

**Original Article**

**Oligohydramnios at third trimester and perinatal outcome**

*Nazlima N<sup>1</sup>, Fatima B<sup>2</sup>*

**Abstract**

**Objectives:** The purpose of this study to assess the effect of oligohydramnios on perinatal outcome especially at third trimester of pregnancy. **Methods:** This prospective and observational study was conducted in a private specialized hospital at Dhaka city from January to December 2009. In this study 78 singleton pregnant females with gestational age from 28 - 42 weeks with less amniotic fluid index (AFI) were analyzed for perinatal outcome. Data were expressed as number (percentage). Proportion test was performed for comparison between two groups, P value <0.05 was taken as level of significance. **Results:** Women with oligohydramnios were significantly associated with an abnormal antepartum fetal heart rate (FHR), meconium stained fluid, Apgar score less than 7 or NICU admission. Also subjects with AFI of 5.0 cm or less had a higher rate of cesarean section for fetal distress. **Conclusions:** Antepartum oligohydramnios is associated with an increased risk of fetal heart rate abnormalities. Although in our population it is not predictive of adverse perinatal outcome as measured by low apgar score and NICU admission, yet this may be reflective of the aggressive antepartum and intrapartum management that these patients received.

**Keywords :** Oligohydramnios, perinatal outcomes.

**Introduction**

Oligohydramnios means too little amniotic fluid. It is a condition where the liquor amnii is deficient in amount to the extent of less than 200 ml at term<sup>1</sup>. About 8% of pregnant women can have low levels of fluid, with about 4% being diagnosed with oligohydramnios. Amniotic fluid can be measured by a few different methods, most commonly through amniotic fluid index (AFI) evaluation or deep pocket measurements. If an AFI shows a fluid level of less than 5 centimeters (or less than the 5th percentile), the absence of a fluid pocket 2-3cm in depth, or a fluid volume of less than 500ml at 32-36 weeks of gestation, then a diagnosis of oligohydramnios would be suspected.<sup>2</sup>

Oligohydramnios is associated with increased pregnancy complications, congenital anomalies and perinatal mortality and morbidity. Multiple studies done on oligohydramnios. This study also done to assess the effects of oligohydramnios on perinatal outcome at 3rd trimester of pregnancy based on amniotic fluid index.

**Materials and methods**

This is a prospective study. A total of 570 pregnant women from January 2009 to December 2009 were admitted in Ibn Sina Hospital. This private specialized hospital is situated at Dhanmondi, Dhaka. The hospital offers specialized services in Medicine, Surgery, Paediatrics and Obstetric and Gynaecology. In this prospective study 78 singleton pregnant females with gestational age between 28 -42 wks with less amniotic fluid were analyzed for perinatal outcome.

For the purpose of this study oligohydramnios is defined as when clinically an amniotic fluid was suspected to be reduced and sonographically AFI was less than 8 cm.

Pregnant women having normal amniotic fluid volume with medical complications like gestational diabetes mellitus, hypertension, heart disease or any obstetric complications like preeclampsia, eclampsia, multiple pregnancy, antepartum hemorrhage etc were excluded from this study.

1. Nazlima Nargis, Assistant Professor, Department of Obstetric and Gynaecology, ibn Sina Medical College Hospital.
2. Fatema Begum, Professor, Department of Obstetric and Gynaecology, ibn Sina Medical College Hospital.

**Corresponds to:** Dr. Nazlima Nargis, Assistant Professor, Department of Obstetric and Gynaecology, ibn Sina Medical College Hospital. **E-mail:**adelbd@live.com

A written informed consent was taken at the study entry and baseline demography, post obstetrics and medical history were recorded in a data sheet. clinically suspected cases of oligohydramnios were sonographically by measuring AFI. Previous sonographic report if available, also recorded.

By transabdominal ultrasonography AFI index was measured by four-quadrant technique by dividing the uterus into four quadrants. The transducer was placed on the maternal abdomen along the longitudinal axis. The vertical diameter of the largest amniotic fluid pocket in each quadrant was measured with the transducer head held perpendicular to the foot. These measurements were summed in centimeter and the result was recorded as the amniotic fluid index (AFI).

On admission, fetal surveillance was done by BPP, which included foetal cardiotocography (CTG) and ultrasonography.

**Table-1 Characteristics**

	Number	Percentage (%)
Age group		
18-20	15	19.23
21-25	36	46.15
26-30	18	23.07
>30	09	11.53
Parity		
Nulliparous	28	35.89
Multiparous	50	64.10
Education		
Upto SSC	35	44.87
>SSC	43	55.12
AFI on admission		
5.1-8cm (Borderline oligohydramnios)	58	74.35
<5cm (severe oligohydramnios)	20	25.64
EGA at delivery (Wk)		
<37 completed wks	53	67.94
>37 completed wks	25	32.05
Mode of delivery		
Vaginal delivery	22	28.20
Caesarean section	56	71.79

**Table VI : Perinatal outcome ( N=78)**

Disease	Number	Conservative treatment	Admission
Birth weight			
<2500 gm	51 (65.38%)		
>2500 gm	27 (34.61%)		
Apgar score <7 at 5 minutes	21 (26.9%)		
Birth Asphyxia	12 (15.38%)	7 (8.9%)	6 (7.6%)
Meconium aspiration syndrome	8 (10.2%)		8 (10.2%)
Early neonatal death	1 (1.2%)		1 (1.2%)
Still birth	1 (1.2%)		

Fetal heart rate was monitored by CTG. It was done for 20 minutes. Baseline FHR, beat to beat variability acceleration and decelerations were observed. Variable deceleration or late deceleration or prolonged bradycardia was the indicator of foetal distress and these had influenced the pattern of management towards caesarean section. Gestational age at the time of delivery was recorded.

Liquor was assessed (volume, colour etc) at the time of rupture of the membranes, during labour and at the time of lower uterine caesarean section (LUCS). Mode of delivery, either normal or assisted vaginal delivery or caesarean section was recorded. APGAR score and neonatal birth weight also recorded.

All relevant information recorded were appropriately analysed by SPSS methods.

**Table-II: Cardiotocography (CTG) on admission (N-78)**

CTG	Number	Percentage (%)
Normal CTG	26	33.33
Abnormal CTG	52	66.66

**Table-III: Colour of liquor at the time of rupture of membrane**

Colour of liquor	Number	Percentage (%)
Normal colour	54	69
Meconium stained colour	24	30.76

**Table IV: Indications of caesarian section (N=56)**

Indications	Number	Percentage (%)
Foetal distress	46	58.97
Elective C/S	10	12.82

**Table V: Comparison of caesarean section between borderline and severe oligohydramnios –**

Oligohydramnios	C/S	NVD	P-value
Borderline Oligohydramnios (N=58)	36	22	X <sup>2</sup> = 11.67; P < 0.001
Severe Oligohydramnios (N=20)	20	0	

## **Results**

A total of 570 Pregnant women were admitted during this 12 months period. Among them 78 were diagnosed as oligohydramnios.

Table -I shows characteristics of pregnant mother including age, parity, educational status, AFI on admission, estimated age of delivery and mode of delivery.

Mean age of the patients was 24.583.99 SD and of all these 46.15% were between 21-25 years. 36% patients were nulliparous and 64% patients were multiparous. Among 78 pregnant women borderline oligohydramnios was 74% and severe oligohydramnios was 25%. About 68% patients were delivered less than 37 completed weeks i.e. preterm delivery. In most of the cases( 72% ) delivery was caesarean section and 51% caesarian section was due to fetal distress (table -IV ). Table -II shows 33% normal CTG and 66% abnormal CTG on admission .Table -III indicates colour of the liquor. At the time of membrane rupture colour of the liquor was found normal in 69% cases and 31 % cases was meconium stained.

Table -V shows that caesarean section was significantly higher in severe oligohydramnios group than in borderline oligohydramnios group. Table - 6 shows perinatal outcome including birth weight, Apgar score, meconium aspiration syndrome and NICU admission. Among 78 babies low birth weight baby was 65%. Apgar score <7 at 5 minute was found in 21 babies. Among 78 babies 15% suffered from respiratory distress and 10% from meconium aspiration syndrome. 15 neonates were admitted in neonatal ward with these complications.

## **Discussion**

It is well established that oligohydramnios is associated with high risk adverse perinatal outcomes. On the other hand, oligohydramnios is a poor predictor for adverse outcomes.<sup>4</sup> But oligohydramnios is often used as an indicator for delivery. So assessment of amniotic fluid volume in antenatal period is a helpful tool in determining who is at risk for potentially adverse perinatal outcome.

In our study, maximum number of women (n=36) were in the age group 21-25 years (46%). Sixty four

percent women were multigravida, 38% women presented at gestational age 34-36 wks. Studies done by Cosey et al<sup>3</sup>, Chauhan<sup>4</sup>, Magann<sup>5</sup> et al. there was no significant relation of age and parity with oligohydramnios.

In our study only 24 patients had meconium stained liquor which was 30.76%. In Coseys<sup>3</sup> study among 147 oligohydramnios patients meconium stained liquor was found only in 9 patients, which was only 6%. He stated that meconium stained liquor less often complicated the pregnancy with oligohydramnios. This study showed no obvious relation between meconium stained liquor and oligohydramnios.

Elective caesarian section was done in 12%, 28% women had normal vaginal delivery and 71% underwent caesarian section, out of which 51% had fetal distress. Chauhan et al found that AFI <5cm was associated with an increased incidence of caesarian section delivery for fetal distress. Anna et al<sup>6</sup> found that 15.2% caesarian section delivery among 341 oligohydramnios patients. Voxman<sup>7</sup> also found increased rate caesarian section (14.7%) for fetal distress in oligohydramnios group. In Anna et al study and voxmans study caesarian section rate was high in oligohydramnios patients but not significantly higher as it is found in this study. Probably due to less facilities for fetal monitoring well being during antepartum and intrapartum period. So for the avoidance of adverse effects on perinatal outcome in most cases caesarian section was done.

Meconium stained liquor was seen in 44% of women in our study, while youseff et al<sup>8</sup> identified it is 40% of females. This suggests that there is high incidence of meconium stained liquor and poor placental reserve in oligohydramnios patient.

Sarno et al<sup>9</sup> noted a significantly higher rate of fetal distress and low apgar score in women with AFI 5 cm. This is reported to be due to head and cord compression. Golam et al<sup>10</sup> reported a low apgar score at 5 minutes in 4.6% babies, in contrast to a figure of 21% noted by us. This difference in rates observed is because of better intrapartum fetal assessment facilities available in developed countries. They concluded that liberal use of amnioinfusion in women diagnosed with oligohydramnios might have resulted in improved outcomes which was not seen in previous

studies. But amnioinfusion is yet not established in our country. Casey et al<sup>3</sup> found respiratory distress in 3.4% of neonates at birth in contrast to 15.3% as noted by us. The incidence of NICU admission was found to be 19% by Garmel et al<sup>11</sup> which is in accordance to our results (15%).

Oligohydramnios has been recognized as a clinical hallmark of impending severe perinatal compromise. We have found 2.4% perinatal deaths (1 still birth and 1 neonatal death) where as Casey et al reported 6.4% perinatal deaths. Ja -young et al<sup>12</sup> in a recent study have concluded that in the borderline AFI group, the presence of abnormal dorsal

velocimetry measurement was related to adverse perinatal outcomes and mandates closer antenatal surveillance.

### **Conclusion:**

Oligohydramnios is associated with a high rate of pregnancy complications and increased perinatal morbidity and mortality. AFI measurement in antepartum or intrapartum can help to identify women who need increased antepartum surveillance for pregnancy complications and such women should be managed in a special unit to combat the complications effectively.

### **Reference**

1. D.C.Dutta, A text book of Obstetrics including perinatology & contraception. 6th Edition, s 218
2. Boys RI. Polyhydramnios and oligohydramnios. Available at: URL :<http://www.emedicine.com/PED/TOPIC854.htm>.
3. Casey BM, McIntire DD, Bloom SL et al. Pregnancy outcomes after antepartum diagnosis of oligohydramnios at or beyond 34 weeks of gestation. *Am J Obstet Gynecol* 2000; 182: 909-12  
[http://dx.doi.org/10.1016/S0002-9378\(00\)70345-0](http://dx.doi.org/10.1016/S0002-9378(00)70345-0)
4. Chauhan SP, Sanderson M, Hendrix NW et al. Perinatal outcome and amniotic fluid index in the antepartum and intrapartum periods: A meta-analysis. *Am J Obstet Gynecol* 1999; 181: 1473-78  
[http://dx.doi.org/10.1016/S0002-9378\(99\)70393-5](http://dx.doi.org/10.1016/S0002-9378(99)70393-5)
5. Magann EF, Kinsella JM, Chauhan SP, McNamanra MF, Gehring BW and Morison JC. Does an amniotic fluid index of <5 necessitate delivery in high risk pregnancies? A case control study. *Am J Obstet Gynecol* 1999; 181: 1473-8  
PMid:10601931
6. Localeli A, Vergani P, Pezzullo JC, Toso L and Verderio M. Perinatal outcome associated with oligohydramnios in uncomplicated pregnancies. *Am J Obstet Gynecol* 2004; 269: 130-3.
7. Voxman EG, Train S and Wing BA. Low amniotic fluid index as a predictor of adverse perinatal outcome. *Journal of Perinatology* 2002; 22: 282-85
8. Youssef AA, Abdullah SD, Sayed EH et al. Superiority of amniotic fluid pocket measurement for predicting bad fetal outcomes. *Southern Medical Journal* 1993; 86: 426-29  
<http://dx.doi.org/10.1097/00007611-199304000-00011> PMid:8465220
9. Sarno AP Jr, Ahn MO, Brar HS et al. Intrapartum Doppler velocimetry, amniotic fluid volume and fetal heart rate as prediction of subsequent fetal distress. *Am J Obstet Gynecol* 1989; 161: 1508-14  
PMid:2690625
10. Golan A, Lin G, Evron S et al. Oligohydramnios: maternal complication and fetal outcome in 145 cases. *Gynaecol Obstet Invest* 1994; 37: 91-95  
<http://dx.doi.org/10.1159/000292532>  
PMid:8150377
11. Garmel SH, Chelmow D, Sha et al. Oligohydramnios and appropriately grown fetus. *Am J Perinatol* 1997; 14: 359-63  
<http://dx.doi.org/10.1055/s-2007-994161>  
PMid:9217959
12. Ja-Y-K, Han-s k, Young-H K et al. Abnormal Doppler Velocimetry is related to adverse perinatal outcomes for borderline amniotic fluid index during third trimester. *J Obstet Gynecol Res* 2006; 32: 545-49  
<http://dx.doi.org/10.1111/j.1447-0756.2006.00459.x>  
PMid:17100815