

A Study of Fetal Outcome in Oligohydramnios

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Abstract: Introduction: During antenatal surveillance, amniotic fluid assessment is a crucial barometer to know foetal status. Around 3-8% pregnant women suffered with oligohydramnios. Objective of present study was to find associated comorbidities and perinatal outcome in oligohydramnios. Aims: 1) To study foetal outcome at birth in oligohydramnios in form of a) foetal distress, b) growth retardation, c) NICU admission. 2) To study APGAR score of newborn babies of oligohydramnios. 3) To study the incidence of congenital malformation in relation to oligohydramnios. 4) To study early neonatal morbidity and mortality. Material and Methods: This prospective were carried out in Dhiraj Hospital, Vadodara from 1st Jan 2018-1st Jan 2019. 100 patients were selected randomly after satisfying inclusion and exclusion criteria. Inclusion criteria: 1) Antenatal patients in their 3rd trimester 2) Singleton pregnancy 3) Amniotic fluid index less than 5cm. Exclusion Criteria: Multiple gestation, Patient having major medical illness, Patient not taking medicines which cause reduction in amniotic volume like NSAID'S, ACE inhibitors. Result and Analysis: 58% participants were belonged to 20-25yrs age group and 52% participants were primigravida. Mean age was 23.66yrs. 23% were affected with oligohydramnios in gestational age more than 41wks. There is less chances of oligohydramnios in pregnancy gestational age less than 32wks or pregnancy near term. 66% participants were suffered with moderate AFI(3.1-5.0). In 33% participants, there were no associated comorbidities and 27% had PIH. 58% Participants were delivered vaginally and 42% were by caesarean section in which 38% were operated for foetal distress. 31% were admitted in NICU in which 6 babies were died. 3 were still birth and 4 were IUD. Conclusion: Oligohydramnios is frequent occurrence problem in obstetrics and needs intensive surveillance in antenatal and intranatal and postnatal period. Due to high morbidity and mortality, the rate of LSCS increases. However, vaginal delivery has same outcome, but its need strict vigilance during labour.

Keywords: AFI, Oligohydramnios, NST, Induction of labour, Perinatal outcome

1. Introduction

The amniotic fluid is known as a pregnant woman's water. Nature has made floating bed in form of amniotic fluid cavity filled with liquor amnii for the requirement of foetus, for its existence and growth in sterile environment, regulation of temperature, avoidance of external injury and reduction in impact of uterine contractions.

"Amniotic fluid is a part of baby life support system during labour".

During antenatal foetal surveillance, amniotic fluid assessment is a crucial barometer to know the foetal status.¹ Primary sonographic sign of an obstetric issue is abnormal amniotic fluid volume.²

Normally during 3rd trimester, around 3-8% pregnant women suffered from low amniotic fluid volume. It is normally anticipated as a sign of placental insufficiency.³ Early detection of oligohydramnios and its management may help in reduction of perinatal morbidity and mortality.

Oligohydramnios is defined as when the AFI is less than 5cm or 10TH centile.^{4,5,6}

Oligohydramnios is a sign of threatening maternal condition like Pregnancy induced hypertension, premature rupture of membrane, post-term pregnancy, chronic abruption placenta, congenital abnormalities. Oligohydramnios reflects uteroplacental insufficiency and intrauterine growth retardation in foetus and congenital abnormalities like pulmonary hypoplasia in early diagnosed cases due to compression of uterine wall and adherent foetal parts and

prolonged external compression and, oligohydramnios lately manifested as amniotic band syndrome.

So this study was conducted with objectives to find the maternal and perinatal outcome, associated with oligohydramnios.

2. Aims

- 1) To study foetal outcome at birth in oligohydramnios in form of a) foetal distress, b) growth retardation, c) NICU admission
- 2) To study APGAR score of newborn babies of oligohydramnios
- 3) To study the incidence of congenital malformation in relation to oligohydramnios
- 4) To study early neonatal morbidity and mortality

3. Material and Methods

This prospective study was carried out in the antenatal labour room of Dhiraj hospital, Vadodara, from 1st Jan 2018 to 1st Jan 2019. Informed and written consent of patient was sought before the study. 100 patients in third trimester of pregnancy with oligohydramnios were selected randomly after satisfying inclusion and exclusion criteria.

Inclusion criteria

- 1) Antenatal patients in their 3rd trimester
- 2) Singleton pregnancy
- 3) Amniotic fluid index less than 5cm

Exclusion Criteria

- 1) Multiple gestation
- 2) Patient having major medical illness
- 3) Patient not taking medicines which cause reduction in amniotic volume like NSAID'S, ACE inhibitors.

4. Methodology

Plan of activity and time chart were formulated after taking informed and written consent from patients and her relative. Other potential explanatory variables were obtained including maternal age, booking status, PIH and other risk factors at the time of admission were recorded. Detailed clinical history including obstetric, menstrual, past and personal history were taken. Thorough general, systemic and obstetric examination was performed. Patients routine investigation was done.

AFI was measured with the help of ultrasonography by using phelan's four quadrant technique.^{4,5,6} The uterus is arbitrarily divided in to 4 quadrants by umbilicus transversely and the linea nigra vertically.

The largest vertical pocket free of foetal parts and umbilical cord loops in each quadrant is measured and sum of these will give us AFI in cm. Normal AFI is 5-25 cm. When AFI is less than 5, it is considered as Oligohydramnios. Study of various maternal associated co-morbidities like prolonged pregnancy, PROM, PIH etc. Outcome was noted in form of mode of delivery, foetal outcome, APGAR score, foetal birth weight, maturity, admission in nursery and postnatal complication.

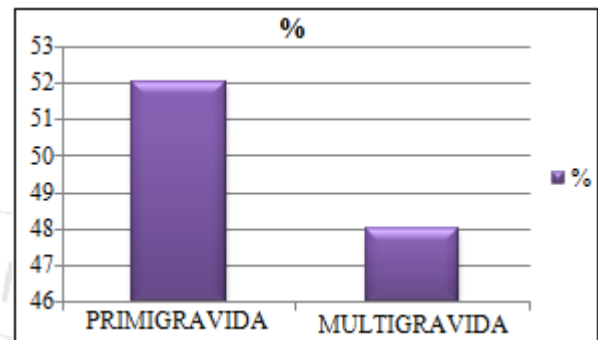
5. Result and Analysis

All the information in proforma were analysed and observation was made.

A) Distribution of Patients according to Age

Age (Yrs)	Oligohydramnios	
	NO.	%
18-20	7	7
20-25	58	58
26-30	29	29
>30	6	6

In above table, we analysed that 58% of patients were in age group of 20-25yr. Mean maternal age was 23.66.

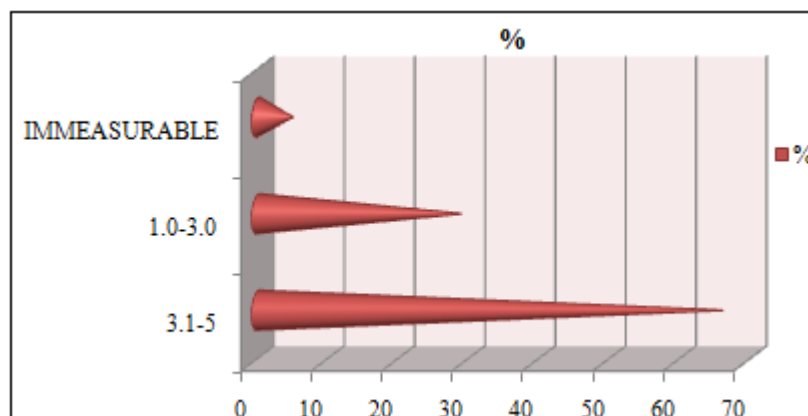
B) Distribution of Patient according to Gravida

From above graph, we analysed that primigravida(52%) patients form a major burden of admission due to oligohydramnios. After that multigravida(48%) were suffered with oligohydramnios.

C) According to Gestational Age

Gestational Age (WKS)	CASES(100)	
	NO.	%
28-32	14	14
33-34	22	22
35-37	22	22
38-40	19	19
>41	23	23

From above table, we analysed that with increase gestational age more than 41wks(23%) , affect the pregnancy more with oligohydramnios. There is less chances of oligohydramnios in pregnancy gestational age less than 32wks or pregnancy in near term.

D) Classification of patient according to AFI

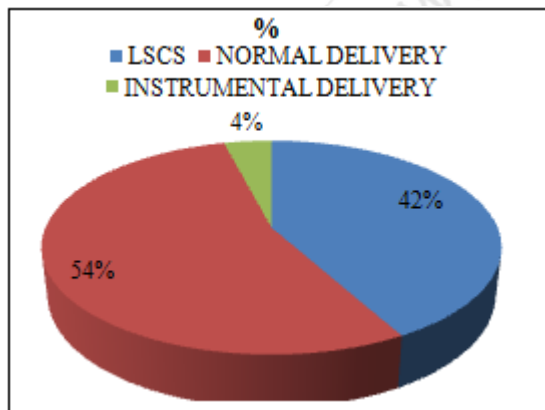
In present study, from above figure we analysed that 66% were suffered with moderate AFI (3.1-5) and 29% were suffered with severe oligohydramnios (AFI- 1-3CM) and 5% with immeasurable AFI.

E) Maternal Factors associated with Oligohydramnios

Maternal Factors	Cases	%
Prolonged Pregnancy	23	23
PIH	27	27
PROM	9	9
Idiopathic	33	33
Malpresentation	3	3
Chorioamnionitis	0	0
Chronic renal disease	1	1
Abruptio Placentae	1	1
FEVER	3	3

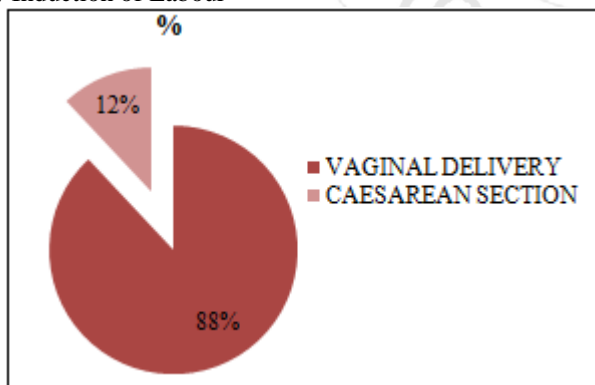
From above table, we analysed that in 33% patients, there was no associated maternal factor with oligohydramnios. In 27% patients, it was associated with PIH.

F) Distribution of cases according to mode of Delivery



From above figure, in max patient 58% delivered vaginally and 42% were by LSCS.

G) Induction of Labour



In our study, we found that induction of labour was done in 25 cases out 100 in which 88% (22 cases) were delivered vaginally and rest by caesarean section.

H) Indication for LSCS

Indications For LSCS	CASES(42)	
	NO	%
Oligohydramnios With Foetal Distress	16(Acute foetal distress-12) (Chronic foetal distress-4)	38.0
Malpresentation	5	11.9
Failed Induction	3	7.14
Oligohydramnios / Iugr With Doppler Changes	11	26.19
Cord Around Neck	1	2.38
Bad Obstetric History	1	2.38
Previous Casarean Section	5	11.9

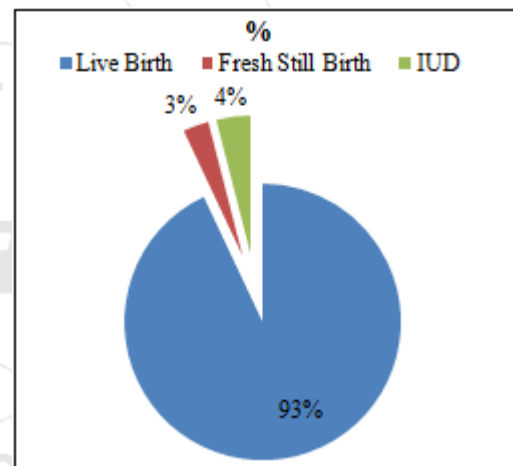
It was seen from above study that LSCS done in study group was primarily done for oligohydramnios /IUGR(26.9%), Foetal distress(38.0%) .

I) Non –Stress Test

NST	Vaginal Delivery		Caesarean Section	Total
	Normal	Assisted		
Reactive	46(70.53%)	1(3.12%)	18(26.4%)	65
Non-Reactive	4(14%)	3(10%)	24(75%)	31

In above table, we analysed that operative morbidity was significantly higher in NST non reactive group than reactive NST.

J) Birth Outcome



In our study, out of 100 babies, 3% were Fresh still birth and 4% were IUD.

K) Distribution of APGAR Score at Birth at 1min And 5min

APGAR Score	AT 1 MIN	AT 5MIN
8-10	13	63
5-7	68	30
3-4	9	3
<3	3	2

In our study, we assessed perinatal outcome by APGAR score at 1min and at 5min. Max babies (68) had APGAR score 5-7 at 1min .

L) Distribution of Perinatal Outcome

Perinatal Outcome		Caesarean Section	Vaginal Delivery
Mother Side		30	32
Nicu Admission	Low Birth Weight/ Iugr	5(4- IUGR)-PRETERM)	16(16-PRETERM)
	Meconium Aspiration Syndrome	4	1
	Respiratory Distress	2	1
	Congenital Anomalies	0	2
Still Birth		1	2
IUD		0	4

In our study, we concluded that 31% babies were admitted in NICU. Mainly 21% were admitted due to low birth weight.

M) Cause of Neonatal Death

Hyaline Membrane Disease	1
Congenital anomalies	2
Septicaemia	2
Meconium aspiration syndrome	1

In our study, out of 93 live birth babies, 6 died. Out of 6, 2 was due to septicaemia, 1 was due to hyaline membrane disease and 1 was due to meconium aspiration syndrome.

6. Discussion

Obstetrical complication are frequently associated with oligohydramnios. In present study, oligohydramnios was found to be idiopathic in 32% cases, and after that most common associated cause was PIH (25%). Similar result are corresponding with Golan A et al, he studied that 22.1% of oligohydramnios was found hypertensive.⁷ Mercer LJ et al found preeclampsia in 24.7% cases with decreased AFI. Chauhan P et al reported that in 12% cases of oligohydramnios are associated with pre-eclampsia.⁸

In our study, mean maternal age was 23.66yrs, which was corresponding with other studies. Study done by Chauhan P et al found that mean maternal age was 23.6+/- 6.5yrs. In Casey et al, the mean maternal age was 23.9yr.⁹

In Donald D et al, the incidence of oligohydramnios in primipara was 60% which is comparable to our study, which was 52%.

According to gestational age, 23% cases of oligohydramnios was manifested in >40 wks of gestational age. Clement D et al studied 6 cases of postdatism, in which sudden diminished of amniotic fluid volume over 24hrs.¹⁰ Bowen Chattoor JS et al evaluated the relationship between amniotic fluid index and perinatal outcomes in postdated pregnancies.¹¹

Mode of Delivery

In present study, the LSCS was done in 42% cases which was comparable with other studies. Casey B et al studied that in oligohydramnios there was increased rate of induction of labour(42%) and caesarean section (32%) of pregnancies.⁹ Golan A et al found that in 35.2% of oligohydramnios were delivered by caesarean section.

Perinatal Outcome

In the present study, the APGAR score was measured at 1 min and 5 min after birth. 16.3% babies had low APGAR score. Syria R et al reported that incidence of low APGAR score was 38.8% at 1 minute. Casey B et al concluded that 6% babies had 3 APGAR score less than at 5minute.

In our study, 34% neonate were admitted in nursery. Syria R et al reported 88.8% newborn were admitted in NICU with AFI <5cm.¹² Casey B et al reported 7% admission in NICU with AFI<5cm. Zhang J et al reported that 29.4% was admitted in NICU with AFI<5cm.

In our present study, 62% babies were mother side and 3% were fresh still birth and 6% were died in neonatal period and 4% were IUD. Chamberlin PF et al reported the 18.8% perinatal mortality in patients with low AFI. Chhabra S et al reported 87.7% perinatal mortality in oligohydramnios patient.

In our study, we found only 2 cases of congenital anomaly, inspite that oligohydramnios is associated with many congenital anomaly like renal agenesis, posterior urethral valve, obstruction of urinary tract etc.. It might be less in our study, due to regular antenatal visits and congenital anomaly scan in 2nd trimester.

The lack of amniotic fluid allows compression of foetal abdomen, which restricts movement of diaphragm. So there is more chances of foetal jeopardy in oligohydramnios.

As patients of oligohydramnios with non reactive NST indicated foetal jeopardy as per revised Biophysical profile scoring by Clerk et al. The foetal jeopardy was reflected by increment in operative interference in present study.

In our study, we diagnosed 4 cases of chronic Foetal distress with the help of NST, which were delivered by elective Caesarean section. In today's era, regular use of NST increases the rate of caesarean section.

7. Conclusion

Oligohydramnios is frequent occurrence in pregnant women, which were diagnosed precisely by ultrasonography. Patients with oligohydramnios demands intensive foetal surveillance and proper antepartum and intrapartum care. Oligohydramnios is frequently associated with IUGR, PIH and post datism. Amniotic fluid volume is a predictor of foetal tolerance in labour and its decrease is predictor of foetal jeopardy in relation to abnormal foetal heart rate and meconium stained liquor.

Take timely intervention can reduce the perinatal mortality and morbidity. Due to increase intranatal complication, increases the rate of caesarean section, but decision between vaginal delivery and caesarean section should be well balanced, so that unnecessary maternal morbidity can be prevented and other side timely intervention can reduce perinatal morbidity and mortality.

8. Ethical Approval

A written and informed consent has been given by the patient for publication of this case.

9. Conflict of Interest

There is no conflict of interest

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