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Research Article

EVALUATION OF MATERNAL AND FETAL OUTCOME IN PREGNANT WOMEN PRESENTING WITH ISOLATED OLIGOHYDRAMNIOS AT 40 WEEKS AND BEYOND

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ABSTRACT
Introduction: Oligohydramnios (AFI<5) is considered a risk factor for adverse fetal outcome as well as an indicator of the possible presence of maternal and /or fetal comorbidities. Hence, the identification of oligohydramnios usually mandates close fetal surveillance. Isolated oligohydramnios (IO) refers to the presence of oligohydramnios without fetal structural and chromosomal abnormalities, without fetal growth restriction, without intrauterine infection, and in the absence of known maternal disease. However recent evidences suggest that in pregnancies with no underlying disorder, isolated oligohydramnios is not related to adverse perinatal outcome than pregnancies with normal amniotic fluid. Hence this study was undertaken to find the maternal and fetal outcome in patients with isolated oligohydroamnios in 40 weeks and beyond pregnancy and to compare it with gestational age matched patients with normal liquor volume. *Material and Methods:* This was a prospective study carried out in Obstetrics and Gynecology department, Hindu Rao hospital and NDMC Medical College. 50 women with gestational age 40 weeks and beyond with Isolated Oligohyroamnios were taken as case and 50 women at similar gestation age with normal amount of liquor volume were taken as control. Maternal and fetal outcome was studied and compared in both groups. *Results:* Mean age of cases and controls was 24.7 years and 24.4 years respectively (p-0.65). Oligohydramnios was found to be associated with primi-parity (64% cases and 38% controls) as compared to multi-parity (36% cases and 62% controls). Mean AFI among cases was 3.73 while Mean AFI among controls was 7.73. In case group 22% patients went into spontaneous labour as compared to 52% in controls, the difference was statistically significant (p-0.046). Induction of labour was required in 64% in case group as compared to 42% control group, statistically significant ($p<0.05$). Abnormal Doppler was seen more in subjects with oligohydramnios (34%) as compared to controls (14%) statistically significant ($p<0.034$). Mean birth weight of cases and controls was 2.83 Kg and 2.90 Kg respectively (p-0.359). Apgar score of less than 7 at 5 minutes was seen in 2% cases and 0% controls respectively (p-1.0). Incidence of meconium stained liquor was 18% in cases as compared to 8% controls, statistically non-significant (p-0.24). 18% newborns among cases required NICU admission as compared to 10% among controls. The difference was statistically non-significant (p-0.3880). No perinatal death was observed in any of the group. *Conclusion:* Pregnancies with isolated oligohydramnios at or beyond 40 weeks are not associated with unfavorable maternal or perinatal outcome. Rate of caesarean section is increased in case group but with Intensive fetal monitoring and expectant management in patients with IO led to spontaneous labour in significant number of patients, thereby decreasing maternal morbidity and improving future obstetric outcome.

Keywords: *Isolated Hydroamnios, Amniotic Fluid Index*

INTRODUCTION
Amniotic fluid volume is now recognized as an important marker of fetal well-being. It plays a vital role in the normal growth of the fetus, promotes muscular-skeletal development and allows for easier fetal movement. Amniotic fluid volume rises to a plateau between 22 to 39 weeks of gestation reaching up to 700 to 800 ml, which corresponds to amniotic fluid index of 14 to 15 cm (Ever, 2003). After 40 weeks

amniotic fluid decreases at a rate of 8% per week and averages, only 400-450 ml at the end of the 42 weeks and reduces further at 43 and 44 weeks (Brace *et al.* 1989). Oligohydramnios is defined as AFI≤ 5cm, which is calculated as the sum of deepest vertical dimension in each quadrant of uterus on ultrasound (Manning *et al.,* 1986). It is considered a risk factor for adverse fetal outcome, as well as an indicator of the possible presence of maternal and/or fetal comorbidities. Oligohydramnios or decrease in amniotic fluid volume has been correlated with increased risk of intrauterine growth restriction, meconium aspiration syndrome, severe birth asphyxia, low Apgar scores and congenital abnormalities (Chauhan *et al.,* 1999), hence the identification of oligohydramnios usually mandates close fetal surveillance.

Isolated oligohydramnios (IO) refers to the presence of oligohydramnios without fetal structural and chromosomal abnormalities, without fetal growth restriction, without intrauterine infection, and in the absence of known maternal disease. The incidence of IO ranges from 0.5 to 5% depending on the definition used and the population studied (Ever HF 2003, Nicolini *et al.,* 1989). Recent evidences suggest that in pregnancies with no underlying disease or disorder, isolated oligohydramnios is not related to adverse perinatal outcome than pregnancies with normal amniotic fluid. The optimal management of term and post term pregnancies with isolated oligohydramnios is controversial (Rossi *et al.,* 2013). It is well established that oligohydramnios is associated with an increased incidence of adverse perinatal outcome, possibly as a result of umbilical cord compression, an associated utero-placental insufficiency, and/or meconium-stained amniotic fluid (MSAF). Therefore, recommendations for labour induction at term have evolved in an attempt to reduce the incidence of these adverse outcomes. In 2013, Rossi and Prefumo published a systematic review and meta-analysis focusing on perinatal outcomes of IO and concluded that in term and post term pregnancies, IO was associated with an increased risk of obstetrical interventions but not with adverse neonatal outcome.

Aim

To know the maternal and fetal outcome in pregnant women with isolated oligohydramnios at 40 weeks and beyond pregnancy and compare it with pregnant women with normal liquor volume.

MATERIALS AND METHODS

This was a prospective study carried out in tertiary care center in Department of Obstetrics and Gynecology during the period between 2016 - 2018 in Hindu Rao hospital and NDMC Medical College after ethical clearance. 50 patients with gestational age 40 weeks and beyond with isolated oligohydramnios and 50 patients with normal liquor volume of similar gestational age were included in the study after informed consent.

Case**:** Pregnant women at gestational age of 40 weeks and beyond either by LMP or by USG or both as available with single live intrauterine fetus with cephalic presentation with intact membrane and no additional high risk factors and detected to have isolated oligohydramnios.

Control: Pregnant women at gestational age of 40 weeks and beyond either by LMP or USG or both as available with single live intrauterine fetus with cephalic presentation with intact membrane and no additional high risk factors with normal amniotic fluid volume.

Pregnant patients with high risk factors or any other medical or surgical co- morbidity were excluded from study. Patients who fulfilled the inclusion criteria were enrolled in the study. Pre structured Performa were used to record the details of the patients. Detailed history of the patient including age, demographic profile, obstetric history, menstrual history, past history and family history were taken. After a detailed history, general physical examination per abdomen and systemic examination was done. Patients in oligohydramnios group (case group) were followed with maternal hydration by plenty of oral fluids and Fetal surveillance done with daily fetal movement count (DFMC), non-stress test (NST), biophysical profile (BPS), Doppler studies biweekly (Singh *et al.,* 2016, Hofmeyer *et al.,* 2002,). Patient with normal Doppler findings and NST pregnancy was continued till 41 weeks and was offered termination at 41 weeks, if they did not go into spontaneous labour. Patient with deranged Doppler or

decreased fetal movements or AFI<2 or deranged BPS or non-reactive NST or with any other new complication was offered termination of pregnancy. Patients in control group with normal liquor volume were also followed by Doppler blood flow studies, CTG and BPS as per need and were offered termination at 41 weeks if they do not go into spontaneous labour as per hospital protocol. Decision of delivery for any case i.e. either for spontaneous onset of labour, induction of labour or elective LSCS or emergency LSCS were done as per requirement and depending upon the feto-maternal surveillance and monitoring.

Maternal outcome was taken as spontaneous delivery, induced labour, operative vaginal delivery and caesarean section. Fetal outcome was taken as birth weight, liquor either clear or meconium stained, fetal distress, Apgar score and NICU admission.

Analysis of data was carried out by using SPSS software version. The significance threshold of p-value was set at <0.05.

RESULTS

Total 100 patients were included in the study, of which 50 were cases of oligohydramnios and 50 were controls with normal liquor volume. Mean age group in cases and control were 24.7 years and 24.4 years respectively (p-0.65). Oligohydramnios was found to be associated with primi-parity (64% cases and 38% controls) as compared to multi-parity (36% cases and 62% controls). Mean AFI was 3.73 +/- 0.983 in case group while in control group mean AFI was 7.73 +/-1.49. There was no difference in gestational age at delivery in both the groups.

Table 1. Comparison of age in study groups

Age group	Cases	Control	p- value
mean±SD	24.7±3.7	24.4±3.33	0.65

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Table 2. Comparison of study groups according to parity

Parity	Cases	Control	Total
Primi	64.0%	38.0%	51.0%
Multi	36.0%	62.0%	49.0%
p<0.05			

Table 3. Distribution of cases as per AFI levels

AFI (cases)	**N**	**%**
Nil	1	2.0%
</= 2	6	12.0%
2.1 to 4	27	54.0%
4.1 to 5	16	32.0%
Total	50	100.0%
Mean AFI - 3.73 +/- 0.98		

Table 4. Distribution of controls as per AFI levels

AFI (controls)	N	%
5 to 8	36	72.0%
8.1 to 11	13	26.0%
> 11	1	2.0%
Total	50	100.0%
Mean AFI - 7.73 +/- 1.49		

Table 5. Comparison of study groups based on Doppler findings

Doppler	Group		Total
	Cases	Controls	
Abnormal	34.0%	14.0%	24.0%
Normal	66.0%	86.0%	76.0%
p- 0.034			

Table 6. Comparison of study groups based on mode of delivery

Mode of Delivery	Group		Total
	Cases	Controls	
Spontaneous Vaginal (including instrumental)	20.0%	40.0%	30.0%
Induced Vaginal	40.0%	30.0%	35.0%
LSCS	40.0%	30.0%	35.0%
p - 0.046 (Spontaneous vs Non spontaneous)			

Caesarean section rates and induced vaginal deliveries were significantly more in cases of oligohydramnios as compared to controls (40% each versus 30% each).Most common indication for induction of labour in both groups was abnormal Doppler, late term and decreased fetal movements. Most common indication for induction of LSCS in both groups were: fetal distress, failed induction and abnormal NST.

Table 7. Comparison of study groups based on birth weight

	Group		
Birth weight in KG	**cases group**	**control group**	**p value**
Mean±S.D	2.8±0.41	2.90±0.39	p - 0.359

Table 8. Comparison of study groups based on APGAR at 5 minutes

APGAR at 5 minutes	Group		Total
	Cases	Controls	
<7	2.0%	0.0%	1.0%
>/= 7	98.0%	100.0%	99.0%
p -1.0			

Table 9. Comparison of study groups based on presence of Meconium stained liquor (MSL)

MSL	Group		Total
	Cases	Controls	
Yes	18.0%	8.0%	13.0%
No	82.0%	92.0%	87.0%
p - 0.24			

Table 10. Comparison of study groups based on requirement of NICU admission for newborn

NICU Admission	Group		Total
	Cases	Controls	
Yes	18.0%	10.0%	14.0%
No	82.0%	90.0%	86.0%
p - 0.388			

DISCUSSION

Total 100 patients with 50 cases of isolated oligohydramnios and 50 cases of normal liquor volume at 40 weeks and beyond gestation were taken for study. Mean age of cases and controls was 24.7 years and 24.4 years respectively (p-0.65) statistically not significant. Sowmya *et al.,* (2014) also observed the mean age as 22.86 years among cases and 23.08 years among controls with no difference statistically. Oligohydramnios was found more associated with primigravida (64% cases and 38% controls) as compared to multigravida (36% cases and 62% controls) in our study which was statistically significant. Singh *et al.,* (2016) also observed the mean age among cases of oligohydramnios as 23.02 years with significant association of oligohydramnios with primigravida (61%).

Majority of patients delivered at gestational age between 40 to 40+6 weeks (76% v/s 74%) in both the groups. Locatelli *et al.,* (2004) (10) found significant difference in Gestational age at delivery, nulliparity and induction of labor in cases with oligohydramnios and those with normal AFI (all p<0.001). In our study, patients in case group with AFI <5 at gestational age 40 weeks and beyond with normal Doppler and reactive NST were also managed expectantly in the same manner as in control group so no significant association was observed between case and control group in relation to the gestational age at delivery.

In case group, 22% women went into spontaneous labour as compared to 52% in control group and statistically significant (p 0.046). Spontaneous labour was higher in control group but because of intensive feto-maternal surveillance and expectant management, significant number of patient (22%) also went into spontaneous labour in case group thereby decreasing number of induction of labour, further decreasing caesarean section and improving future obstetric outcome. Induction of labour was required in

64% among cases as compared to 42% in controls and was statistically significant (p-0.04). The common indication for induction of labor in both groups was abnormal Doppler (24% in cases and 10% in control group). Vishalakshi *et al.,* (2018) and Ashwal E *et al.,* (2014) in their study also observed induction of labour to be significantly more in the study group as compared to controls (63% versus 47%) and (27.7 vs. 3.7 %), p< 0.01) respectively. Kavitha G *et al.,* (2015) also found more induction of labour in oligohydramnios group (28%) versus (2%) in control group.

Incidence of caesarean section was higher among cases of oligohydramnios (40%) as compared to30% among controls. Ashwal E *et al.,* (2014) and Kavitha G et al. (2015) in their study also observed that isolated oligohydramnios was associated with a higher rate of Caesarean section (p- 0.046). Vishalakshi *et al.,* (2018) also found increased incidence of caesarean-sections in oligohydramnios group (61% versus 25%) which is consistent with our study. Fetal distress was the main indication in all the above studies. Most common indication for cesarean section were fetal distress, failed induction and abnormal NST in the present study.

In present study, abnormal Doppler was seen in significantly more number of patients with isolated oligohydramnios (34%) as compared to controls (14%), (p<0.034) statistically significant. Doppler velocimetry of the umbilical artery must be performed and an increased S/D ratio in cases of isolated oligohydramnios helps to identify fetus at risk. Sowmya *et al.,* (2014) observed abnormal Doppler findings in 26.4% cases as compared to 7.14% controls. Patel P *et al.,* (2015) also observed that subjects with isolated oligohydramnios were associated with an increased incidence of Doppler abnormalities with no differences in maternal or perinatal outcome.

There was no significant difference between the birth weights of neonates in both the groups in our study Mean birth weight ± S.D kg in cases and controls were2.83±0.41) kg and 2.9±0.39 kg) respectively (p 0.359). Conway *et al.,* (1998) and Patel *et al.,* (2015) in their studies also observed no difference between the cases and controls as regards to birth weight of neonates (p>0.05). Apgar score of neonates at less than 7 at 5 min was seen in 2% cases and 0% controls respectively (p-1.0). Similarly no difference in APGAR was observed in the studies by Ahmed *et al.,* (16), Sowmya *et al.,* (2014), Vishalakshi *et al.,* (2018), Kavitha G *et al.,* (2015) and Patel P *et al.,* (2015) as seen in our study. Incidence of meconium stained liquor was 18% in case group as compared to 8% in control group (p - 0.24). Though incidence is higher in case group but statistically non-significant and was not associated with adverse perinatal outcome. Similarly no difference in meconium staining of liquor was observed by Ahmed *et al.,* (2009), Sowmya K *et al.,* (2014), Kavitha G *et al.,* (2015) and Patel P *et al.,* (2015) in their studies.

No statistically significant difference between case group and control group with respect to incidence of NICU admissions (18% versus 10%) (p-0.388). Conway *et al.,* (1998) and Patel P *et al.,* (2015) also observed no difference between the cases and controls as regards to incidence of fetal distress or NICU admissions (p>0.05) in their study which is comparable to our study. No perinatal death was observed in any of the groups in our study. Thus the present study observed that pregnancies with isolated oligohydramnios at or beyond 40 weeks period of gestation with proper monitoring are not associated with adverse maternal or perinatal outcome. The limitation of the study was that it was conducted in single center with small sample size which might not be a representative of whole population.

CONCLUSION

Present study observed that pregnancies with isolated oligohydramnios at or beyond 40 weeks are not associated with unfavorable maternal or perinatal outcome. Rate of cesarean for fetal distress is increased. Though spontaneous labour was lower in case group but because of intensive feto-maternal surveillance and expectant management, significant number of patient with oligohydramnios went into spontaneous labour, thereby decreasing induction of labour and caesarean section rate in isolated oligohydramnios. As per neonatal outcomes, the incidence of low birth weight, meconium stained liquor, fetal distress and neonatal were also comparable among case and control group. The present study thus concludes that isolated oligohydramnios in the otherwise normal term pregnancy may not be a marker for fetal

compromise and induction of labor may therefore not be required in all the cases. Antepartum diagnosis of isolated oligohydramnios at term warrants close feto - maternal surveillance and timely intervention and thereby decreasing maternal morbidity and improving future obstetric outcome.

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