

Study of effect of Oligohydramnios on maternal and fetal outcome

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ABSTRACT

Background: Amniotic fluid acts like a cushion and helps in growth of fetus, decrease in amniotic fluid volume may lead to increased risk of intrauterine growth retardation (IUGR), meconium aspiration syndrome, severe birth asphyxia, low APGAR scores and congenital abnormalities.

Objective: This study was done to see effects of Oligohydramnios on fetal outcome in the form of neonatal morbidity and mortality and maternal morbidity.

Material and Methods: Present study was done in 100 patients who have completed 28 weeks of pregnancy and above with oligohydramnios, selected randomly after satisfying inclusion and exclusion criteria. Detailed examination done and oligohydramnios was confirmed by measuring AFI on ultrasonography. Associated complications, type of delivery conducted, and fetal outcome for perinatal morbidity & mortality studied.

Results: Common causes for Oligohydramnios were idiopathic (56%) and PIH (24%). Most common reason to perform caesarean was fetal distress. Oligohydramnios was related to higher rate of growth retardation and neonatal intensive care unit admission.

Conclusion: Oligohydramnios is frequent occurring condition. This condition requires antepartum and intrapartum care. Due to

oligohydramnios intrapartum complications, perinatal morbidity and mortality are increasing. Decision between vaginal delivery and caesarean section should be well balanced. Unnecessary maternal morbidity can be prevented. Timely intervention can reduce perinatal morbidity and mortality.

Key Words: Oligohydramnios, maternal outcome, fetal outcome, amniotic fluid index, non stress test, doppler study

Introduction

Amniotic fluid acts like a cushion and helps in growth of fetus in sterile environment, regulates temperature, avoid external injury and reduce impact of uterine contractions. Usual amount of amniotic fluid is approximately 1000ml at term. Volume of amniotic fluid decreases with increasing gestational age. Decrease in amniotic fluid volume is called as oligohydramnios. ^[1] Causes of Oligohydramnios are pregnancy induced hypertension (PIH), postdate pregnancy, infections, congenital anomalies like renal agenesis, idiopathic, etc. Oligohydramnios may lead to increased risk of intrauterine growth retardation (IUGR), meconium aspiration syndrome, severe

birth asphyxia, low APGAR scores and congenital abnormalities. ^[2] Oligohydramnios increases maternal morbidity by increasing rates of induction and/ or operative interference. ^[3] With the help of amniotic fluid estimation by amniotic fluid Index (AFI) using four quadrant technique during transabdominal USG, as per described by Phelan et al in 1997. ^[4] Better identification of fetus at high risk is done. Increased induction of labour and elective caesarean deliveries are currently practiced for better perinatal outcome. Early detection of oligohydramnios and its management may help in reduction of maternal & fetal morbidity and mortality. In this study we tried to see the type of delivery conducted

in the form of normal vaginal delivery, assisted vaginal delivery or caesarean section in all patients of Oligohydramnios of different age groups and parity. We studied different causes of Oligohydramnios. Fetal surveillance was done by NST and Doppler study. Outcome of baby was studied by IUGR, APGAR score, NICU admission or perinatal mortality.

Material and Methods

Present study was done in department of obstetrics and gynaecology, Bharati Vidyapeeth Deemed University Medical College & Hospital, Sangli from January 2010 to December 2012. 100 patients in third trimester of pregnancy with Oligohydramnios selected randomly after satisfying inclusion and exclusion criteria.

Inclusion Criteria: Antenatal patients in their third trimester with intact membranes, PIH, postdate pregnancy, IUGR.

Exclusion Criteria: Antenatal patients having heart diseases, Polyhydramnios, premature rupture of membranes, twins and multiple pregnancies.

Study was conducted to observe outcome of labour in form of perinatal morbidity and maternal outcome in form of vaginal or caesarean section deliveries.

A detailed history and examination were done. All required investigation like haemogram, Blood grouping and Rh typing, BSL, TFT, VDRL, HIV, HbSag, Ultrasound Doppler study, NST, urine routine and microscopy were done. Oligohydramnios confirmed by measuring amniotic fluid index (AFI). Routine management in form of rest, left lateral position, oral and intravenous hydration and control of etiological factor was done if present. Fetal surveillance was done by USG, non stress test (NST) and Doppler. Decision of delivery

by vaginal route or elective / emergency LSCS was done as per required. Some patients were already in labour and other allowed going in spontaneous labour. Cases were then studied for maternal and perinatal outcome. Chi square test was used for analyzing the data.

Results

Out of 100 patients recruited in the study maximum patients (85%) were in 20-30 years age group. Out of 85% patients 50.6% delivered vaginally and 12% delivered by forceps. 35.3% were delivered by caesarean section. 4% patients were less than 20 years of age. Out of these patients 50% patients were delivered by caesarean section. 11% patients were more than 30 years of age, 54.5% patients delivered by caesarean section. Rate of caesarean was highest in patients of age group 20-30 years. (Table1) In our study 54% patients were primigravida. Incidence of vaginal delivery in primigravida was 37%. Caesarean section rate was more in primigravida (44.45%). 56.5% multigravida patients were delivered vaginally and 13% with forceps. In our study 62% patients had vaginal delivery and 38% patients had caesarean section. (Table2) Most common cause of Oligohydramnios was idiopathic (56%). Second commonest cause was PIH (24%). Operative morbidity [caesarean section] was highest in PIH (50%). (Table 3) 50% patients with idiopathic cause for oligohydramnios, 33.3% patients with PIH as a cause for oligohydramnios, 50% patients with postdate pregnancy as a cause for Oligohydramnios delivered vaginally. Total 16% patients had instrumental (forceps) delivery. Operative morbidity was significantly higher in NST non-reactive (73.6%) group than NST reactive (16.1%) group. 67.7% patients with

reactive NST delivered vaginally. (Table 4) All patients were undergone Doppler study. 14% were found with fetoplacental insufficiency (Table5). Most common reason to perform caesarean was fetal distress which was either due to cord compression or IUGR. (Table 6) Oligohydramnios was related to higher rate of growth retardation (76%) and NICU

admission (28%). (Table 7) In NST Reactive group 2 babies expired due to septicaemia and low birth weight. In NST Non-Reactive group 3 babies expired due to meconium aspiration syndrome & acute respiratory distress syndrome. (Table 8) Operative morbidity was significantly higher in NST non-reactive (73.60%) group than NST reactive (16.12%) group

Table 1: Age and maternal outcome of labour

Age in yrs	Vaginal Delivery	Vaginal Delivery	Caesarean	Total
	Normal	Instrumental (Forceps)		100
Less than 20	01(25%)	01(25%)	02(50%)	04(4%)
20-30	43(50.6%)	12(14.1%)	30(35.3%)	85(85%)
More than 30	02(18.2%)	03(27.3%)	06(54.5%)	11(11%)

Table 2: Parity and Maternal Outcome of Labour

Parity	Vaginal Delivery	Vaginal Delivery	Caesarean	Total
	Normal	Assisted		100
Primigravida	20(37%)	10(18.5%)	24(44.45%)	54(54%)
Multigravida	26(56.5%)	06(13%)	14(30.4%)	46(46%)

Table 3: Associated condition and mode of delivery

Associated condition	Normal Vaginal delivery	Instrumental [forceps] vaginal delivery	Caesarean	Total
Idiopathic	28(50%)	08(14.3%)	20(35.7)	56
PIH	08(33.3%)	04(16.6%)	12(50%)	24
Postdates	10(50%)	04(20%)	06(30%)	20
Total	46	16	38	100

Table 4: Non-Stress Test (NST)

NST	Vaginal Delivery	Vaginal Delivery	Caesarean	Total
	Normal	Instrumental [forceps]		100
Reactive	42(67.7%)	10(16.1%)	10(16.1%)	62
Non Reactive	04(10.5%)	06(15.8%)	28(73.6%)	38

Table 5: Doppler study

Doppler study	Vaginal Delivery	Vaginal Delivery	Caesarean	Total
	Normal	Assisted		100
Normal	44(51.1%)	14(16.2%)	28(32.5%)	86
Abnormal	02(14.3%)	02(14.3%)	10(71.4%)	14

Table 6: Indication of Caesarean Section

Indication	No of patients
Fetal distress	25(65.7%)
Oligohydramnios	05(13.2%)
IUGR	03(7.9%)
Breech	01(2.6%)
Other	04(10.5%)

Table 7: Outcome of Baby

Outcome of Baby	Outcome in %
Growth retardation	76(AGA) 24(SGA)
Apgar score <7 At 1&5min	15
NICU admission	28

Table 8: Perinatal outcome in relation to NST

Perinatal outcome	Reactive NST	Non reactive NST
Live	60	35
Neonatal Death	02	03

Discussion

Out of 100 patients recruited in our study maximum patients (85%) were in 20-30 years age group. In Casey et al,^[5] the mean maternal age was 23.9 years which is comparable to the present study. The incidence of oligohydramnios was 54% in primigravida in our study. In Donald D et al,^[6] the incidence of oligohydramnios was 60% in primigravida which is comparable to our study. In our study 62% patients delivered vaginally and 38% by caesarean section. Sir Gangaram Hospital study^[7] shows 68% vaginal deliveries in induced patients of Oligohydramnios and 32% by caesarean section which is comparable to our study. Manzanares S et al^[8] shows 84% vaginal deliveries in induced patients of Oligohydramnios and 16% by caesarean section. In this study, in spite of non-reactive NST 26.3% patients delivered vaginally. The caesarean section was done more commonly in 73.6% patients with non-reactive NST as seen in Charu Jandial study^[9] As these patients had oligohydramnios, a non-reactive NST + AFI < 5 indicated fetal jeopardy as per revised Biophysical profile scoring by Clerk et al.^[10] The fetal jeopardy was reflected as increase operative interference in this study. The operative morbidity is significantly higher in patients with altered Doppler study. In our study 71.4% patients undergone caesarean section. In Weiss et al^[11] and Yound HK et al^[12], it was 71% and 69.7% respectively

which was comparable to this study. In present study, 36% babies had weight < 2.5 kg. Mean birth weight was 2.3 kg which is similar to the study conducted by William Ott et al^[13] with the mean birth weight was 2.4 kg. The incidence of low birth weight babies is higher in Oligohydramnios except in post maturity where the babies may have average birth weight. In Julie Johnson et al,^[14] 92.6% babies were AGA and 7% were SGA. In Brain M Casey et al^[15] 75.5% AGA and 24% SGA, in Philipson EH et al^[16] 60% AGA and 40% SGA, in Manning et al^[17] 64% AGA and 36% SGA, in Raj Sariya et al^[18] 83.4% AGA and 16.6% SGA. This high percentage of SGA babies suggesting correlation of IUGR with oligohydramnios. In our study 15% babies had APGAR score <7 which is same as Manning et al.^[17] In Raj Sariya et al,^[18] it was 38%. In our study 28 % babies had NICU admission. In Julie M Jhonson et al^[14] 20% babies had NICU admission, in Manning et al^[17] and Raj Sariya et al^[18], 43% and 88.88% respectively. Golan et al^[19] show 6.3% neonatal death in deliveries of oligohydramnios patients which was comparable [5%] with our study.

Oligohydramnios is frequent occurrence and demands intensive fetal surveillance and proper antepartum and intrapartum care. Oligohydramnios is a frequent finding in pregnancy involving IUGR, PIH, and pregnancy beyond 40 weeks of gestation. Amniotic fluid volume is a

predictor of fetal tolerance in labour and its decrease is associated with increased risk of abnormal heart rate and meconium stained fluid. Due to intrapartum complication and high rate of perinatal morbidity and mortality, rates of caesarean section are rising, but decision between vaginal delivery and caesarean section should be well balanced so that unnecessary maternal morbidity can be prevented and on other side timely intervention can reduce perinatal morbidity and mortality.

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