

## Perinatal outcome in cases of borderline oligohydramnios

Uma Pandey<sup>1</sup>, Stephen Lindow<sup>2\*</sup>

<sup>1</sup>Associate Professor, Dept. of Obstetrics and Gynaecology, Banaras Hindu University, Varanasi, Uttar Pradesh, India, <sup>2</sup>Professor, Dept. of Obstetrics & Gynaecology, Weill Cornell Medical College Qatar, Division Chief Obstetrics, Sidra Medical and Research Center, Doha

**\*Corresponding Author:**

Email: stephen.lindow@hotmail.co.uk

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### Abstract

**Introduction:** Oligohydramnios is associated with intrauterine growth restriction, congenital anomaly, neonatal and maternal morbidities. The outcome in cases of borderline oligohydramnios is less clear. This study was performed to document fetal, neonatal and maternal outcome in cases of borderline oligohydramnios among those women who delivered in our unit.

**Materials and Methods:** The duration of the study was July 2013-June 2016 and a total of 66 women who were more than 37 weeks gestation were included. The data was compared with 66 control women from the same institution.

**Results:** Overall 45.4% cases were delivered normally while 62.5% of the control group had a vaginal delivery ( $p=0.02$ ). Emergency caesarean section cases were due to fetal distress in 35.29% of cases compared to 8.6% in the control group ( $p=0.02$ ). The fetal and neonatal outcome was far better in the control group as there was 45 versus 8 cases where there was a neonatal problem ( $p < 0.001$ ).

**Conclusions:** Cases of borderline oligohydramnios at term have a higher risk of perinatal complications and operative delivery and should be monitored during labour. Delivery should preferably be in a unit where excellent neonatal facilities are available.

**Keywords:** Oligohydramnios, Caesarean section, Intrauterine growth restriction, Meconium.

### Introduction

Amniotic fluid is in the amniotic sac of human gravid female which surrounds the baby like a shock absorber or a like a cushion. It also allows fetal breathing and movements. The circulation of it is by production of urine and swallowing by the fetus.

The amniotic fluid volume changes with the gestational age; it is 200 ml at 16 weeks, 1000 ml at 28 weeks, 900 ml at 36 weeks and 800 ml at 40 weeks of gestation.<sup>1</sup>

An experienced obstetrician can assess oligohydramnios on clinical examination, however it should be confirmed by ultrasound. The amniotic fluid index (AFI) is normal in the range 8-24, borderline 5-8, and  $<5$  is diagnosed as oligohydramnios.<sup>2</sup>

Oligohydramnios is associated with intrauterine growth restriction, congenital anomaly, neonatal and maternal morbidities. There should be antenatal fetal surveillance and neonatal facilities where these women plan to deliver. The outcome for cases of decreased liquor that falls short of the diagnostic criteria for oligohydramnios is less clear.<sup>4-6</sup>

This study was performed to document fetal, neonatal and maternal outcome in cases of borderline oligohydramnios among those women who delivered in our unit and compared to a group of women with a normal amniotic fluid volume.

### Materials and Methods

Pregnant women attending the outpatient department and laboring unbooked women who directly came to the delivery suite of the department of

Obstetrics and Gynaecology of Sir Sunder Lal Hospital, Institute of Medical Sciences, Banaras Hindu University with documented borderline oligohydramnios were included in the study. The duration of the study was July 2013-June 2016 and a total of 66 women who were more than 37 weeks gestation were included. There were 66 control women who matched with their sociodemographic (age and parity) pattern who had normal amniotic fluid volumes.

Inclusion criteria were AFI measured by ultrasound and documented as 5-8, no history of PPRM (premature preterm rupture of membrane). Women who were preterm, had twin pregnancy, diabetic, hypertensive or had abruptio placentae were excluded. None of the scans of babies included in the study showed any gross congenital abnormality.

Patients were fully informed that we would be collecting their data and their written informed consent was taken. A proforma was prepared and data was collected by the author. Data was also collected for 66 control woman who delivered in the same delivery suite. Care of laboring women was undertaken as per the existing hospital protocol.

### Results

This is a prospective observational study in which total of 66 women were included in the study group with 66 controls. The age and parity was similar in both study and control group.

In this study of oligohydramnios only 15% of women were more than 40 weeks of pregnancy while in the control group there were 20% women of more than

40 weeks gestation. Birth weight was categorized as <2.5 kg and >2.5 Kg as 2.5 Kg is the cut off limit for low birth weight babies in India. There were 14% neonates who were <2.5 Kg in the study group while 4.5% neonates were <2.5 kg in the control group. 86% and 95.45% of neonates were >2.5 kg in study and control group respectively. (p=NS)

The liquor was stained with thin meconium in 24.2% cases and it was thickly meconium stained in 18% cases while only 1% of control had meconium stained liquor.

Table 1 shows that 51% cases were delivered by Caesarean section while 45% cases were delivered by spontaneous vaginal delivery, only 3% cases were delivered by instrumental vaginal delivery, The control group had 46 vaginal deliveries (62.5%) (chi-sq 5.2, p=0.02)

Table 2 shows indications of Caesarean section. Emergency Caesarean section cases were due to fetal

distress in 35.29%) of cases compared to 8.6% in the control group. (chi-sq 5.5, p=0.02)

Table 3 shows fetal outcome in cases of borderline oligohydramnios. 12% of neonates were growth restricted, only one anomaly was diagnosed after birth (cleft palate). Fetal distress (due to suboptimal CTG) happened in 22% cases and poor Apgar score was in 16% of neonates. There were 9% NICU (Neonatal intensive care unit) admissions, 3% developed respiratory distress syndrome and 3% had meconium aspiration syndrome. No cases of IUGR were found in the control group. Apgar score was 5 at one minute and 7 at 5 minute was observed in 2 (3%) fetuses of control group both of them had meconium stained liquor, and needed NICU admission. If all the cases of abnormal neonatal outcomes are combined there were 45 cases in the oligohydramnios group and 8 in the control group (chi-sq 33.7, p<0.001)

**Table 1: Mode of delivery**

Mode of delivery	Study group (N=66)	Control group (N=66)
Spontaneous Vaginal Delivery	30 (45.4%)*	43 (65.2%)*
Caesarean Section	34 (51.5%)	23 (34.8%)
Instrumental Delivery	2 (3%)	0

\* chi sq 5.2, p=0.02

**Table 2: Indications for caesarean section CS**

Indications of Caesarean section	Study group (N=34 CS)	Control group (N=23 CS)
Fetal distress (thick MSAF, Emergency)	12 (35.3%)#	2 (8.6%)#
Prolonged Labour (Emergency) {Inco-ordinate uterine contraction, Dystocia)	4 (11.8%)	4 (17.4%)
Failed Induction (Emergency)	4(11.8%)	2 (8.6%)
Malpresentation (Elective)	2 (5.8%)	6 (26.1%)
Maternal request (Elective)	2 (5.8%)	6 (26.1%)
IUGR* with Oligoamnios (Elective)	8 (23.5%)	0
Gross CPD** (Elective)	2 (5.8%)	3 (13.0%)

(Study group CS=34, Control group =23)

# chi sq 5.5, p=0.02

\*IUGR Intrauterine growth restriction

\*\* Cephalopelvic disproportion

**Table 3: Fetal outcome**

Fetal outcome	Study group (N=66)	Control group (N=66)
IUGR*	8 (12.1%)	0
Fetal anomaly	1 (1.5%)	0
Suboptimal CTG	15 (22.7%)	0
Low Apgar	11 (16.6%)	2 (3%)
RDS**	2 (3%)	2 (3%)
Meconium aspiration	2 (3%)	2 (3%)
NICU*** admission	6 (9%)	2 (3%)

For any abnormal fetal outcome chi sq 33.7, p<0.001

\*IUGR Intrauterine growth restriction

\*\* Respiratory distress syndrome

\*\*\* Neonatal intensive care unit

**Table 4: Birth weight**

	Study group (N=66)	Control group (N=66)
Birth weight<2.5 Kg*	9 (14%)	3 (4.5%)
Birth weight>2.5 Kg*	57 (86%)	63 (94.5%)

p=NS

\*2.5 kg is the cutoff for low birth weight in India

**Discussion**

In this study of borderline oligohydramnios there was 22% fatal distress and 16% of neonates were depressed at birth. NICU admission was needed in 9% of cases.

Amniotic fluid and its passage through fetus is absolutely vital for the development and survival of fetus. So therefore the measurement of amniotic fluid index by Ultrasound, which is an important component of antenatal fetal surveillance.

Reduced amniotic fluid around fetus causes cord compression which may result in fetal distress or the appearance of fatal distress. Reduced liquor volumes may be associated with growth restriction which itself causes reduced urine production. Both factors may be associated with increased neonatal morbidity and increased chance of operative delivery.

Reduced liquor also results in malpresentations due to reduced amount of amniotic fluid for the fetus to move around. There is also higher incidence of thin and thick meconium stained liquor, which is associated with higher perinatal complications. This study shows the above findings.<sup>7,8</sup>

The association of a borderline amniotic fluid index with adverse perinatal outcomes has been described and the occurrence of maternal and fetal complications was reported more often in pregnancies with borderline AFI than in those with normal AFI.<sup>9,10</sup> Borderline AFI cases had higher rate of neonatal complications such as Apgar score of less than 7, IUGR, LBW, and crucial need to NICU. Petrozella et al reported the rate of caesarean 24% and the birth weight below the third percentile 21%. Voxman et al reported NICU admission among women with borderline AFI that were almost similar to our results. This study further corroborates the findings.<sup>11</sup>

In this study, the maternal and fetal complications in women with borderline AFI were collected in 66 pregnant women in SSL Hospital, Banaras Hindu University which confirmed the increased adverse perinatal outcomes in women with borderline AFI, similar findings were reported by Karim et al.<sup>12</sup>

The control group had lower rates of adverse fetal and neonatal outcome e.g NICU admission, meconium staining liquor and IUGR.

It is therefore recommended that the obstetrician should perform twice weekly sonography assessment to evaluate AFI and to carefully monitor the patients for IUGR. Women with borderline oligohydramnios should be monitored with ultrasound AFI or amniotic fluid

pocket and also CTG. They should be counselled regarding the prognosis of baby.<sup>13</sup>

**Conclusion**

This study concludes that in cases of borderline oligohydramnios there is higher risk of perinatal complications and operative delivery. Every obstetrician must do a thorough clinical examination and if oligohydramnios is suspected then it should be confirmed with ultrasound. As there is no sufficient evidence and specific decision about delivery based on a borderline AFI, there should be a close observation and antepartum surveillance in every patient. Those diagnosed to have borderline oligohydramnios at term should be monitored during labour and delivery should preferably in a unit where good neonatal facilities are available.

**Conflict of Interest:** None.

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