

Clinical study of maternal and fetal outcome in pregnancies with oligohydramnios

Surabhi Tomar Sharma

Associate Professor, Department of Obstetrics and Gynaecology, NIMS Medical College and Hospital, Jaipur, Rajasthan, INDIA.

Email: Surabhit@gmail.com

Abstract

Background: About 3-8% of pregnant women in third trimester are diagnosed with low amniotic fluid volume. Oligohydramnios is associated with an increased risk of adverse outcome such as increased rates of caesarean delivery due to meconium staining of amniotic fluid or fetal distress, while fetal adverse outcomes are admission to the neonatal intensive care unit (NICU), meconium aspiration syndrome (MAS), 5-min Apgar score <7, umbilical cord blood pH < 7.10, low birth weight (small-for-gestational age) and respiratory distress syndrome. Present study was undertaken to study maternal and fetal outcome in pregnancies with oligohydramnios. **Material and Methods:** This prospective and observational was conduct pregnant women with 28 completed weeks with intact membranes diagnosed as oligohydramnios (AFI less than 5 on ultrasonography examination). **Results:** Total 120 patients were considered for this study. Most common age group in our study was of 21- 25 years (72.5 %), followed by 26-30yers age group (14.17 %). In the present study the mean maternal age was 23.58 ±4.32 years. 55 % patients in our study were primigravida, 31.67% were 2nd and 3rd para only 13.33 % were multipara patients. Most common group was of gestational age 34-37 weeks (late preterm group) in 34.17 % patients. The mean amniotic fluid index in or study was 3.12±1.78 cm. The caesarean section rate in our study was 23.33% in oligohydramnios patients. Most common indication for LSCS is fetal distress in 60.72 % patients. Total 44.16 % babies required neonatal resuscitation. Total 16.67 % babies needed NICU admission for more than 5 days. **Conclusion:** We conclude that oligohydramnios is associated with a higher rate of pregnancy complications mainly pre-eclampsia and increased have increased fetal morbidity and mortality.

Key Word: Maternal outcome, Fetal outcome, Oligohydramnios, APGAR score

Address for Correspondence:

Dr. Surabhi Tomar Sharma, Evaa Hospital b 28-29, Govind Marg, Near Moti Doongri Circle, Jaipur, Rajasthan, INDIA.

Email: Surabhit@gmail.com

Received Date: 17/06/2019 Revised Date: 20/07/2019 Accepted Date: 12/08/2019

DOI: <https://doi.org/10.26611/10121125>

Access this article online

Quick Response Code:



Website:

www.medpulse.in

Accessed Date:
21 August 2019

INTRODUCTION

Amniotic fluid is an important part of pregnancy and has a number of important functions such as it helps in development of fetal organs like lungs, gastrointestinal tract and musculoskeletal system. It acts as a physical cushion, protects fetus against external trauma, umbilical cord compression and infection from outside world. It also regulates body temperature and has bacteriostatic

properties. Amniotic fluid volume assessment is an important component of every standard obstetric ultrasonography examination and for ante partum fetal surveillance¹. It measures about 50 ml at 12 weeks, 400 ml at 20 weeks and reaches peak of 1 litre at 36-38 weeks. Thereafter the amount diminishes till at term it measures about 600-800 ml². Amniotic fluid volume can be measured by dye dilution technique, which is invasive method and considered as gold standard. Other non-invasive methods include the four-quadrant amniotic fluid index (AFI), single deepest pocket (SDP) and two-diameter pocket by ultrasonographic examination. Oligohydramnios can be defined as amniotic fluid volume <5% for gestational age, AFI < 5 cm or maximal deepest pocket < 2 cm. Single deepest pocket is the best method for diagnosing oligohydramnios³; however, most studies evaluating adverse outcomes utilize AFI. Regardless of the method used, the finding of oligohydramnios is not normal. Generally, about 3-8% of pregnant women in third trimester are diagnosed with low amniotic fluid

How to cite this article: Surabhi Tomar Sharma. Clinical study of maternal and fetal outcome in pregnancies with oligohydramnios. *MedPulse – International Journal of Gynaecology*. August 2019; 11(2): 60-64. <http://medpulse.in/Gynacology/index.php>

volume. It is normally anticipated as a sign of placental insufficiency⁴. Oligohydramnios is observed in about 1-5% of total pregnancies⁵. Oligohydramnios can be due to various congenital fetal abnormalities, uteroplacental insufficiency, premature rupture of membranes, growth retardation, post-term pregnancy, chronic abruption placentae, etc⁶. Oligohydramnios associated with an increased risk of adverse outcome. Maternal risks were increased rates of caesarean delivery due to meconium staining of amniotic fluid or fetal distress, while fetal adverse outcomes were admission to the neonatal intensive care unit (NICU), meconium aspiration syndrome (MAS), 5-min Apgar score <7, umbilical cord blood pH <7.10, low birth weight (small-for-gestational age) and respiratory distress syndrome^{7,8}. Present study was undertaken to study maternal and fetal outcome in pregnancies with oligohydramnios.

MATERIAL AND METHODS

The study design was prospective and observational, conducted in patients admitted under Department of Obstetrics and Gynaecology, NIMS Medical college and Hospital Jaipur. Study period was from 1 January 2018 to 30 June 2018. Study clearance was obtained from institutional ethical committee.

Inclusion Criteria

Pregnant women with 28 completed weeks with intact membranes diagnosed as oligohydramnios (AFI less than 5 on ultrasonography examination). Patients with

obstetric factors such as PIH, post-dated patients with intrauterine growth retardation were included.

Exclusion Criteria

1. Antenatal patients suffering from medical disorders such as heart diseases, diabetes mellitus
2. Patients with premature rupture of membranes or preterm premature rupture of membranes
3. Patients with fetal congenital anomaly known to cause oligohydramnios.
4. Patients with oligohydramnios diagnosed before 28 weeks
5. Multifetal gestation.

Patients suspected or came to OPD with diagnosis of oligohydramnios were evaluated. Patients admitted and oligohydramnios was confirmed by measuring AFI on ultrasonography. Patients with confirmed diagnosis were further evaluated. Detailed history and physical examination of all the patients was done. Routine and necessary investigations like haemogram, blood grouping and Rh typing, TFT, VDRL, viral markers, Ultrasound doppler study, urine routine and microscopy were done. Routine management in form of adequate rest, left lateral position, oral and intravenous hydration, corticosteroids for fetal lung maturation was done. Decisions such as termination of pregnancy, method of induction, route of delivery, etc. were decided as per protocol. Parameters such as associated complications, type of delivery conducted, fetal outcome, perinatal morbidity and mortality were assessed. Data was collected in Microsoft excel sheet and analysed accordingly.

RESULTS

After applying inclusion and exclusion criteria 120 patients were considered for this study. Most common age group in our study was of 21- 25 years (72.5 %), followed by 26-30yrs age group (14.17 %). In the present study the mean maternal age was 23.58 ±4.32 years.

Table 1: Age wise distribution

Age	No. of patients	Percentage
20 or less	8	6.66
21-25	87	72.5
26-30	17	14.17
>30	8	6.67
Total	120	100

55 % patients in our study were primigravida, 31.67% were 2nd and 3rd para only 13.33 % were multipara patients.

Table 2: Parity and maternal outcome

Parity	normal	Instrumental	LSCS	Total (Percentage)
Primi	43	6	17	66 (55 %)
Parity 2 or 3	26	4	8	38 (31.67 %)
Multipara	11	2	3	16 (13.33 %)
Total	80	12	28	120

Most common group was of gestational age 34-37 weeks (late preterm group) in 34.17 % patients, followed by gestational age 28-34 weeks (early preterm group) in 30.83 % patients. 15.83 % patients were > 40 weeks.

Table 3: Gestational age wise distribution

Gestational age	No. of patients	Percentage
28-34 weeks	37	30.83
34-37 weeks	41	34.17
38-40 weeks	23	19.17
> 40 weeks	19	15.83

When we compared AFI values, most common group was with AFI 4-5 cm (46.67 %) patients, 31.67 % patients had AFI 2-3 cm and 21.66 % patients had AFI 0-2 cm. The mean amniotic fluid index in our study was 3.12 ± 1.78 cm.

Table 4: Distribution according to AFI

AFI	No. of patients	Percentage
0-2	26	21.66
2-3	38	31.67
4-5	56	46.67
Total	120	100

In our study we noted that oligohydramnios was associated with other antenatal complications such as anaemia (24.18%), preeclampsia (21.68%), prolonged pregnancy (40-42 wks) (15 %), breech presentation (12.5 %), gestational hypertension (11.68 %). Rare obstetric problems were post term pregnancy (>42 wks) in 1 patient, chorioamnionitis in 1 patient.

Table 5: maternal complications

Maternal Factors	Total No	%
Anaemia	29	24.18
Preeclampsia	26	21.68
Prolonged pregnancy (40-42 wks)	18	15
Breech	15	12.5
Gestational Hypertension	14	11.68
Post term pregnancy (>42 wks)	1	0.83
Chorioamnionitis	1	0.83

30 % patients had abnormal doppler findings, most of them underwent LSCS (15.83 %). 70 % patients with normal doppler study, had mostly delivered by vaginal route. Early decision for LSCS was considered in patients with abnormal doppler study along with any other obstetric complication.

Table 6: Doppler and maternal outcome

Doppler study	Vaginal	Instrumental	LSCS	Total
Normal	72 (60%)	3 (2.5%)	9 (7.5%)	84 (70 %)
Abnormal	8 (6.67%)	9 (7.5%)	19 (15.83%)	36 (30 %)
Total	80 (66.67%)	12 (10%)	28 (23.33%)	

Induction of labour was done in 44.17 % patients, other 55.83 % had spontaneous labour or came in labour.

Table 7: Comparison of labour

labour	number	percentage
spontaneous	67	55.83
induced	53	44.17

The caesarean section rate in our study was 23.33% in oligohydramnios patients. Most common indication for LSCS is fetal distress in 60.72 %, followed by severe oligohydramnios in 17.86 % patients. LSCS was considered mainly for fetal outcome improvement.

Table 8: Indications and number comparison

Indication	Number	Percentage
Fetal distress	17	60.72
Severe oligohydramnios	5	17.86
Breech	2	7.14
CPD	1	3.57
Other	3	10.71

We noted APGAR score at 1 min as 8-10 in 76.67 %, 6-7 cm in 15.83 % patients and less than 5 in 7.5 % patients. APGAR score at 5 min as 8-10 in 85 %, 6-7 cm in 10.83 % patients and less than 5 in 4.17 % patients.

Mode of delivery	APGAR score at 1 min			APGAR score at 5 min		
	8-10	6-7	Less than 5	8-10	6-7	Less than 5
Vaginal delivery	62	11	7	68	9	3
Instrumental	6	5	1	8	3	1
LSCS	24	3	1	26	1	1
Total	92 (76.67 %)	19 (15.83 %)	9 (7.5 %)	102 (85 %)	13 (10.83 %)	5 (4.17 %)

We had 12.5 % babies with weight less than 1500 gm, 24.17 % babies with weight 1500 – 2000 gm, 32.5 % babies had 2000-2500 gm birthweight and 30.83 % babies had birthweight more than 2500 gm. Total 44.16 % babies required neonatal resuscitation. Babies requiring neonatal resuscitation were admitted in NICU for observation and for any further management.

Birthweight	With mother	Required resuscitation	NICU admission			Total
			Upto 48 hrs	3-5 days	More than 5 days	
Less than 1500	0	15 (12.5 %)	0	0	15 (12.5 %)	15 (12.5 %)
1500-2000	11 (9.16 %)	18 (15 %)	8 (6.67 %)	8 (6.67 %)	2 (1.67 %)	29 (24.17 %)
2000-2500	27 (22.5 %)	12 (10 %)	9 (7.5 %)	1 (0.83 %)	2 (1.67 %)	39 (32.5 %)
More than 2500	29 (24.17 %)	8 (6.67 %)	6 (5 %)	1 (0.83 %)	1 (0.83 %)	37 (30.83 %)
	67 (55.83 %)	53 (44.16 %)	23 (19.17 %)	10 (8.33 %)	20 (16.67 %)	120

Total 16.67 % babies needed NICU admission for more than 5 days. Majority of them were birth weight less than 1500 gm, premature babies, often associated with IUGR, etc. We noted early neonatal death in 3 babies. No maternal mortality noted. 7 mothers required postpartum blood transfusion mostly due to antenatal anaemia.

DISCUSSION

Amniotic fluid volume is an important primary indicator of fetoplacental and uteroplacental insufficiency. Oligohydramnios without premature rupture of membranes reflects conditions causing chronic stress to fetus, it results in shunting of blood to brain, adrenal glands and heart. Decreased renal perfusion results in decrease urinary output and oligohydramnios. Similarly placental pathologies such as pregnancy induced hypertension may cause overall reduced supply to fetus, early placental aging resulting in decreased production of amniotic fluid and thus oligohydramnios. Overall, pregnancies with oligohydramnios have a increased risk of maternal and neonatal morbidities. In the present study the mean maternal age was 23.58 ±4.32 years which was similar other studies^{9,10}. 55 % patients in our study were primigravida, 31.67% were 2nd and 3rd para only 13.33 % were multipara patients. Vidyasagar *et al*¹¹ also had 46.3% Primigravida participants in his study. The mean amniotic fluid index in our study was 3.12±1.78 cm. It was comparable with the study done by Chauhan SP *et al*⁹, (3 ± 1.5 cm in patients with AFI <5). Neonatal morbidities are commonly seen in patients with severe oligohydramnios (AFI less than 2). In our study preeclampsia was associated with 21.68% of cases of oligohydramnios which is less than 38.46% and 31% of preeclampsia in oligohydramnios group in studies by Chandra P *et al*¹², and Sriya R *et al*¹³ respectively.

Induction of labour was done in 44.17 % patients, other 55.83 % had spontaneous labour or came in labour. It was consistent with other studies by Jandial C *et al*¹⁴, and Guin *et al*¹⁵ found that labour was induced in 58% and 56.6% respectively in cases of oligohydramnios, these numbers are more as compared to our study. Initially, obstetricians used to think that oligohydramnios is an emergency situation and requires urgent induction. Now only after proper evaluation of oligohydramnios, we induce patients if needed. The caesarean section rate in our study was 23.33% in oligohydramnios patients. Studies by Casey *et al*¹⁶, and Sriya R *et al*¹³ noted 51% and 43.05% of LSCS rate, which is significantly higher than our study. Jun Zhang *et al*¹⁷, in his comparative study found no difference in the overall rate of caesarean section between women with oligohydramnios and the controls (24% Vs 19%). Most common indication for LSCS is fetal distress in 60.72 %, followed by severe oligohydramnios in 17.86 % patients. LSCS was considered mainly for fetal outcome improvement. In patients with favourable cervix, previous history of vaginal delivery, willing for vaginal delivery were given trial of labour. We noted APGAR score at 1 min as 8-10 in 76.67 %, 6-7 cm in 15.83 % patients and less than 5 in 7.5 % patients. APGAR score at 5 min as 8-10 in 85 %, 6-7 cm in 10.83 % patients and less than 5 in 4.17 % patients. In similar studies by Chauhan SP *et al*⁹, Morris JM *et al*¹⁸, Guin G *et al*¹⁵ and Chate P *et al*¹⁹, noted low

APGAR score in babies of patients with oligohydramnios. We had 12.5 % babies with weight less than 1500 gm, 24.17 % babies with weight 1500 – 2000 gm, 32.5 % babies had 2000-2500 gm birthweight and 30.83 % babies had birthweight more than 2500 gm. Total 44.16 % babies required neonatal resuscitation. Babies requiring neonatal resuscitation were admitted in NICU for observation and for any further management. Chate P *et al.*¹⁹, and Chandra P *et al.*¹² had 42% and 46.5% rate of NICU admissions among cases of oligohydramnios respectively while Casey *et al.*¹⁶ in his comparative study found 7% Vs 2% NICU admission in case of oligohydramnios. We had 69.17 % babies with birthweight less than 2500. Casey *et al.*¹⁶ found 35% LBW in their study while Chandra P *et al.*¹² and Sriya R *et al.*¹¹ found birth weight less than 2.5 kg in 61.53% and 58.38% cases of oligohydramnios respectively. The high incidence of low birth weight might be because of chronic placental insufficiency causing fetal growth restriction. Total 16.67 % babies needed NICU admission for more than 5 days. Majority of them were birthweight less than 1500 gm, premature babies, often associated with IUGR, etc. Early development of oligohydramnios is also associated with increased chances of intrauterine death, stillbirth and NICU admission. We noted early neonatal death in 3 babies. One was known case of oligohydramnios, came in active labour, baby admitted in NICU for 3 days on ventilatory support, other two were with birthweight 1100 gm and 1250 gm respectively, died due to respiratory distress in NICU. No maternal mortality noted. 7 mothers required postpartum blood transfusion mostly due to antenatal anaemia.

CONCLUSION

We conclude that oligohydramnios is associated with a higher rate of pregnancy complications mainly pre-eclampsia and increased have increased fetal morbidity and mortality. Early identification and evaluation of oligohydramnios patients, delivery at centres equipped with NICU can definitely reduce neonatal mortality and morbidity.

REFERENCES

1. Patel PK., *et al.* "Pregnancy outcome in isolated oligohydramnios at term". *National Journal of Community Medicine* 6.2 (2015): 84-88.
2. Dutta DC. Textbook of Obstetrics, 8th edition; 2015:43-44;250-251
3. Nabhan AF, Abdelmoula YA. Amniotic fluid index versus single deepest vertical pocket as a screening test for preventing adverse pregnancy outcome. *Cochrane Database Syst Rev* 2008; 16: CD006593.
4. Moore TR. Clinical assessment of amniotic fluid. *Clin ObstetGynaecol.* 1997;40(2):303-13.
5. Gaikwad PR, Oswal MS, Gandhewar MR, Bhatiyani BR. Perinatal outcome in oligohydramnios and borderline amniotic fluid index: a comparative study. *Int J Reprod Contracept Obstet Gynecol.* 2016;5:1964-8
6. Williams Obstetrics. Cunningham FG, Gant NF, Leveno KJ, Gilstrap LC III, Hauth JC, Wenstrom KD: 21st Edition USA; McGraw Hill. Fetal Growth and Development. Chapter 7:142-3.
7. Alchalabi HA, Obeidat BR, Jallad MF, Khader YS. Induction of labor and perinatal outcome: the impact of the amniotic fluid index. *Eur J ObstetGynecolReprod Biol* 2006; 129: 124-127.
8. Venturini P, Contu G, Mazza V, Facchinetti F. Induction of labor in women with oligohydramnios. *J Matern Fetal Neonatal Med* 2005; 17: 129-132.
9. Chauhan SP, Sanderson M, Hendrix NW, Magann EF, Devoe LD. Perinatal outcomes and amniotic fluid index in the antepartum and intrapartum periods: a meta-analysis. *Am J Obstet Gynecol.* 1999; 181:1473-78.
10. Everett F, Magann MD, Sunect P, Dorota A, Doherty, Chauhan MD *et al.* Predictability of intrapartum and neonatal outcomes with the amniotic fluid index, single deepest pocket and a dye determined amniotic fluid volume. *Am J obstet Gynecol.* 2003;188:1523-28.
11. Vidyasagar V, Chutani N. Fetomaternal outcome in cases of oligohydramnios after 28 weeks of pregnancy. *Int J Reprod Contracept Obstet Gynecol.* 2015;4:152-6.
12. Chandra P, Kaur SP, Hans DK. The impact of amniotic fluid volume assessed intra partum on perinatal outcome. *Obstet and Gynecol Today.* 2000; 5(8); 478-81.
13. Sriya R, Singhai S. Perinatal outcome in patients with amniotic fluid index < 5 cm. *J ObstetGynecol India.* 2001;51:98-100.
14. Jandial C, Gupta S, Sharma S, Gupta M. Perinatal outcome after antepartum diagnosis of oligohydramnios at or beyond 34 weeks of gestation. *JK Science.* 2007;9(4): 213-14.
15. Guin G, Puneekar S, Lele A, Khare S. A prospective clinical study of fetomaternal outcome in pregnancies with abnormal liquor volume. *J ObstetGynaecol India.* 2011; 61: 652-55.
16. Casey BM, McIntire DD, Bloom SL, Lucas MJ, Santos R, [11]Twickler DM, *et al.* Pregnancy outcomes after antepartum diagnosis of oligohydramnios at or beyond 34 weeks' gestation. *Am J Obstet Gynecol.* 2000;182:909-12.
17. Jun Zhang, Troendle J, Meikle S, Klebanoff MA, Rayburn WF. Isolated oligohydramnios is not associated with adverse perinatal outcome. *BJOG.* 2004;111(3):220-5.
18. Morris JM, Thompson K, Smithey J, Gaffney G, Cooke, Chamberlain P *et al.* The usefulness of ultrasound assessment of amniotic fluid in predicting adverse outcome in prolonged pregnancy: a prospective blinded observational study. *BJOG.* 2003;110: 989-94.
19. Chate P, Khatri M, Hariharan C. Pregnancy outcome after diagnosis of oligohydramnios at term. *Int J Reprod Contracept Obstet Gynecol.* 2013; 2: 23-26.

Source of Support: None Declared
Conflict of Interest: None Declared