How to Cite:
Ingle, A. A., Anupama, D., Adapa, S., & Aparna, G. (2022). Maternal and fetal outcome in oligohydramnios: A study from a Government tertiary care hospital, Nizamabad. *International Journal of Health Sciences*, *6*(S1), 13973–13982. https://doi.org/10.53730/ijhs.v6nS1.8607

Maternal and fetal outcome in oligohydramnios: A study from a Government tertiary care hospital, Nizamabad

Dr. Ankitha Abharao Ingle
Junior Resident of OBG, Govt. Medical College and hospital, Nizamabad, Telangana.
Email: ankitha9035@gmail.com

Dr. D. Anupama
Associate professor of OBG, Govt. Medical College and hospital, Nizamabad, Telangana.
Email: desamalaanupama@gmail.com

Dr. Saroja Adapa
Associate Professor, Govt. Medical College and hospital, Nizamabad, Telangana.
Email: dr.adapasaroja@gmail.com

Dr. G. Aparna
Associate professor of OBG, Govt. Medical College and hospital, Nizamabad, Telangana.
Corresponding author email: aparnaganduri@gmail.com

***Abstract*---**Introduction: Oligohydramnios is a serious condition to maternal and fetal health. It is a clinical condition that is characterized by a sonographic amniotic fluid index (AFI) of 5cm. The current study was carried out in a government tertiary care hospital to investigate maternal and perinatal outcomes in oligohydramnios. Material and Methods: Present study was a hospital-based, cross-sectional, observational study conducted from July 2019 to June 2020 among pregnant women admitted in the labor room/ antenatal ward at Govt. Tertiary care Hospital with gestational age more than 37 weeks and AFI ≤ 5 cms. Study Outcomes were induced or spontaneous labor, mode of delivery, APGAR score at 1, 5 min, birth weight, NICU admission, and perinatal death. Data was collected in a Microsoft excel sheet and analyzed accordingly. Data is presented as frequencies and proportions. Results: After applying inclusion and exclusion criteria total of 170 patients were included in the present study. The most common age group in our study was of 21- 25 years (66.5 %), followed by 26-30 years age group (21.2 %). In the present study 62.4 % of patients in our study were primigravida, 35.3% were

International Journal of Health Sciences ISSN 2550-6978 E-ISSN 2550-696X © 2022.
Manuscript submitted: 18 March 2022, Manuscript revised: 9 April 2022, Accepted for publication: 27 May 2022

G2-G5 patients. Among those women diagnosed with Oligohydramnios, the cesarean section rate was 56.5% (n=52) the common indications for LSCS being fetal distress 46.1% (n=23). Oligohydramnios in term patients was associated with other antenatal complications such as anemia (7.6%) and preeclampsia (11.2%). 8.3% of patients had Apgar score less than 7 at 1 minute. It was also associated with the incidence of low birth weight (6%), NICU admissions (18.8%), congenital anomalies (0.6%) and fetal deaths (1.2%). Conclusion: Oligohydramnios patients have a higher risk of maternal morbidity and a worse perinatal outcome. Oligohydramnios is a common condition in obstetrics, indicating the need for close monitoring and good antenatal and postnatal treatment. Most people with Oligohydramnios can be detected with a thorough clinical examination and USG.

***Keywords*---**Maternal outcome, Fetal outcome, Oligohydramnios, AFI ≤ 5.

Introduction

The amniotic fluid that surrounds the developing foetus in the amniotic sac aids the foetus in various ways. It provides a physical space for the foetal skeleton to form appropriately, supports normal foetal lung development, and aids in the prevention of umbilical cord compression. It also aids in the management of temperature in the amniotic cavity, the decrease of the influence of uterine contractions, and the proper labour mechanism. [1,2]

In the third trimester, the typical amniotic fluid amount is 700-800 ml. The clinical measurement of amniotic fluid volume, including bimanual palpation and symphysio-fundal height, is untrustworthy. Ultrasound is commonly used to make a diagnosis. Sonographic criteria are used to determine if amniotic fluid volume is increased or reduced. [3]

According to the working definition of liquor evaluation, AFI less than 5cm is referred to as oligohydramnios, whereas AFI 5 to 8 cm is referred to as borderline AFI. (4) Antepartum oligohydramnios is related with increased foetal abnormalities and, in the absence of deformities, with foetal growth limitation, maternal morbidity, and poor perinatal outcome. [5,6,7]

As a result, for the best perinatal outcome, every case of oligohydramnios requires extensive prenatal examination, parental counselling, personalised decisions about time and manner of delivery, continuous intrapartum foetal monitoring, and optimal newborn care. [8]

So, this study was conducted with the objective to find the maternal and fetal outcomes associated with oligohydramnios at a tertiary care hospital

Materials and Methods

Study area: The present study was done in the in-patient setting of the Department of Obstetrics and Gynaecology, Government medical college, Nizamabad.

Study Design: Cross-sectional observational study.
Duration of Study: July 2019 to June 2020.

Inclusion Criteria:

- Patient with AFI less than and equal to 5
- 37 to 40 weeks of gestation.
- Intact membranes.
- Non-severe and controlled pre eclampsia

Exclusion Criteria:

- 40 weeks or <37weeks of gestation
- Antenatal patients having heart disease
- Premature rupture of membranes
- Multifetal gestation
- Patients not willing to consent
- Cephalopelvic Disproportion
- Contracted pelvis
- Malpresentations
- Eclampsia
- Antepartum Haemorrhage (Placenta Previa, Abruptio Placentae)
- Severe Uncontrolled Preeclampsia
- Severe degree of anaemia (Hb less than 7gm/dl)
- GDM or overt diabetes
- Mild to moderate grade of anemia (Hb >7gm/dl)

Sample size estimation:

The following assumption is made from the study by Ghosh et al.,[9]

Assumption -

Formula = $Z^2 1-\alpha * p(1-p)/d^2$

$n = 1.96^2 \times 0.527 \times (1-0.527) / d^2$

$= 0.9575 / (0.07905)^2$

$= 153.22$

Assuming 10% loses to follow up in 1 year period, effective sample size is n = n x 1/(1-d)

= 153 x 1/(1-0.10)

= 170
Thus effective sample size is 170

Procedure: Antenatal women with a gestational age of 37-40 weeks with oligohydramnios with AFI less than or equal to 5 cm, were enrolled in the study after fulfilling the inclusion and exclusion criteria. The study was conducted after approval from the Institutional ethics committee and informed written consent of participants. Assessment of amniotic fluid volume was done by calculating Amniotic Fluid Index on ultrasonography (Machine used is Voluson P8 of GE company). Detailed antenatal history including last menstrual period, and presence of high-risk factors like previous obstetric history of pregnancy-induced hypertension, pre-eclampsia, eclampsia, gestational age at which hypertension developed in the present pregnancy, and parameters like weight, pallor, edema, blood pressure was elicited from the patient. A repeat ultrasound was done at the end of 3rd day. The need for induction of labor and mode of delivery is according to standard protocols. During labor, the patient was monitored by continuous fetal cardiotocography. Artificial rupture of membranes was done in the active phase of labor to notice the color of liquor and grade it if meconium stained. Partograph was maintained for all enrolled subjects. Mode of delivery, including indications for caesarean section was noted. Data was compiled and analyzed at the end of the study period.

At birth, the neonate was assessed using 1 minute and 5 minute APGAR score. Birth weight was recorded and neonates requiring admission into NICU were followed up. All relevant information was recorded in predesigned structured proforma.

All the required Investigations Complete blood count,Blood grouping and Rh typing,Blood sugar levels (FBS, PLBS),VDRL, HIV, HBsAg,Urine analysis (complete urine examination) were done. All the information was entered in the proforma and analyzed and observations were made and accordingly discussion and recommendations were made

Statistical analysis

The data was entered in Microsoft excel 2016. The analysis was done using Statistical Package for Social Sciences Version 21.0 for windows (SPSS 21.0). The variables were summarized and expressed as frequencies and percentages.

Results

Majority of the patients belong to the age group of 21-25 years (66.5%) followed by 26-30 years (21.2%), <20 years (11.8%) and >31 years (0.6%).Table 1

Table 1: Distribution of patients based on the age group

Age Group	Frequency	Percentage
<20 years	20	11.8%
21-25 years	113	66.5%
26-30 years	36	21.2%

>31 years	1	0.6%
Total	170	100.0%

62.4% patients belong to primigravida, 35.3% patients belong to G2 to G5 and 2.4% belong to G5 and above.Table 2

Table 2: Distribution of patients based on the parity

Parity	Frequency	Percentage
Primi	106	62.4%
G2-G5	60	35.3%
G5 & Above	4	2.4%
Total	170	100.0%

57.6% are booked patients and 42.4% are unbooked patients. Table 3

Table 3: Distribution of patients based on the booking status

Booking status	Frequency	Percentage
Booked	98	57.6%
Unbooked	72	42.4%
Total	170	100.0%

24.1% patients belong to 37 weeks of gestational age, 20% patients belong to 38 weeks of gestational age, 22.4% patients belong to 39 weeks of gestational age and 33.5% patients belong to 40 weeks of gestational age. Table 4

Table 4: Distribution of patients based on the gestational age in completed weeks

Gestational Age	Frequency	Percentage
37 weeks	41	24.1%
38 weeks	34	20.0%
39 weeks	38	22.4%
40 weeks	57	33.5%
Total	170	100.0%

Amniotic fluid is clear in 60.6% patients and meconium stained in 39.4% patients. (Thick meconium stained in 18.2% patients, Thin meconium stained in 21.2% patients). Table 5

Table 5: Distribution of patients based on the amniotic fluid

Amniotic Fluid	Frequency	Percentage
Clear Liquor	103	60.6%
Thick meconium stained liquor	31	18.2%
Thin meconium stained liquor	36	21.2%
Total	170	100.0%

Mode of delivery is LSCS in 60% patients and vaginal in 40% patients. Table 6

Table 6: Distribution of patients based on the mode of delivery

Mode of Delivery	Frequency	Percentage
LSCS	102	60.0%
Vaginal induced delivery	12	7.1%
Vaginal spontaneous delivery	56	32.9%
Total	170	100.0%

Fetal distress (46.1%) was the major indication for LSCS in this study, followed by non progress of labour (36.4%), meconium stained liquor (10.8%), fetoplacental insufficiency (3.9%), fetal growth restriction (1.9%) and precious pregnancy (0.9%). Table 7

Table 7: Distribution of patients based on the indication for LSCS

Indication For LSCS	Frequency	Percentage
Fetal distress	47	46.1%
Non progress of labour	37	36.4%
Meconium stained liquor	11	10.8%
Fetoplacental Insufficiency	4	3.9%
Fetal growth restriction	2	1.9%
Precious pregnancy	1	0.9%
Total	102	100.0%

APGAR Score at 1 min is >/=7 in 91.7% patients, 4-6 in 8.3% patients and APGAR Score at 5 min is >/=7 in all (100%) the patients. Table 8

Table 8: Distribution of patients based on the APGAR score at 1 min & 5 min

		Frequency	Percentage
APGAR Score at 1 min	>/=7	154	91.7%
	4 to 6	14	8.3%
	Total	168	100.0%
APGAR Score at 5 min	>/=7	168	100.0%

In the present study, birth weight is <2.5 kg in 15.9% patients and >/=2.5 kg in 84.1% patients. Table 9

Table 9: Distribution of patients based on the birth weight

Birth Weight (Kg)	Frequency	Percentage
<2.5 kg	27	15.9%
>/=2.5 kg	143	84.1%
Total	170	100.0%

NICU admission was seen in 18.8% patients. Intra uterine fetal death was seen in 1.2% patients. Table 10

Table 10: Distribution of patients based on the admission to NICU

Admission to neonatal ICU	Frequency	Percentage
Intra uterine fetal death	2	1.2%
Yes	32	18.8%
No	136	80.0%
Total	170	100.0%

Low birth weight (6.0%) was the major neonatal complication in this study, followed by Respiratory distress (1.8%), Meconium aspiration syndrome (1.2%), Fetal growth restriction (0.6%) and Birth asphyxia (0.6%). Table 11

Table 11: Distribution of patients based on the neonatal complications

Neonatal complications	Frequency	Percentage
Low birth weight	10	6.0%
Respiratory distress	3	1.8%
Meconium aspiration syndrome	2	1.2%
Fetal growth restriction	1	0.6%
Birth asphyxia	1	0.6%

Discussion

In this study, the Majority of the patients belong to the age group of 21-25 years (66.5%) followed by 26-30 years (21.2%), <20 years (11.8%) and >31 years (0.6%). Various studies conducted by various authors [10-15] showed a majority of study subjects belonged to the age group between 20-30 years. In this present study, the majority (57.6%) of patients were booked cases. A study conducted by Patel PK et al., [16] showed that booked cases were more than the unbooked cases which is similar to the present study.

In this study, 62.4% patients belonged to primigravida, 35.3% patients belonged to G2 to G5 and 2.4% belonged to G5 and above. Similar to present study, Various studies conducted by Ghimire S et al., [17] Sree IP et al.,[18] Jagatia K et al.,[19] showed that incidence was more in Primigravida. In this study, 24.1% patients belonged to 37 weeks of gestational age, 20% patients belonged to 38 weeks of gestational age, 22.4% patients belonged to 39 weeks of gestational age and 33.5% patients belonged to 40 weeks of gestational age. A study conducted by Mohamed

AHG et al.,[20] showed most of the patients belonged to the gestational age of 38-40 weeks

In this study, Mode of delivery is LSCS in 60% patients and vaginal in 40% patients. Studies conducted by authors like Kumud M et al., [21] Pandey U et al.[22] showed incidence rates for caesarean were 48%, and 51% lower than the present study. In contrast to Studies conducted by Rizvi SM et al.[11] showed incidence of caesarean section were more as compared to present study. A Study conducted by Mushtaq E et al,[13] showed incidence of Cesarean delivery was similar to our present study. In contrast to studies conducted by Rathod S et al.,[14] Sree IP et al.,[18] Bansal D et al.,[23] Hindumathi M et al.,[24] Umber A et al.[25] showed that majority of the patient underwent vaginal delivery.

In this study, Fetal distress (46.1%) was the major indication for LSCS in this study, followed by non progress of labour (36.4%), meconium stained liquor (10.8%), fetoplacental insufficiency (3.9%), fetal growth restriction (1.9%) and precious pregnancy (0.9%).Fetal distress was the most common indication of caesarean section., this may be due to the frequent use of fetal monitoring (cardiotocography) as a routine labor room procedure. Fetal heart rate changes in CTG indicate fetal distress which prompts the obstetrician to expedite delivery rapidly. Similar to present study, various studies like Pandey U et al., [22]Rizvi SM et al.,[11] Mushtaq E et al.,[13] Hindumathi M et al., [24]]Jagatia K et al.[19] showed the most common indication for caesarean were fetal distress.

In this study, APGAR Score at 1 min is >/=7 in 91.7% patients, 4-6 in 8.3% patients. Studies conducted by Banu F et al.,[10] Mushtaq E et al.[13] showed incidence for APGAR Score less than 7 at 1 Min were similar to our present study. In this study, Birth weight is <2.5 kg in 15.9% patients and >/=2.5 kg in 84.1% patients. Rathod et al,[14] Pandey et al.[22] got similar finding as compared to present study. The study conducted by Ghimire S et al.[17] maximum number of babies had birth weight between 2.5-4 kg (51%).

In this study, NICU admission was seen in 18.8% patients. Studies conducted by Rizvi SM et al.,[10] Kansal R et al.,[12] Mushtaq E et al.,[13] Mohamed AHG et al.,[20] Patel PK et al.,[16] and Hindumathi M et al. [24] showed fewer babies were admitted in NICU as compared to present study. In this study Intrauterine fetal death was seen in 1.2%. whereas Wolff F et al. in their study reported the perinatal mortality as 7.2%.[26] In this study, 6 % of the babies were low birth weight. In contrast to our study, Biradar et al., [27] Bachhav et al., [28]and Nazlima et al. [29]in their studies reported low birth weight babies as 38.6%, 64%, and 65.3%.

Conclusion

Amniotic fluid index measurement should be used as a useful adjunct to other fetal surveillance methods, to identify those infants at risk of poor perinatal outcome. Oligohydromnios is associated with high incidence of meconium stained liquor, fetal distress, operative delivery and cesarean section for fetal distress, poor APGAR score, low birth weight, meconium aspiration and renal anomaly. Intrapartum assessment of amniotic fluid index is better than antepartum fetal assessment, as an immediate evaluation of current fetal condition can be done.

AFI, if used as a primary fetal surveillance tool in intrapartum period can categorize the fetuses into “high risk” and “low risk” depending on their susceptibility to fetal distress

References

1. Brace RA. Physiology of amniotic fluid volume regulation. Clin Obstet Gynecol. 1997; 40(2): 280-289.
2. Wallenburg HC. The amniotic fluid I. Water and electrolyte homeostasis. J Perinat Med. 1977; 5(5): 193-205.
3. James DK, Steer PJ, Weiner CP, Gonik B. High risk pregnancy: management options. 4th ed. 2007:197- 207.
4. Moore TR. Clinical assessment of amniotic fluid. Clin Obstet Gynecol 1997;40:303-13.
5. 5.Kaur Tajinder, Sood Ruchika. Feto maternal outcome in pregnancies with abnormal AFI. IOSR Journal of Dental and Medical Sciences. 2016;15:71-75.
6. Jayati Nath, Maneesha Jain, Rehana Najam. A Clinical study on oligohydramnios in the third trimester of pregnancy with special emphasis on the perinatal outcome.Journal of Evolution of Medical and Dental Sciences 2013;39:7386-91.
7. Loren N et al. Clinical significance of borderline amniotic fluid index and oligohydramnios in preterm pregnancy. Am J Obstet Gynecol 2011;117:338-42
8. Sharayu Mirji, Meena Satia. Fetomaternal outcome in cases of oligohydramnios-A prospective observational study. International Journal of Scientific Research 2016;5:136-38.
9. Ghosh R, Oza H, Padhiyar B. Maternal and fetal outcome in oligohydramnios: study from a tertiary care hospital, Ahmedabad, India. International Journal of Reproduction, Contraception, Obstetrics and Gynecology.;7(3):908.
10. Banu F, Paul VJ, Ahmad S, Pokhrel A. A Hospital based study evaluating oligohydraminous and its perinatal outcome. International Journal of Contemporary Medical Research 2017;4(10):2037-2039.
11. Rizvi SM, Farooq S, Farooq M. A study of oligohydramnios at term on maternal and fetal outcome. IJAR. 2017;5(10): 652-655.
12. Kansal R, Bansal I, Singla D, Agarwal N, Thami G. Oligohydramnios maternal & fetal outcome in pregnant females. Asian Pac. J. Health Sci., 2017; 4(2):235-240.
13. Mushtaq E, Parveen S, Shaheen F, Jan S, Abdullah A, et al. (2017) Perinatal Outcome in Patients with Isolated Oligohydramnios at Term: A Prospective Study. J Preg Child Health 4:332.
14. Rathod S, Samal SK. Evaluation of Maternal and Perinatal Outcomes of Induction in Borderline Oligohydramnios at Term. Journal of Clinical and Diagnostic Research. 2017 Sep;11(9): QC05-QC07.
15. Bhat S, Kulkarni V. Study of effect of oligohydramnios on maternal and fetal outcome. Int J Med and Dent Sci 2015; 4(1):582-588.
16. Patel PK, Pitre DS, Gupta H. Pregnancy outcome in isolated oligohydramnios at term. National Journal of Community Medicine.2015; 6(2): 217-221.
17. Ghimire S, Ghimire A, Chapagain S, Paudel S. Pregnancy outcome in cases of oligohydramnios after 28 weeks of gestation. Int J Adv Med Health Res 2016;3:68-72.

18. Sree IP, Sarada B, Veni NK, Devi SS. Third Trimester Oligohydramnios With Maternal and Fetal Outcome: Study of 75 Cases. Indian Journal Of Applied Research. 2016; 6(3): 455-57.
19. Jagatia K, Singh N, Patel S. Maternal and fetal outcome in oligohydramnios: A study of 100 cases. Int J Med Sci Public Health 2013; 2:724-727
20. Mohamed AHG. Pregnancy Outcome among Patients with Oligohydramnios and Suggested Plan of Action. IOSR-JNHS;4(5):65-75.
21. Kumud M, Kumari V, Priyambada R. Maternal & Fetal Outcome after Diagnosis of Oligohydramnios at Term. JMSCR;6(3): 555-559.
22. Pandey U, Lindow S. Perinatal outcome in cases of borderline oligohydramnios. Indian Journal of Obstetrics and Gynecology Research. 2018;5(3):405-408.
23. Bansal D, Deodhar P. A Clinical Study of Maternal and Perinatal Outcome in Oligohydramnios. J Res Med Den Sci 2015;3(4):312-6.
24. Hindumathi M, Karthiki J, Ramamani, Sivajyothi. A prospective study of maternal and fetal outcome in oligohydramnios in rural area. International Journal of Recent Advances in Multidisciplinary Research. 2015;2(11): 0985-0988.
25. Umber A. Perinatal Outcome in Pregnancies Complicated by Isolated Oligohydramnios at Term. Annals. 2009;15:35-37.
26. Wolff F, Schaefer R. Oligohydramnios-perinatal complications and diseases in mother and child. Geburtshilfe Frauenheilkd. 1994;54(3):139-43.
27. Biradar KD, Shamanewadi AN. Maternal and perinatal outcome in oligohydramnios: study from a tertiary care hospital, Bangalore, Karnataka, India. Int J Reprod Contracept Obstet Gynecol. 2016;5:2291-4.
28. Widana, I.K., Sumetri, N.W., Sutapa, I.K., Suryasa, W. (2021). Anthropometric measures for better cardiovascular and musculoskeletal health. *Computer Applications in Engineering Education*, *29*(3), 550–561. https://doi.org/10.1002/cae.22202
29. Bachhav AA, Waiker M. Low amniotic index at term as a predictor of adverse perinatal outcome. J Obstet Gynaecol Ind. 2014;64(2):120-3.
30. Nazlima N, Fathima B. Oligohydromnios at third trimester and perinatal outcome. Bangladesh J Med sci. 2012;11(1):33-6.