

## Original Research Article

**A Hospital Based Prospective Study to Determine the Relationship Between Amniotic Fluid Volume as Determined by Ultrasound Studies and Perinatal Outcome****Rekha Jharwal<sup>1</sup>, Suman Meena<sup>1</sup>, Vinod Meena<sup>2</sup>, Atul Kumar Meena<sup>3\*</sup>**<sup>1</sup>Senior Resident, Department of Obstetrics and Gynaecology, Government Medical College, Bharatpur, Rajasthan, India.<sup>2</sup>Medical Officer, R.K. Joshi Government Hospital, Dausa, Rajasthan, India.<sup>3</sup>Associate Professor, Department of Paediatric Surgery, Atal Bihari Vajpayee Institute of Medical Science and Dr. Ram Manohar Lohia Hospital, New Delhi, India.

Received: 02-11-2020 / Revised: 12-12-2020 / Accepted: 31-12-2020

**Abstract**

**Background:** Perinatal mortality and morbidity increased significantly with polyhydramnios. Pre-eclampsia, malpresentation, premature rupture of the membranes, premature birth and accidental bleeding are the most common complications of polyhydramnios during pregnancy. The purpose of the study was to determine the relationship between amniotic fluid volume as determined by ultrasound studies and perinatal effect. **Materials & Methods:** A hospital based prospective study done on 50 cases of Polyhydramnios at department of Obstetrics and Gynaecology, Government Medical College, Bharatpur, Rajasthan. The amniotic fluid index (AFI) is an artistic measure of measurement the volume of amniotic fluid. The presence of Polyhydramnios would be a concern if the AFI was above the 95th percentile during pregnancy. The outcome of the pregnancy was recorded in patients who were classified as having an excess amount of amniotic fluid. The gestation period was established by a reliable period or the patient's ultrasound examination. **Results:** The present study showed that majority of cases were seen in 16-25 yrs of age group, multigravida was seen in 66% of cases. The mostly patients (62%) had >37 wks of gestational and mild polyhydramnios was occurred in 42 cases. Majority of the cases (28/42, 66.66%) were diagnosed at term >37 weeks and these were mild polyhydramnios. Mild polyhydramnios is most commonly associated with alive babies (28 cases), after that perinatal death (12 cases) are common with mild polyhydramnios. **Conclusion:** A simple judgment of looking at an excessive amount of amniotic fluid by an experienced sonographer is a useful way to identify high-risk cases and may lead to a successful search for birth defects.

**Keywords:** Amniotic Fluid Index (AFI), Ultrasound, Perinatal Outcome, Polyhydramnios.

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**Introduction**

Perinatal mortality and morbidity increased significantly with polyhydramnios. Fetal conditions associated with polyhydramnios include congenital malformations (open neural tube defects, upper intestinal obstruction or dysfunction etc.) and both the immunologic and non-immunologic forms of hydrops foetalis. Maternal health conditions are also known to be associated with polyhydramnios and the following side effects of fetal outcome (e.g. diabetes). Pre-eclampsia, malpresentation, premature rupture of the membranes, premature birth and accidental bleeding are the most common complications of polyhydramnios during pregnancy and cord prolapse, uterine inertia, placental abruption and postpartum haemorrhage are the expected complications of -polyhydramnios during childbirth. So, by examining these cases as soon as possible, we can prevent these maternal problems. If maternal problems are related to fetal malformations, we can also eliminate get pregnant as soon as possible. Direct measurement of antepartum volume of amniotic fluid volume with treatment alone it is very difficult. Amniotic fluid is easily identified by current ultrasound diagnostic methods. Using the ultrasound method, it is now possible to measure the amount of amniotic fluid present, especially the amniotic fluid index (AFI). Ultrasonographic measurement of amniotic fluid

volume is a very important method for the well-being of the abdomen. Hydramnios is defined as the AFI > 95<sup>th</sup> percentile (185 to 249 mm) of gestational age [1]. In 1940, before the advent of prenatal ultrasound (USG), Lizenberg wrote "a excessive amounts of amniotic fluid up to two or three pounds are common but small clinics important, but an extra amount of 15 to 25 liters provides real medical problems.

Today polyhydramnios (also known as hydramnios) can be obtained via USG before rupture of membrane [2]. Anatomically Polyhydramnios is defined as a condition in which liquor amni exceeds > 2000 ml during pregnancy. Its status varies from 0.2% to 3.3% and depends on how this abnormality is described [3]. Ultrasonically Polyhydramnios defined as AFI is more than the 95<sup>th</sup> percentile of gestational age. The purpose of the study was to determine the relationship between amniotic fluid volume as determined by ultrasound studies and perinatal effect.

**Material and methods**

A hospital based prospective study done on 50 cases of Polyhydramnios at department of Obstetrics and Gynaecology, Government Medical College, Bharatpur, Rajasthan.

**Inclusion Criteria**

- Pregnancy associated with excess of amniotic fluid ie. if the amniotic fluid index (AFI) is greater than the 95<sup>th</sup> percentile for the gestational age.
- Irrespective of age and parity.
- Second and third trimester period.
- Multiple pregnancy with polyhydramnios.

**Exclusion Criteria****\*Correspondence****Dr. Atul Kumar Meena**

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- Pregnancy associated with over distended abdomen other than hydramnios.
- Pregnancy with huge ovarian cyst.
- Ascites.

#### Methods

Several pregnancies have been tested at our center during the second and third trimesters period. Ultrasound examination of obstetrics performed using line or curvilinear transducer. A typical test for birth ultrasound, 3.5-5 MHZ a transducer was used. Amniotic fluid volume tests were performed using ultrasound method. The amniotic fluid index (AFI) is an artistic measure of measurement the volume of amniotic fluid. The presence of Polyhydramnios would be a concern if the AFI was above the 95th percentile during pregnancy. In addition, general fetal biometric data were obtained. Embryonic lie, presentation, position, pregnancy age test and placental location are determined. The outcome of the pregnancy was recorded in patients who were classified as having an excess amount of amniotic

fluid. The gestation period was established by a reliable period or the patient's ultrasound examination.

#### Results

The present study showed that majority of cases were seen in 16-25 yrs of age group, multigravida was seen in 66% of cases. The mostly patients (62%) had >37 wks of gestational and mild polyhydramnios was occurred in 42 cases (table 1).

Majority of the cases (28/42, 66.66%) were diagnosed at term >37 weeks and these were mild polyhydramnios. Majority of severe polyhydramnios (2/4, 50%) were diagnosed at less than 37 weeks (table 2).

Congenital anomalies were associated with mild polyhydramnios in table no. 3. Mild polyhydramnios is most commonly associated with alive babies (28 cases), after that perinatal death (12 cases) are common with mild polyhydramnios (table 4).

**Table 1: Demographic and clinical profile of patients**

Profile	Number of patients (N=50)	Percentage
Age (yrs)		
16-25 yrs	37	74%
26-35 yrs	12	24%
>35 yrs	1	2%
<b>Gravida</b>		
Primigravida	17	34%
Multigravida	33	66%
<b>Gestational duration (wks)</b>		
24-27 wks	4	8%
28-32 wks	10	20%
33-37 wks	5	10%
>37 wks	31	62%
<b>Type of Polyhydramnios</b>		
Acute	6	12%
Chronic	44	88%
<b>Severity of polyhydramnios</b>		
Mild	42	84%
Moderate	4	8%
Severe	4	8%
<b>Type of delivery</b>		
Abortion	4	8%
Vaginal	33	66%
Caesarean section	13	26%

**Table 2: Gestational Age Associated With Severity Of Polyhydramnios**

Gestational wks	Severity of polyhydramnios		
	Mild (N=42)	Moderate (N=4)	Severe (N=4)
24-27 wks	3 (7.14%)	0 (0%)	1 (25%)
28-32 wks	8 (19.04%)	1 (25%)	2 (50%)
33-37 wks	3 (7.14%)	1 (25%)	1 (25%)
>37 wks	28 (66.66%)	2 (50%)	0 (0%)

**Table 3: Congenital anomalies Associated With Severity Of Polyhydramnios**

Congenital anomalies	Severity of polyhydramnios		
	Mild (N=42)	Moderate (N=4)	Severe (N=4)
Anencephaly	2	0	0
Non-immune hydrofoetalis	1	0	1
Oesophageal atresia+Tracheoesophageal fistula	1	0	0
Foetal Ascites	0	1	0
Multicystic kidney	1	0	0
Cleft palate and cleft lip	1	0	0
Diaphragmatic hernia	1	0	0
Tracheoesophageal fistula	0	0	1

**Table 4: Foetal Outcome Associated With Severity Of Polyhydramnios**

Foetal Outcome	Severity of polyhydramnios		
	Mild (N=42)	Moderate (N=4)	Severe (N=4)
Alive	28 (66.66%)	3 (75%)	1 (25%)
Perinatal outcome	12 (28.57%)	1 (25%)	2 (50%)
Dead abortus	2 (4.76%)	0 (0%)	1 (25%)

**Discussion**

The current study showed that the majority of cases (74%) were detected in 16-25 yrs of age group as compared with the S Vaid et al[4] study, in which 90% of cases were in the 20-30 year age group. In the present study, 84%, 8%, 8% patients were mild, moderate and severe polyhydramnios respectively as compared to Ariel Many et al[5] where 82.3%, 10% and 7.7% patients were mild, moderate and severe polyhydramnios respectively. Another study done by Lyndon M.Hill[6] found that 84.4%, 8.6% and 7% patients were mild, moderate and severe polyhydramnios respectively. Majorities of the severe polyhydramnios were diagnosed at less than 37 weeks whereas majority of mild polyhydramnios were diagnosed at term in present study. According to current research, the most common birth defect was anencephaly followed by nonimmune hydrops fetal, which coincided with S.Vaid et al [4] found that anencephaly was a very rare birth defect compared to other congenital malformations. Nicole Damato[7] developed Nonimmune hydrops Fetal anomalies birth was present in 17% of cases. According to Yoni Barnhard et al, concluded that (i) polyhydramnios is associated with an increased incidence of congenital fetal anomalies, (ii) growth retarded fetuses with polyhydramnios warrant genetic evaluation, (iii) A genetic study is not absolutely indicated for patients with polyhydramnios and a sonographically normal fetus[8]. According to Hill LM et al, Individual amniotic fluid indices can be obtained in twin pregnancies. The median amniotic fluid index in individual twin gestational sacs rises slowly from 14 to 16 weeks and 23 to 28 weeks' gestation and then gradually declines. The median amniotic fluid index values by gestational age for both twins are not statistically different[9].

**Conclusion**

We concluded that ultrasonography is the best way to detect polyhydramnios early. A simple judgment of looking at an excessive amount of amniotic fluid by an experienced sonographer is a useful way to identify high-risk cases and may lead to a successful search for birth defects.

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**Conflict of Interest: Nil****Source of support: Nil**