence of caesarean sections (26.3%) than women with normal amniotic fluid volume (11.2%). Compared to all other studies, the rate of caesarean sections among women with borderline AFI was 62%, according to studies by Nazlima et al. [12] This could be explained by the fact that oligohydramnios caused elective caesarean sections in 12% of instances. [17] The borderline Oligohydramnios group had a higher caesarean section rate, according to Luo et al. [18] However, in their study, the borderline Oligohydramnios group did not have an increased incidence of neonatal mortality or foetal distress.

There were notable variations in the rates of growth-restricted babies between the two groups in terms of perinatal outcome. Compared to women with normal AFI, there were more growth-restricted babies born to those with borderline AFI. Additionally, Blanks et al. found that among mothers with borderline oligohydramnios, the incidence of growth-restricted newborns was four times higher. [17]

In their analysis of the perinatal result in women with borderline AFI, Blanks et al. [17] found that the incidence of unfavourable perinatal outcomes was twice as high. Additionally, Kwon et al. [9] found that mothers with borderline AFI had a higher chance of NICU admission, as did newborns whose APGAR score was less than 7 at five minutes of life. Gumus and colleagues also noted a markedly elevated ratio of NICU hospitalisations among women who had borderline AFI. [19] APGAR score <7 at 5 minutes after birth did not differ between the two groups, according to Hashimoto et al., [20] but the Borderline AFI group had a higher rate of NICU admission (20.2%).

Conclusion

Therefore, from the result of current study, we concluded that Oligohydramnios, when equated with normal liquor volume is associated with increased incidence of Meconium staining of Amniotic fluid, Fetal distress and Caesarean delivery, as well as chances of mortality is also high. So, increased antenatal care and regular follow up is obligatory in cases with Oligohydramnios to escape adverse perinatal outcomes.

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