

Perinatal Outcome in Term Pregnancy with Isolated Oligohydramnios: Retrospective Observational Study

Adhikari A¹, Gurung TK¹, Adhikari SP²

ABSTRACT

Introduction: Isolated Oligohydramnios complicates 3 to 5% of pregnancy at term both in terms of fetal outcome and mode of delivery. **Aims:** To study the perinatal outcome in isolated oligohydramnios (Amniotic Fluid Index ≤ 8) and compare the outcome between Borderline (Amniotic Fluid Index = 5.1-8 cm) and Severe (< 5 cm) oligohydramnios. **Methods:** Retrospective observational study of pregnancy outcome with isolated oligohydramnios (Amniotic Fluid Index ≤ 8 cm) at term was carried out in Gandaki Medical College Teaching Hospital, Pokhara for one year from January 2019 to December 2019. Patients were divided into Borderline Oligohydramnios (Amniotic Fluid Index = 5.1 to 8 cm) and Severe Oligohydramnios (Amniotic Fluid Index ≤ 5 cm). The two groups were compared in terms of fetal outcome like: meconium passage, low birth weight, low APGAR (Appearance, Pulse, Grimace, Activity and Respiration) score at 1 and 5 min, Neonatal Intensive Care Unit (NICU) admission and neonatal death. Similarly mode of delivery was also compared. **Results:** There were total of 100 patients with isolated oligohydramnios. Of which 51(51%) were with Borderline Oligohydramnios and 49(49%) with Severe Oligohydramnios. The incidence of adverse perinatal outcome and caesarean delivery was high in patients with isolated oligohydramnios. When compared with the two groups there was significant difference in terms of meconium passage (11% vs 48.9%), low birth weight (5.8% vs 18%), low APGAR (Appearance, Pulse, Grimace, Activity and Respiration) score at 1 min (1.9% vs 14%), NICU (Neonatal Intensive Care Unit) admission (11% vs 67%) and Caesarean delivery (39% vs 79.5%). **Conclusion:** Isolated oligohydramnios at term has been associated with an increased risk for caesarean delivery for fetal distress and adverse perinatal outcomes. Severe oligohydramnios is a sensitive predictor for the adverse perinatal outcome both in terms of fetal outcome and termination of pregnancy.

Keywords: Amniotic Fluid Index, Isolated Oligohydramnios, Perinatal Outcome

Authors:

1. Dr. Ayushma Adhikari
2. Dr. Tika Kumari Gurung
3. Dr. Shree Prasad Adhikari

¹Department of Obstetrics and Gynecology, Gandaki Medical College and Teaching Hospital, Pokhara

² Paropakar Matri Sishu Hospital, Thapathali, Kathmandu, Nepal

Address for Correspondence:

Ayushma Adhikari

Lecturer

Department of Obstetrics and Gynecology

Gandaki Medical College and Teaching Hospital

Pokhara, Gandaki State, Nepal

Email: ayushmanpj@gmail.com

INTRODUCTION

Amniotic fluid is a clear fluid that surrounds the fetus, collects within the amniotic cavity, increases as pregnancy progresses until about 34 weeks when there is decrease in volume.¹ Oligohydramnios is defined as an AFI $\leq 5^{\text{th}}$ centile for gestational age, AFI ≤ 50 mm or maximum vertical pocket devoid of umbilical cord or fetal limbs measuring < 30 mm, in presence of intact membrane.² Borderline oligohydramnios is described as AFI of 5.1 to 8 cm.^{3,4,5} Oligohydramnios complicates 3 to 5% of pregnancy at term.² Some authors state that such pregnancies are at an increased risk of adverse perinatal outcome such as fetal distress in labor, induction of labor, cesarean delivery for fetal distress, meconium passage, low Apgar score

and neonatal resuscitation or neonatal intensive care unit admission.^{6,7,8,9} Hence the study was carried out to study the association between isolated oligohydramnios at term and adverse perinatal outcome in terms of fetal outcome and mode of termination of pregnancy. Besides this study also compared the outcomes between different grades of oligohydramnios.

METHODS

Retrospective observational study was carried out in the department of Obstetrics and Gynecology, Gandaki Medical College and Teaching Hospital (GMCTH), Pokhara during one year period from January 2019 to December 2019 in term pregnant patients admitted with AFI ≤ 8 cm. An approval from

Institutional Review Committee (IRC) was taken to carry out the study. Inclusion criteria for the study population was women who completed 37 weeks of gestation with AFI \leq 8 cm irrespective of age and parity. Pregnancy with medical disorders like diabetes, hypertension, renal disease, premature rupture of membrane, preterm delivery, multiple pregnancy, malpresentation, fetal malformation, Intrauterine Growth Retardation or intrauterine fetal death were excluded from the study. Amniotic fluid measurement were performed by ultrasound on study patients by radiologist of the hospital. All the patients' details fulfilling inclusion criteria were filled in the predesigned proforma. Group having AFI ranging from 5.1cm to 8cm was considered as Borderline oligohydramnios (BH) and other group having AFI \leq 5 cms was considered as severe oligohydramnios (SH). Details like any history of previous pregnancy complicated by oligohydramnios, fundal height, lie, presentation, per vaginal leaking was taken. Regarding the fetal outcome details were noted in terms of: Fetal Weight, Apgar score at 1 and 5 min, Color of the liquor, admission in neonatal intensive care unit, early neonatal death. Similarly mode of delivery was also noted. Statistical analysis was done by SPSS software version 22.0. The results were statistically analysed using Z test to look for the significant difference between different variables in two different groups. P value of <0.05 was considered significant.

RESULTS

Total of 100 patients with oligohydramnios were included in the study fulfilling the inclusion criteria. Among them 51 patients were borderline oligohydramnios and 49 patients were severe oligohydramnios. The outcomes between both the oligohydramnios have been depicted in the Table I and results are discussed henceforth.

Outcomes	Oligohydramnios (N=100)	BH (n=51) (51%)	SH (n=49) (49%)	P value
Caesarean section	59 (59%)	20 (39%)	39 (79.5%)	<0.00001 . (S)
Meconium	30 (30%)	6 (11%)	24 (48.9%)	<0.00001 . (S)
APGAR score <6 at 1 min	8 (8%)	1 (1.9%)	7 (14%)	0.023 (S)
APGAR score <7 at 5 min	2 (2%)	0 (0%)	2 (4%)	0.1443 (NS)
Birth weight <2.5 kg	12 (12%)	3 (5.8%)	9 (18%)	0.027 (S)
NICU admission	39 (39%)	6 (11%)	33 (67%)	<0.00001 (S)

*S: Significant, NS: Not Significant

Table I: Showing outcomes in women with Borderline and Severe Oligohydramnios

Table I showed the frequency distribution of mode of delivery like caesarean section, meconium, low apgar score at 1 and 5 min, birth weight <2.5 kg and NICU admission in patients with isolated oligohydramnios at term. Among them incidence of Caesarean section, meconium passage and NICU admission was the highest than the other parameters in isolated oligohydramnios. Similarly there was significant difference between the Borderline Oligohydramnios and Severe Oligohydramnios in terms of delivery mode like caesarean section for fetal distress, meconium, APGAR score <6 at 1 min, Birth weight <2.5 kg and NICU admission.

DISCUSSION

Isolated oligohydramnios has been associated with adverse perinatal outcome in terms of mode of delivery by caesarean section for fetal distress, meconium passage, low APGAR score at 1 and 5 min, low birth weight and NICU admission. In our study, the incidence of Borderline Oligohydramnios is 51% and severe oligohydramnios is 49%.

The incidence of caesarean section in isolated oligohydramnios is 59%(N=100) whereas SH is almost double than the BH (79.5% vs 39%, $p<0.00001$) and significantly different. The incidence of LSCS in severe oligohydramnios group was comparable with other studies done by Akhtar et al¹⁰ (70%) and Bacchav et al¹¹ (66%). The indication for LSCS in oligohydramnios is fetal distress most of the time followed by thick meconium stained liquor. Meconium stained liquor was found in 30 cases(30%), 24(48.9%) were in SH and 6(11%) in BH with significant difference between the two. Similarly Nazlima et al¹² and Chate P et al¹³ found the incidence of meconium to be 30% and 46% respectively. Meconium stained liquor is significantly high in severe Oligohydramnios. There were no cases of meconium aspiration syndrome in our study.

The effect of oligohydramnios is also reflected in APGAR score. In our study there were 8(8%) newborns with APGAR score <6 at 1 min, out of which 7(14%) were with severe oligohydramnios. APGAR score <7 at 5 min was seen in only 2(2%) newborns which were with severe oligohydramnios. Severe oligohydramnios was associated with significant low APGAR score at 1 min but with good resuscitation, APGAR score <7 at 5 min were low and doesn't show any significant difference between the two groups. Chate et al¹³ demonstrated APGAR score <7 at 1 min in 30 % of cases and APGAR score <7 at 5 min in 16 % cases which is higher than our study. Similarly Alchalabi et al¹⁴ also revealed 26% had low APGAR score at 1 min and 2% with low APGAR score at 5 min. Our study doesn't seem to have overall low APGAR score at 1 min and 5 min owing to the low threshold for LSCS in patients with oligohydramnios. Most of the times patients were taken for immediate LSCS once severe oligohydramnios has been diagnosed. There was no neonatal death in our study.

Low birth weight was seen in 12(12%) cases. Among them 9(18%) were in SH and 3(5.8%) in BH. Incidence of low birth weight was significantly higher in SH groups than the BH group in our study. Alchalabi et al¹⁴ found no significant difference

between the two groups in their study. But Locatelli et al¹⁵ demonstrated neonates with birth weight <10th percentile (13.2% vs 5.5%, p<0.001) were significantly higher in the SH group compared to the BH group. In a study done by Zhang et al¹⁶ found that isolated oligohydramnios was not associated with impaired fetal growth or an increased risk of adverse perinatal outcomes. Factors contributing for low birth weight could be due to premature rupture of the membranes, congenital anomalies, diabetes, hypertension, postdate and intrauterine growth retardation. Similarly in a systematic review and meta-analysis done by Rabie et al¹⁷ demonstrated that isolated oligohydramnios has been associated with LSCS delivery, meconium aspiration and NICU admission but infant with low birth weight was associated in oligohydramnios with comorbidities. NICU admission was in 39(39%) of neonates, out of which 33(67%) were with SH and 6(11%) were in BH. NICU admission was significantly higher in SH groups. Our result is consistent with the study done by Rabie et al which is a systematic review and meta-analysis from 1980 to 2015.

LIMITATIONS

Since it is retrospective study with small sample size a prospective study with larger sample size would have been a better study.

CONCLUSION

Isolated oligohydramnios at term has been associated with an increased risk for caesarean delivery for fetal distress and adverse perinatal outcomes. Severe oligohydramnios is a sensitive predictor for the adverse perinatal outcome both in terms of fetal outcome and termination of pregnancy. Hence, timely intervention by LSCS once the diagnosis of oligohydramnios has been established could help in preventing adverse perinatal outcomes.

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