Original Article ISSN (O):2395-2822; ISSN (P):2395-2814

Fetomaternal Outcome in Polyhydramnios.

Chetana A Gopchade[1], Ajeet Gopchade[2]

[1]Consultant Obstetrician and Gynaecologist, Amrutpath Maternity and Children's Hospital Nanded. (MS)- India.
[2]Consultant Pediatrician, Amrutpath Maternity and Children's Hospital Nanded. (MS)- India.

Received: August 2018
Accepted: August 2018

ABSTRACT

Background: Polyhydramnios is diagnosed if on ultrasound the deepest vertical pocket is more than 8 cm or amniotic fluid index (AFI) is more than 95th percentile for the corresponding gestational age. Approximately 0.5%-1.5% are complicated by polyhydramnios. Polyhydramnios adversely affect fetomaternal outcome in many cases hence it is important to diagnose it in time so that further evaluation and appropriate management steps can be taken. **Methods:** This was a prospective observational study comprising of 60 pregnant women included in this study on the basis of a predefined inclusion and exclusion criteria. A detailed history was taken in all the cases and detailed clinical examination was done. Polyhydramnios was diagnosed on the basis of amniotic fluid index. Presence of fetal anomalies detected on antenatal ultrasound were noted. Postnatally a pediatrician examined all the newborn babies and presence of any congenital anomaly was also noted. Maternal and fetal complications were studied. Perinatal and neonatal mortality and its causes were analyzed. Data analysis was carried out using Minitab 17 version software. **Result:** Amongst the studied cases 34 (56.67%) patients were primigravida while rest of the patients were multigravida (43.33%). Mean age of the patients was found to be 26.15 +/- 5.07 years. The risk factors such as maternal anemia, pre-eclampsia, gestational diabetes and Rh isoimmunization was present in 9 (15 %), 8 (13.33%), 6 (10%) and 5 (8.33%) patients respectively. No identifiable risk factor was found in 32 cases. Most of the patient diagnosed with polyhydramnios were between 37-42 weeks (76.67%). The most common gestational age when congenital anomalies were detected was between 27-42 weeks (20%). Fetal congenital anomalies were seen in 11 (18.33%) patients. Maternal complications were seen in 27 patients (55%). There was no maternal mortality in any case. Perinatal deaths were seen in 8 cases while Neonatal Deaths (excluding deaths in perinatal period) were seen in 4 cases. **Conclusion:** Polyhydramnios adversely affect fetomaternal outcome. Moreover, there is increased incidence of congenital anomalies in cases with polyhydramnios. Proper antenatal diagnoses of these congenital anomalies is essential part of management and helps prospective parents in taking informed decision.

Keywords: Polyhydramnios, congenital anomalies, fetomaternal outcome, informed decision.

INTRODUCTION

Amniotic fluid serves as a cushion for the growing fetus and facilitate the exchange of nutrients, water, and various biochemical factors between mother and fetus. The amount of amniotic fluid is maintained within a normal range by means of mechanisms such as placental control of water and solute transfer; swallowing and excreting of amniotic fluid by the fetus and maternal effect on fetal fluid balance.[1] Defects in any of these mechanisms may lead to abnormally low (oligohydramnios) or high (polyhydramnios) amount of amniotic fluid.

Polyhydramnios is diagnosed if on ultrasound the deepest vertical pocket is more than 8 cm or amniotic fluid index (AFI) is more than 95th percentile for the corresponding gestational age.[2] Since amniotic fluid amount is kept in balance mainly by swallowing and excretion by the fetus it won't be difficult to understand that anything which affects the swallowing of amniotic fluid by the fetus (such as esophageal atresia, tracheoesophageal fistula, cleft lip and cleft palate) may lead to development of polyhydramnios.[3] The other conditions associated with polyhydramnios include maternal diabetes, multiple pregnancies, fetal anemia, intrauterine infections and fetal gastrointestinal malformations such as duodenal or anal atresia. It may also be seen in fetal neuromuscular disorders (myotonic dystrophy) and chromosomal abnormalities (Downs syndrome).[4]

Approximately 0.5%-1.5% are complicated by polyhydramnios.[5] The diagnosis is confirmed by ultrasound either by measurement of single deepest pocket measurement or by 4 quadrant method (Amniotic fluid index). A single deepest pocket of more than 8 cm or amniotic fluid index of more than 25 cm is diagnostic of polyhydramnios. Based upon single deepest pocket measurement and amniotic fluid index polyhydramnios can further be divided into mild (Single deepest pocket=8-11 cms or AFI 25-30 cms) moderate (Single deepest pocket=12-15

Name & Address of Corresponding Author
Chetana A Gopchade
Consultant Obstetrician and Gynecologist,
Amrutpath Maternity and Children's Hospital Nanded.
(MS)- India.

cms or AFI 30.1-35 cms) or severe polyhydramnios (Single deepest pocket= 16 cms or more or AFI 35.1 cms or above).[6] It is important to categorize the severity of polyhydramnios because increasing severity of polyhydramnios is associated with increased chances of congenital anomalies in the fetus. The risk of fetal anomalies increases with the degree of polyhydramnios and various studies have reported that mild, moderate and severe oligohydramnios is associated with fetal anomalies in 1%,2% and 10% patients respectively.[7]

Polyhydramnios have adverse impact on maternal as well as fetal health. In pregnant woman it is dyspnea, premature rupture of membranes (PPROM), abnormal fetal presentation, cord prolapse, uterine inertia, retained placenta and postpartum hemorrhage.[8] There are reports which suggest that there is increased incidence of events such as obstructed labor due to fetal macrosomia in patients with polyhydramnios.[9] The fact that polyhydramnios is common in patients with gestational diabetes it is plausible that the increased incidence of fetal macrosomia may be due to coexistent gestational diabetes. Polyhydramnios may also have an adverse impact on fetus in the form of increased chances of cord prolapse causing birth asphyxia, Premature rupture of membranes causing neonatal sepsis and premature delivery and its consequences such as hyaline membrane disease and neonatal hyperbilirubinemia.[10]

It is important that polyhydramnios and its severity is diagnosed at an appropriate time so that proper intervention and counselling of patients about the risks associated with it could be done.

MATERIALS AND METHODS

The present study was conducted on 60 pregnant women with more than 20 weeks of gestation and having polyhydramnios diagnosed on the basis of amniotic fluid index who were admitted in the Department of Obstetrics and Gynecology in a tertiary care center situated in an urban area. AT the time of admission detailed history regarding age, parity, gestational age, history of polyhydramnios in previous pregnancy, Family history of polyhydramnios and present complaints were recorded from the patient. History of gestational diabetes in previous or present pregnancy was also enquired into. A detailed physical examination, abdominal and pelvic examinations were done. Investigations like complete hemogram, obstetric ultrasound and anomaly scan was done. If it was done earlier then the reports were carefully reviewed. Complete labor record was analyzed along with mode of delivery. Fetal anomalies detected during ultrasound were recorded and confirmed after birth by a pediatrician. All deliveries and cesarean sections were attended by a pediatrician who recorded APGAR scores at 1 and 5 minutes. Complete physical examination of baby was also done by the attending pediatrician. Baby was shifted to mother if there were no indications for admission to NICU otherwise the baby was shifted to NICU. Maternal and neonatal complications were noted. At the end of the study, the data was compiled and analyzed. The results were studied using appropriate statistical methods. Data analysis was carried out using Minitab 17 version software. Microsoft word and excel were used for generating charts and graphs.

Inclusion Criteria

Patients diagnosed to be having polyhydramnios on the basis of Amniotic Fluid Index.
Gestational Age more than 20 weeks.
Patients giving informed consent to be part of the study.
Singleton Pregnancies.

Exclusion criteria

Gestational Age less than 20 weeks.
Multiple pregnancies.
Those patients who refused consent to be part of study.
Patients having co-morbid conditions likely to affect fetomaternal outcome such as eclampsia, Rh incompitability and maternal systemic illnesses.

RESULTS

This was a prospective study of 60 pregnant women diagnosed with polyhydramnios on the basis of amniotic fluid index on ultrasound. Amongst the studied cases 36 (60 %) patients were those who came for follow up while remaining 24 (40 %) patients were referred to our hospital from other hospitals.

Table 1: Referred Vs Follow up cases in the study.

Type of cases	No Of Cases	Percentage
Referred	24	40 %
Follow Up	36	60 %
Total	60	100 %

Amongst the studied cases 34 (56.67%) patients were primigravida while rest of the patients were multigravida (43.33%).

Table 2: Gravida of the studied cases.

Gravida	No of cases	Percentage
1st	34	56.67%
2nd	14	23.33%
3rd	8	13.33%
4th	3	5.00%
5th	1	1.67%
Total	60	100.00%

The analysis of the age groups of the studied cases showed that the most common age group of the affected cases was 18-25 years (43.33%) followed by 26-30 years (40%). Only 10 (16.67%) patients

belonged to age group of more than 30 years. Mean age of the patients was found to be 26.15 +/- 5.07 years.

Table 3: Age group of the studied cases.

Age groups	No. of Patients	Percentage
18 - 25 years	26	43.33%
26 - 30 years	24	40.00%
31 – 35 years	6	10.00%
> 35 years	4	6.67%
Total	60	100.00%
Mean Age ± SD = 26.15 +/- 5.07 years.		

In Majority of the cases of polyhydramnios there was no identifiable maternal risk factor for development of polyhydramnios. The risk factors such as maternal anemia, pre-eclampsia, gestational diabetes and Rh isoimmunization was present in 9 (15 %), 8 (13.33%), 6 (10%) and 5 (8.33%) patients respectively.

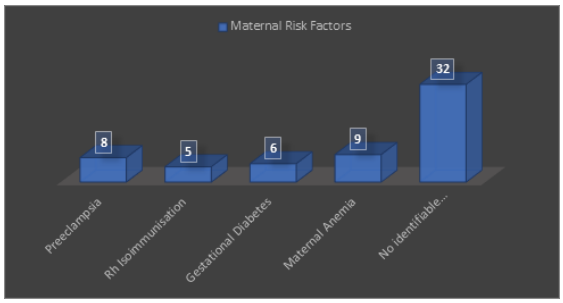

Figure 1: Maternal Risk Factors in studied cases.

The study of gestational age showed that most of the patient diagnosed with polyhydramnios were between 37-42 weeks (76.67%). Gestational age of 20-28 weeks was seen in 3 patients (5%) while 29-36 and more than 42 weeks gestational age was seen in 5 (8.33%) and 6 (10%) patients respectively.

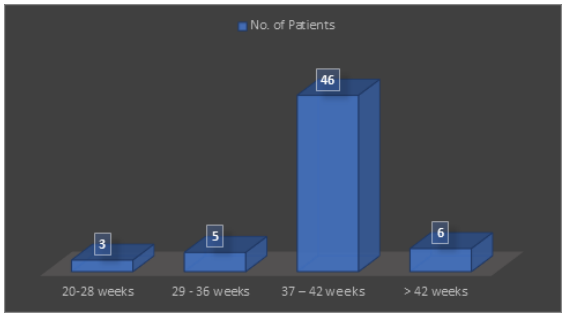

Figure 2: Gestational age in studied cases.

As the gestational age advanced there was increasing number of cases with congenital anomalies. The most common gestational age when congenital anomalies were detected was between 27-42 weeks (20%). 4 (6.67%), 2 (3.33%) and 1 (1.67%) patients were detected with congenital anomalies in more than 42 weeks, 29-36 weeks and 20-28 weeks of gestational age respectively.

The analysis of congenital anomalies showed that congenital anomalies were seen in 11 (18.33%) patients. Cleft lip and cleft palate were seen in 2 (3.33%) patients while duodenal and anal atresia were seen in 2 (3.33%) patients. 2 (3.33%) babies were diagnosed to be having Downs syndrome diagnosed on the basis of karyotyping. Anencephaly, spina bifida, esophageal atresia, microcephaly and skeletal dysplasia was seen in 1 (1.67%) patient each.

Table 4: Gestational age and congenital anomalies.

Age groups	Congenital Anomalies Present	Congenital anomalies absent
20-28 weeks	1	2
29 - 36 weeks	2	3
37 – 42 weeks	12	34
> 42 weeks	4	2
Total	19	41

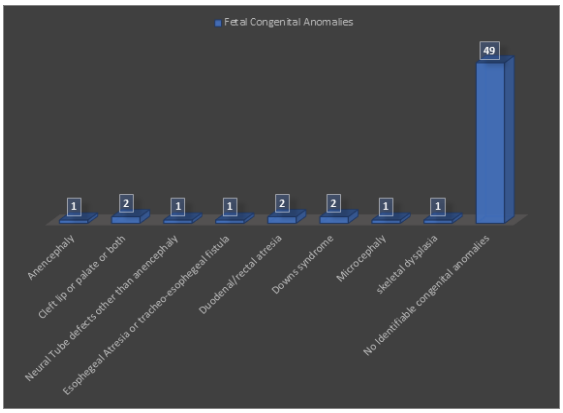

Figure 3: Fetal Congenital Anomalies in the studied cases.

Common maternal complications seen were preterm deliveries (13.33%), premature rupture of membranes (8.33%), malpresentation (8.33%), abruptio placenta (5%), atonic PPH (6.67%) and retained placenta (3.33%). There was no maternal mortality in any case.

Table 5: Maternal Complication in the studied cases.

Maternal Complications	No. of Patients	Percentage
Premature Delivery	08	13.33%
Premature Rupture Of Membranes	05	8.33%
Malpresentation	05	8.33%
Abruptio Placenta	03	5.00%
Atonic Postpartum Hemorrhage	04	6.67%
Retained Placenta	02	3.33%
No maternal Complications	33	55.00%
Total	60	100.00%

Newborn babies were either shifted to mother or to NICU depending upon the indications for admission. The most common indication for admission was found to be presence of congenital anomalies (18.33) followed by prematurity (13.33), respiratory distress other than due to meconium aspiration (10%) , meconium aspiration syndrome (8.33%) and birth asphyxia (5%).

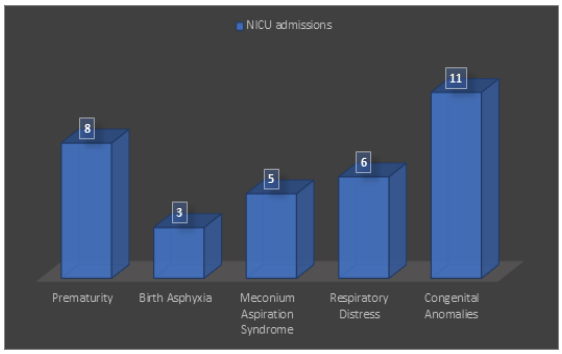

Figure 4: NICU admission in the neonates.

Out of 60 cases there were 2 intrauterine deaths while perinatal deaths were seen in 8 cases. 4 neonates died during their treatment in neonatal intensive care unit.

Table 6: Fetal Outcome in the studied cases.

Fetal Outcome	No of cases	Percentage
Alive	46	56.67%
Perinatal Deaths	8	23.33%
Intrauterine Deaths	2	13.33%
Neonatal Deaths (excluding deaths in perinatal period)	4	5.00%
Total	60	100.00%

DISCUSSION

Polyhydramnios has been the topic of interest amongst researchers because of its adverse impact on fetus as well as maternal health. In our study majority of the cases of polyhydramnios were primigravida. Various studies have shown polyhydramnios to be common in multigravida while some studies have found that the polyhydramnios is more common in primigravida patients. Singh Richa et al,[11] conducted a study to find out the incidence of polyhydramnios and its association with maternal and perinatal outcome. The authors found that polyhydramnios was most commonly seen in primigravida patients (30/64). Studies conducted by Lallar M et al and Chen K C et al,[12,13] contradicted this and reported polyhydramnios to be more common in multigravida.

In our study common maternal risk factors associated with polyhydramnios were found to be the risk maternal anemia, pre-eclampsia, gestational diabetes and Rh isoimmunization. Various studies have reported similar risk factors for development of polyhydramnios. Tafsheen K et al,[14] in a study comprising of 25,979 pregnant women found that the polyhydramnios was present in 477 cases. A total of 72 (15.3 %) cases of polyhydramnios were complicated by diabetes (gestational or established diabetes mellitus) as compared to 10% of the control group and 39 (8.1%) neonates had congenital anomalies. Polyhydramnios was associated with advanced maternal age 58 (12.2%) of subjects were over 40 years old.

In our study polyhydramnios was seen most commonly between the gestational age of 37 to 42 weeks. In many studies Polyhydramnios was usually detected in third trimester. Moore L et al,[15] conducted study of 1545 patients and found that 131 patients (8.5%) had diabetes and no other cause for polyhydramnios. 173 (11.2%) had antenatally diagnosed anomalies. For all categories of AFI except the largest (> 40.9 cm) the most common cause of polyhydramnios was idiopathic. The mean gestational age at diagnosis of polyhydramnios was 32 completed weeks. The findings of these study were similar to our conclusion that the polyhydramnios is most commonly seen in third trimester.

Maternal Complications seen in this study were preterm deliveries, premature rupture of membranes, malpresentation, abruptio placenta, atonic PPH and retained placenta. There was no maternal mortality in any case. In a study by Zahra Fardiazar et al,[26] pregnant mothers with polyhydramnios (amniotic fluid index [AFI] more than 30) were managed according to the fetal and maternal distress and preterm labor criteria. The authors found that premature rupture of membranes, meconium staining of amniotic fluid and fetal hypoxia were common complications associated with polyhydramnios.[16] Similar findings were reported in studies conducted by Golan A et al and Asadi N et al.[17,18]

Finally, the analysis of fetal anomalies associated with polyhydramnios showed that the congenital anomalies were seen in 11 patients. Cleft lip and cleft palate were seen in 2 patients while duodenal and anal atresia were seen in 2. 2 (3.33%) babies were diagnosed to be having Downs syndrome diagnosed on the basis of karyotyping. Anencephaly, spina bifida, esophageal atresia, microcephaly and skeletal dysplasia was seen in 1 (1.67%) patient each. Kornacki J et al,[19] reported that Congenital malformations of the gastrointestinal tract were the most frequent fetal anomalies in patients with polyhydramnios. Trisomy 18 was the most frequent aneuploidy found though in our study we found trisomy 21 to be more common. Similar congenital anomalies were found in the studies conducted by Abele H et al.[20]

CONCLUSION

Polyhydramnios is associated with various maternal as well as fetal complications. Its early recognition is important from the point of view of a treating obstetrician for proper management. Antenatal diagnosis of fetal congenital anomalies is important so that an informed decision can be taken by prospective parents at an appropriate time.

REFERENCES

1. Wintour EM, Shandley L. Effects of fetal fluid balance on amniotic fluid volume. Semin Perinatol. 1993 Jun;17(3):158-72.
2. Hebbar S, Rai L, Adiga P, Guruvare S. Reference ranges of amniotic fluid index in late third trimester of pregnancy: what should the optimal interval between two ultrasound examinations be? J Pregnancy. 2015;2015:319204.
3. Fukami T, Goto M, Matsuoka S, Nishijima-Sorano S, Thyama A, Yamamoto H, Nakamura S, Matsuoka R, Tsujioka H, Eguchi F. The relation between causes and onset time of polyhydramnios. Clin Exp Obstet Gynecol. 2017;44(1):113-115.
4. Hendricks SK, Conway L, Wang K, Komarniski C, Mack LA, Cyr D, Uhrich S. Diagnosis of polyhydramnios in early gestation: indication for prenatal diagnosis? Prenat Diagn. 1991 Aug;11(8):649-54.
5. Idris N, Wong SF, Thomae M, Gardener G, McIntyre DH. Influence of polyhydramnios on perinatal outcome in pregestational diabetic pregnancies. Ultrasound Obstet Gynecol. 2010 Sep;36(3):338-43
6. Lazebnik N, Many A. The severity of polyhydramnios, estimated fetal weight and preterm delivery are independent risk factors for the presence of congenital malformations. Gynecol Obstet Invest. 1999;48(1):28-32.
7. Dashe JS, McIntire DD, Ramus RM, Santos-Ramos R, Twickler DM. Hydramnios: anomaly prevalence and sonographic detection. Obstet Gynecol. 2002 Jul;100(1):134-9.
8. Dubil EA, Magann EF. Amniotic fluid as a vital sign for fetal wellbeing. Australasian Journal of Ultrasound in Medicine. 2013;16(2):62-70.
9. Said AS, Manji KP. Risk factors and outcomes of fetal macrosomia in a tertiary centre in Tanzania: a case-control study. BMC Pregnancy and Childbirth. 2016;16(1):243.
10. Institute of Medicine (US) Committee on Understanding Premature Birth and Assuring Healthy Outcomes; Behrman RE, Butler AS, editors. Preterm Birth: Causes, Consequences, and Prevention. Washington (DC): National Academies Press (US);2007.
11. Singh Richa, Saroj Singh, YadavPoonam, HarpreetKaur. "To study the Association of Polyhydramnios with Maternal and Perinatal outcome".Journal of Evolution of Medical and Dental Sciences 2013; Vol. 2, Issue 51, December 23; Page: 10002-10008.
12. Lallar M, Anam ul Haq, Nandal R. Perinatal Outcome in Idiopathic Polyhydramnios. Journal of Obstetrics and Gynaecology of India. 2015;65(5):310-314. .
13. Chen KC, Liou JD, Hung TH, Kuo DM, Hsu JJ, Hsieh CC, Hsieh TT. Perinatal outcomes of polyhydramnios without associated congenital fetal anomalies after the gestational age of 20 weeks. Chang Gung Med J. 2005 Apr;28(4):222-8.
14. Tashfeen K, Hamdi IM. Polyhydramnios as a Predictor of Adverse Pregnancy Outcomes. Sultan Qaboos University Medical Journal. 2013;13(1):57-62.
15. Moore LE. Amount of polyhydramnios attributable to diabetes may be less than previously reported. World Journal of Diabetes. 2017;8(1):7-10.
16. Fardiazar Z, Soltanpour L, Ghatrehsamani F Maternal and Fetal Outcomes in Pregnant Women With Polyhydramnios Treated Based on Maternal and Fetal Distress and Preterm Delivery International Journal of Women's Health and Reproduction Sciences. 2017 Summer;5(3):237–242.
17. Golan A, Wolman I, Sagi J, Yovel I, David MP. Persistence of polyhydramnios during pregnancy--its significance and correlation with maternal and fetal complications. Gynecol Obstet Invest. 1994;37(1):18-20.
18. Asadi N, Khalili A, Zarei Z, Azimi A, Kasraeian M, Foroughinia L, Salehi A, Ravanbod HR, Davoodi S, Vafaei H. Perinatal outcome in pregnancy with polyhydramnios in comparison with normal pregnancy in department of obstetrics at Shiraz University of Medical Sciences. J Matern Fetal Neonatal Med. 2018 Jul;31(13):1696-1702.
19. Kornacki J, Adamczyk M, Wirstlein P, Osiński M, Wender-Ożegowska E. Polyhydramnios - frequency of congenital anomalies in relation to the value of the amniotic fluid index. Ginekol Pol. 2017;88(8):442-445.
20. Abele H, Starz S, Hoopmann M, Yazdi B, Rall K, Kagan KO. Idiopathic polyhydramnios and postnatal abnormalities. Fetal Diagn Ther. 2012;32(4):251-5.

How to cite this article: Gopchade CA, Gopchade A. Fetomaternal Outcome in Polyhydramnios. Ann. Int. Med. Den. Res. 2018; 4(5):OG19-OG23.

Source of Support: Nil, **Conflict of Interest:** None declared