

Pregnancy Outcome in Oligohydramnios at Term, A Prospective Study

Dr. Ashish Kumar Bhattacharjee¹, Dr. Karuna Kanta Das², Dr. Tanuja Morang^{3*}¹Professor, Department of Obstetrics and Gynaecology, Gauhati Medical College and Hospital, Guwahati, Assam, India²Associate Professor, Department of Obstetrics and Gynaecology, Gauhati Medical College and Hospital, Guwahati, Assam, India³Post Graduate Trainee, 3rd Year, Department of Obstetrics and Gynaecology, Gauhati Medical College and Hospital, Guwahati, Assam, IndiaDOI: [10.36347/sjams.2019.v07i11.010](https://doi.org/10.36347/sjams.2019.v07i11.010)

| Received: 30.10.2019 | Accepted: 06.11.2019 | Published: 09.11.2019

*Corresponding author: Dr. Tanuja Morang

Abstract

Original Research Article

Decrease in liquor or oligohydramnios is associated with increased risk of perinatal morbidity in terms of low birth weight, meconium aspiration syndrome, low APGAR Score, increased rate of NICU admission and perinatal death. It is also associated with increased rate of caesarean delivery. Early detection of oligohydramnios and its management may help in better fetomaternal outcome. **The objectives of present study were:** 1) To study the effect of oligohydramnios on maternal outcome in terms of vaginal delivery or caesarean delivery. 2) To study the effect of oligohydramnios on fetal outcome in terms of APGAR score, NICU admission, birth weight and perinatal death. Present study is a hospital based case-control study done over a period from 1-07-2018 to 30-06-2019 in 200 patients with oligohydramnios and 200 control with normal liquor volume in third trimester pregnancy, selected randomly after satisfying inclusion and exclusion criteria. AFI <5cm was considered oligohydramnios. There was increased incidence of non reactive NST, induction of labour, delivery by LSCS, low APGAR Score, low birth weight (<2.5 kg) and perinatal mortality (8%) in women with oligohydramnios. Most common cause of LSCS was fetal distress. AFI ≤ 5 cm detected at 37 weeks of gestation is an indicator of poor perinatal outcome. Determination of AFI is a valuable screening test for predicting fetal distress in labour requiring caesarean section.

Keywords: Oligohydramnios; Term gestation; Amniotic fluid index; Maternal outcome; Fetal outcome.**Copyright © 2019:** This is an open-access article distributed under the terms of the Creative Commons Attribution license which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use (NonCommercial, or CC-BY-NC) provided the original author and source are credited.

INTRODUCTION

Nature has made floating bed for the growing fetus in the form of amniotic fluid cavity filled with liquor amnii. It provides space for free fetal movement, acts as shock absorber, provides nutrition, maintains temperature and prevents cord compression.

The main source of amniotic fluid is fetal urine in later half of pregnancy. Another important source of amniotic fluid is fetal lungs. The volume of amniotic fluid increases rapidly with the growth of the products of conception from about 30 ml at 10 weeks to 200 ml at 16 weeks and reaches 1000 ml at 36 weeks. During the last few weeks decreases to 600-800 ml.

Proper clinical assessment of amniotic fluid volume was difficult in past. With the advent of real time ultrasonography, assessment of amniotic fluid has been possible resulting in earlier recognition of abnormal condition and possible intervention. The technique of four quadrant method of calculating Amniotic fluid index (AFI) described by Phelan *et al.*, in 1987 is accepted by most of the authors.

Decrease in amniotic fluid volume or oligohydramnios is defined as a condition where liquor amnii is deficient in amount. Sonographically, it is defined when the single largest vertical pocket of liquor is less than 2 or AFI less than 5.

With amniotic fluid index of less than 5, incidence of oligohydramnios after 34 weeks is around 4-8%. Various studies show that oligohydramnios is associated with variety of ominous pregnancy outcome. Umbilical cord compression during labour is common with oligohydramnios which increases the risk for caesarean delivery for fetal distress and 5 minute APGAR score <7 [1]. The decrease of amniotic fluid volume is associated with stillbirth, increased labour induction, meconium aspiration syndrome, non assuring fetal heart pattern and neonatal death (Casey and coworkers, 2000)². Oligohydramnios is also associated with maternal morbidity in the form of increased rates of induction or operative interference carried out to improve the perinatal outcome.

This present study is conducted to find out the effect of oligohydramnios in determining perinatal outcome at term pregnancy. The purpose of taking group of women with oligohydramnios at term pregnancies is that the etiology, management and the outcome is different in late onset oligohydramnios compared to early onset oligohydramnios.

MATERIALS AND METHODS

Present study was done over a period from 1-07-2018 to 30-06-2019. 200 patients with oligohydramnios in third trimester admitted in the department of Obstetrics and Gynaecology, Gauhati Medical College and Hospital, Guwahati were taken as study group and 200 patients with normal liquor volume were taken as control. The cases were selected randomly after satisfying inclusion and exclusion criteria.

Inclusion Criteria

- Pregnancies with gestational age ≥ 37 completed weeks.
- Amniotic fluid index ≤ 5 cm.
- Singleton pregnancy.

Exclusion Criteria

- Gestational age less than 37 completed weeks.
- Associated fetal malformations.
- Multiple gestations

Oligohydramnios was confirmed by USG to assess AFI using Phelan's four quadrant technique. AFI ≤ 5 cm was considered oligohydramnios.

This study was conducted with the aims and objective of

- To observe the effect of oligohydramnios on maternal outcome in terms of vaginal delivery or caesarean delivery.
- To study the effect of oligohydramnios on fetal outcome in terms of APGAR score, NICU admission, birth weight and perinatal death.

A detailed history and examination was done. All required investigations were done. Decision regarding mode of delivery either by induction or elective or emergency LSCS was done as per required.

RESULTS

Maximum patients were in age group 20-30 years both in study (88%) and control group (92%). 59% of patients were primi in study group and 56.5% of patients were primi in control group. Antenatal complications were gestational hypertension and pre-eclampsia (19.5%), post dated pregnancy (18.5%), malpresentation (7%), previous LSCS (17%) etc. Higher incidence of non-reactive NST in study group (39.5%) compared to control group (16.5%) (Table-1). Increased incidence of induction of labour in study group (36%) (Table-2). Increased rate of LSCS in oligohydramnios group (60%) (Table-3). Most common cause to perform LSCS was fetal distress in study group (55.8%). Oligohydramnios was associated with increased rate of low APGAR Score at 1 min (27%) (Table 4) and 5 min (19%) (Table-5), low birth weight (41.5%) (Table-6), increased rate of admission to NICU (52%) (Table-7) due to various causes like birth asphyxia, meconium aspiration syndrome, low birth weight and increased incidence of perinatal mortality (8%) (Table-8).

Table-1: Non Stress Test Pattern

NST	STUDY GROUP		CONTROL GROUP	
	NUMBER	%	NUMBER	%
REACTIVE	121	60.5	167	83.5
NON-REACTIVE	79	39.5	33	16.5

Table-2: Onset of Labour

ONSET OF LABOUR	STUDY GROUP		CONTROL GROUP	
	NUMBER	%	NUMBER	%
SPONTANEOUS	128	64	140	70
INDUCED	72	36	60	30

Table-3: Mode of Delivery

MODE OF DELIVERY	STUDY GROUP		CONTROL GROUP	
	NUMBER	%	NUMBER	%
VAGINAL DELIVERY	80	40	124	62
LSCS	120	60	76	38

Table-4: Apgar Score At 1 Min

SCORE	STUDY GROUP		CONTROL GROUP	
	NUMBER	%	NUMBER	%
<4	18	9	3	1.5
4-7	36	18	14	7
>7	146	73	183	91.5

Table-5: Apgar Score At 5 Min

	STUDY GROUP		CONTROL GROUP	
	Number	%	Number	%
<7	38	19	11	5.5
>7 Or = 7	162	81	189	94.5

Table-6:

BIRTH WEIGHT IN KG	STUDY GROUP		CONTROL GROUP	
	NUMBER	%	NUMBER	%
<2	51	25.5	16	8
2-2.5	32	16	36	18
2.5-3	100	50	111	55.5
>3	17	8.5	37	18.5

Table-7: Admission to NICU

	STUDY GROUP		CONTROL GROUP	
	NUMBER	%	NUMBER	%
YES	104	52	36	18
NO	96	48	164	82

Table-8: Perinatal Mortality

	NUMBER	%
STUDY GROUP	16	8
CONTROL GROUP	2	1

Table-10: LSCS for Fetal Distress

Studies	LSCS in percentage
Casey <i>et al.</i> , 2000 [2]	51
Chandra P <i>et al.</i> , 2000 [4]	76.92
Sriyar <i>et al.</i> , 2001 [5]	43.05
Biradar KD <i>et al.</i> , 2016 [7]	42
Present study	55.8

The rate of LSCS for fetal distress in cases with Oligohydramnios in present study is 55.8%, which is comparable with different rates found in various studies. In a study by Chandra P *et al.*, [4] showed a higher rate of LSCS for fetal distress.

The APGAR Score <7 at 1 min is seen in 27% in present study and is consistent with studies done by Rutherford *et al.* in 1987(23%)⁸ and Biradar KD *et al.*, in 2016(25%) [7]. Sriya *et al.*, in 2001 5 showed higher incidence of low APGAR Score at 1 min (38.88%).

The 5 min APGAR Score was 19% in present study which is consistent with the result of the study done by Biradar KD *et al.*, in 2016 (18.2%) [7].

The high incidence of Low Birth Weight may be due to chronic placental insufficiency causing fetal growth restriction. The occurrence of low birth weight is 41.5%. Sowmya K *et al.*, [6] found 48% low birth weight babies and Biradar KD *et al.*, [7] showed 38.6%.

52% of newborns were admitted in NICU for various perinatal morbidities like meconium aspiration syndrome, birth asphyxia and neonatal seizures etc. It is consistent with the studies done by Chandra P *et al.*, in 2000 [4] (46.15%) and Biradar KD *et al.*, in 2016 [7] (40%). This is not consistent with study done Sowmya K *et al.*, in 2014 [6] (14%). Study done by Sriya R *et*

DISCUSSION

The various outcome results are comparable to similar studies done in India or abroad. Casey and co-workers (2000) [2] conducted a study on outcome of pregnancy with oligohydramnios and found that there was increase in induction of labour (42% vs 18%). In present study, labour was induced in 36% of patients whereas 30% of patients went into spontaneous labour.

Table-9: Non-Reactive Non Stress Test

Studies	% of Non- Reactive NST
Kumar P <i>et al.</i> , 1991 [3]	40
Chandra P <i>et al.</i> , 2000 [4]	69.23
Sriya R <i>et al.</i> , 2001 [5]	41.55
Sowmya K <i>et al.</i> , 2014 [6]	12
Present study	39.5

The non reactive NST rates are high in women with AFI < 5 cm, the rate being 39.5% in present study and is comparable to most of the similar studies (Table-9). However, the result is not consistent with that of Sowmya K *et al.* in 2014, which showed 12% only.

al., in 2001 [5] showed higher incidence of neonatal admission (88.88%).

Out of 200 cases in study group there were 16 Neonatal Deaths (8%) while among controls there were only 2 Neonatal Death (1%). In a study by Casey *et al.*, [2] neonatal death occurred in 5% cases. In another study by Baron *et al.*, [9], there was no mortality probably due to good neonatal intensive care unit. All the deaths in present study were early Neonatal Death and 87.5% of them i.e. 14 cases were unbooked cases. Six of them were deeply asphyxiated and could not be revived. Three babies had Meconium Aspiration Syndrome.

CONCLUSION

Oligohydramnios is being detected more often these days due to routinely performed obstetric USG. Oligohydramnios is one of the indicators of poor perinatal outcome. It is associated with meconium staining of amniotic fluid, umbilical cord compression, poor tolerance of labour, low APGAR Score. Gestational hypertension, postdated pregnancy are the commonest causes of reduced amniotic fluid during third trimester. Oligohydramnios with non reactive NST results in increased incidence of fetal distress and caesarean section, NICU admission, low APGAR Score and neonatal death. Mode of delivery depends on severity of oligohydramnios and status of fetal well being. In conclusion, oligohydramnios is a high risk pregnancy, proper antepartum care, intensive fetal surveillance and intrapartum as well as good neonatal care are expected in patients with oligohydramnios for better fetomaternal outcome. Every case of oligohydramnios demands individualization, decisions regarding time and mode of delivery.

REFERENCES

1. Chauhan SP, Sanderson M, Hendrix NW, Magann EF. Perinatal outcome and amniotic fluid index in the antepartum and intrapartum period. A meta analysis. Arch gynecology Obstetrics, 2007, July, 276(1)-17-9
2. Casey BM, McIntire DD, Bloom SL, Lucas MJ, Santos R, Twickler DM, Ramus RM, Leveno KJ. Pregnancy outcomes after antepartum diagnosis of oligohydramnios at or beyond 34 weeks' gestation. American journal of obstetrics and gynecology. 2000 Apr 1;182(4):909-12.
3. Kumar P, Iyer S, Ramkumar V. Amniotic fluid index- A new ultrasound assessment of amniotic fluid. Journal Obstet and Gynaecol of India, 1991; 41(1): 10-12.
4. Chandra P, Kaur SP, Hans DK, Kapila AK. The impact of amniotic fluid volume assessed intrapartum on perinatal outcome. Obstet and Gynae Today, 2000; 5(8): 478-81.
5. Sriya R, Singhai S, Rajan M. Perinatal outcome in patients with amniotic fluid index < 5cm. J Obstet Gynaecol India. 2001;51(5):98-100.
6. Sowmya K, Varghese SB, Borkar U. Effect of isolated oligohydramnios in otherwise normal term pregnancy. Int J Biomed Res [Internet]. 2014 Feb 28;5(2) SE-Original Research Articles). Available from: <https://ssjournals.com/index.php/ijbr/article/view/944>
7. Biradar K, Shamanewadi A. Maternal and perinatal outcome in oligohydramnios: study from a tertiary care hospital, Bangalore, Karnataka, India. Int J Reprod Contraception, Obstet Gynecol. 2016 Jan 1;2291-4.
8. Rutherford SE, Jeffrey P, Phelan J, Smith CV, Jacobs N. The four quadrant assessment of amniotic fluid volume: An adjunct to antepartum fetal heart rate testing. Obstet Gynecol, 1987; 70: 353.
9. Baron C, Morgan MA, Garite TJ. The impact of amniotic fluid volume assessed intrapartum on perinatal outcome. American Journal of obstetrics and gynecology, 1995, 173: 167.