



Feto Maternal Outcome of Amniotic Fluid Abnormalities

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Abstract

Introduction: Amniotic fluid is the protective fluid surrounding the fetus which provides support for the growing fetus. Amniotic fluid volume abnormalities are associated with a number of abnormal fetomaternal outcomes. Antepartum surveillance with the assessment of amniotic fluid volume has become an integral component in the management of pregnancies at risk to avoid abnormal maternal and fetal outcome.

Objectives: The primary objective of the study was to study the fetomaternal outcome in amniotic fluid abnormalities. The secondary objective was to study the risk factors in abnormal fetomaternal outcome in amniotic fluid abnormalities.

Methodology: A hospital based cross sectional study was carried out among 600 antenatal women admitted at SAT Hospital, Trivandrum, diagnosed with amniotic fluid abnormalities. A semi structured questionnaire was used to collect data. The data was analyzed using SPSS v.20 (trial version).

Results: It was observed that 428 women (71.3 %) had abnormal maternal outcome. The abnormal maternal outcomes were categorized into groups. 259 women (43.2%) had cesarean deliveries. 8 women (1.3%) had instrumental deliveries. 228 women (38%) had induction of labor. 74 women (12.3%) had malpresentation. 14 women (2.3%) had post partum hemorrhage. 4 women (0.6%) had placental abruption. In this study 371 women (61.8%) had abnormal fetal outcome. 197 (32.8%) babies were preterm. 313 babies (52.1%) had low birth weight (< 2.5 kg). 122 babies (20.3%) had low APGAR (<7 at one minute). 229 babies (38.2%) were admitted in NICU. 28 babies (4.7%) had congenital anomalies. 13 babies (2.1%) had neonatal death. 35 babies (5.8%) had been admitted in NICU due to meconium stained amniotic fluid. 48 babies (8%) had respiratory distress syndrome

Keywords: Amniotic fluid, Respiratory distress, Feto maternal outcome, Cesarean Delivery.

Introduction

Amniotic fluid surrounding the fetus serves several roles in pregnancy. It protects the fetus and umbilical cord from compression and provides the necessary condition for normal development of the fetal lungs, musculoskeletal

and gastrointestinal systems. Moreover it has antibacterial property also. Amniotic fluid is derived from a number of fetal and non fetal sources with the relative combination from each source changing across gestation. Amniotic fluid epithelium is the major source of amniotic fluid in

the early gestation. Early in gestation amniotic fluid is thought to be derived from the mother directly across the amnion and the fetal surface of the placenta and the fetal body surface. In mid gestation fetal urine begins to enter the amniotic sac and the fetus begins to swallow amniotic fluid although the daily volume flows are quite small. The fetal lungs also begin to secrete liquid into the amniotic fluid at this time. Near term the major sources of amniotic fluid production are fetal urine and lung liquid, the major routes of absorption of fluid are fetal swallowing and the intra membranous pathway (from amniotic fluid to fetal circulation). The range of normal amniotic fluid volume is very wide being 500 ml to 2000 ml. Aberrations in amniotic fluid volume both low (oligohydramnios) and high (polyhydramnios) are associated with a multitude of pregnancy related problems. A diagnosis of an amniotic fluid volume abnormality may be suspected by physical examination but the diagnosis is generally made by examination of the fluid compartment in ultrasound. Although amniotic fluid volume can be assessed by invasive means such as dye dilution these are not used in clinical practice. The amount of amniotic fluid is measured commonly using ultrasound, the amniotic fluid index (AFI) or the single deepest pocket (SDP). Both are used as semi quantitative measurements. Phelan and colleagues¹ described quantification using amniotic fluid index. This is calculated by adding the vertical depths of the largest pocket in each of four equal uterine quadrants.

Oligohydramnios is a decreased amount of amniotic fluid affecting 3 to 5% of pregnancies. It is defined as amniotic fluid index less than or equal to 5. Many centers regard AFI of 5 to 8 as being borderline normal. Following the findings of Phelan and co workers severe oligohydramnios describes a situation in which there is no measurable amniotic fluid.

The etiology of oligohydramnios varies depending on gestational age. The major etiology is fetal anomaly in early oligohydramnios and intrauterine growth restriction in late oligohydramnios. The

main fetal anomalies are renal agenesis, bilateral multi cystic kidneys, polycystic kidneys chromosomal anomalies collecting system abnormalities or obstruction. The other conditions associated with oligohydramnios are premature rupture of membrane, post maturity, placental abruption, uteroplacental insufficiency, hypertensive disorders, diabetes, maternal dehydration and drugs like ACE inhibitors, prostaglandin synthesis inhibitors etc.

Oligohydramnios may be associated with an increase in maternal complications. Premature rupture of membranes which is one of the main causes of oligohydramnios is associated with increased risk of chorioamnionitis and maternal morbidity. Other maternal risks are increased incidence of cesarean section, increased risk of induction of labor and small for gestational age babies. Reduced amniotic fluid in the first trimester is an ominous finding, the pregnancy often aborts. In the second trimester the prognosis depends on the underlying etiology. Severe oligohydramnios often ends in fetal or neonatal death. Late problems associated with oligohydramnios are cord compression in labor causing variable decelerations and meconium aspiration syndrome.

Polyhydramnios is the condition of excessive amniotic fluid. It is defines as amniotic fluid index more than or equal to 25. It occurs in 1-3% of pregnancies. Polyhydramnios is often categorized as mild moderate or severe they correspond roughly to AFI of 25 to 30, 30 to 35 and more than 35 cm. Polyhydramnios may be caused either by excess fetal urine or lung fluid or by a defect in amniotic fluid absorption.

The degree of polyhydramnios as well as its prognosis is often related to the cause. Maternal diabetes is often associated with polyhydramnios. Fetal anomalies that can cause excess fluid are central nervous system anomalies, myotonic dystrophy esophageal blockage, high gut obstruction, duodenal atresia, thoracic tumours etc. Maternal alloimmunization and infections like syphilis parvovirus and rare complications like

Bartter syndrome, Perlman syndrome, fetal and placental tumors all can cause polyhydramnios. Mild to moderate polyhydramnios creates minimal maternal symptoms, generally consisting of abdominal discomfort and slight dyspnoea. In moderate to severe polyhydramnios there may be maternal respiratory distress and edema of lower extremities. Severe polyhydramnios is associated with an increased prevalence of preeclampsia in association with mirror syndrome. Gestational diabetes has increased incidence of polyhydramnios. Marked polyhydramnios may increase the incidence of preterm birth due to uterine over distention. The most frequent complications associated with polyhydramnios are placental abruption, uterine dysfunction and post partum hemorrhage

Objectives

Primary Objective

To study the fetomaternal outcome of amniotic fluid abnormalities in SAT hospital, Thiruvananthapuram.

Secondary objective

To find out the risk factors of abnormal fetomaternal outcome among amniotic fluid abnormalities.

Materials and Methods

Study design: A cross sectional design was adopted for this study.

Setting: The study was conducted in the Department of Obstetrics and Gynecology, Sree Avittom Thirunal Hospital (SATH), Thiruvananthapuram

Duration: One and half year.

One year for data collection and six months for data entry and analysis.

The data was collected from May 2013 to April 2014.

Study Population: Antenatal women diagnosed with amniotic fluid abnormalities satisfying inclusion and exclusion criteria, getting admitted in SAT Hospital during the period of one year.

Sample size: As per the study conducted by Guin G et al, the preva Hence using the formula

$$\text{Sample size (n)} = 3.84 \times P \times Q / L^2$$

Where P= Prevalence, Q= 100-P, L= P x 20/100 (assuming a precision of 20%)

$$N = 3.84 \times 14 \times 86 / 7.84 = 589.7$$

This was rounded off to a final sample size of 600

Inclusion Criteria

- 1) Pregnant women with history of regular menstrual cycles and reliable LMP or having an early ultra sonogram for determining the gestational age
- 2) Singleton pregnancies
- 3) Gestational age more than or equal to 28 weeks
- 4) USS showing amniotic fluid index less than or equal to 5 or more than or equal to 25.

Exclusion criteria

1. Multiple pregnancies
2. Gestational age less than 28 weeks
3. Patients with unknown LMP or no dating ultrasonogram
4. Previous Cesarean section

Tools and Techniques: Informed written consent was taken.

Details of the patients were collected using a semi structured questionnaire.

Prevalence of congenital anomalies in pregnancies with abnormal fluid volume is 14%. Details of labour, maternal and fetal outcome were collected from the registers in Labour Room and Inborn Nursery.

Conduct of the study: Antenatal women who were admitted at SAT Hospital during a period of one year from May 2013 to April 2014, satisfying inclusion and exclusion criteria, were selected.

Data was collected using a semi structured questionnaire after taking consent. The Fetomaternal outcomes were collected from the registers in labour room and NICU. The collected data was entered using Microsoft excel worksheet. Data entry and analysis were done in six months.

Data Analysis: Data were analyzed using Microsoft Excel, and Statistical Package for

Social Sciences (SPSS) version 20 (trial version). To elucidate the association and comparisons between different categorical variables, Pearsons Chi square test was used.

Observations and Results

A cross sectional study was conducted among the antenatal women admitted at SAT Hospital, diagnosed with amniotic fluid abnormalities. A total of 600 women were included in the study, spanning for a period of one year.

Descriptive statistics of the study sample

The women were categorized into three groups based on age. 502 (83.7%) of the 600 study participants were in the age group of 19-30. 193 women (15.5%) were of the age more than 30 years. 5 women were less than 19 years of age, which constituted 0.8% of the study sample.

The mean age of the study sample was 25.63 with a standard deviation of 4.7. The above data is summarized in Table no. 5.1 and Fig. no. 5.1

Table No. 1 Categorized Age distribution (n=600)

Age category	Frequency	Percentage
<19	5	0.8
19-30	502	83.7
>30	93	15.5

Body mass index of the study participants were calculated using the pre pregnancy weights. The BMI was categorized into 4 groups. Normal BMI is taken between 18 to 25 A BMI more than 27 is considered overweight. 535 (89%) of the 600 women were having a BMI of less than 27 and 65 women (11%) were having a BMI more than 27. The mean BMI among the study sample was 23.74 with a standard deviation of 3.32.

The above data is summarized in Table No. 5.2 and Fig. No 5.2, Table No. 5.2 Body Mass Index (n=600)

Table 2

BMI	Frequency	Percentage
<27	539	89
>27	65	11

The study participants were grouped into oligohydramnios and polyhydramnios based on

amniotic fluid index. Among the 600 study participants 505 women (84.2%) were having oligohydramnios (Amniotic fluid index less than or equal to 5) and 95 women (15.8%) were having polyhydramnios (Amniotic fluid index more than or equal to 25).

The above data is summarized in Table No.2

Table No. 3 Amniotic Fluid Volume Abnormalities (n=600)

AFV abnormalities	Frequency	Percentage
Oligohydramnios	505	84.2
Polyhydramnios	95	15.8

Among the women having hypertensive disorders (n=160) 96 (60%) were taking antihypertensive drugs and 64 (40%) were not taking the drugs. Among them (n=96) 42 women (43.8%) were diagnosed to be having severe preeclampsia. 54 (56.2%) were not having severe preeclampsia. Among those who were having severe preeclampsia (n=42) 6 women (14.3%) had eclampsia. 36 women (85.7%) didn't have eclampsia.

Table No. 4 Hypertensive Disorders of Pregnancy (n=160)

Study Variable	Frequency	Percentage
Gestational Hypertension on Antihypertensive (n= 160)		
Present	96	60
Absent	64	40
Severe Preeclampsia (n= 160)		
Present	42	43.8
Absent	54	56.2
Eclampsia (n= 160)		
Present	6	14.3
Absent	154	85.7

75 women (12.5%) of the 600 study participants complained of leaking per vaginum before the onset of labor. They were categorized to be having PROM (premature rupture of membrane) or PPRM (preterm premature rupture of membrane). 525 women (87.5%) didn't have PROM/PPROM.

Table No. 5 PROM/PPROM (n=600)

PROM/PPROM	Frequency	Percentage
Present	75	12.5
Absent	525	87.5

The women who were having abnormal umbilical artery S/D ratio on ultrasound for the corresponding gestational age were noted. 106 women (17.7%) among 600 were having abnormal umbilical artery S/D ratio. 494 women (82.3%) were having normal Doppler.

Table No. 6 Umbilical Artery Doppler S/D ratio (n=600)

Umbilical Doppler	Frequency	Percentage
Normal	494	82.3
Abnormal	106	17.7

Among the 600 study participants 228 women were induced. Out of the 228 induced women 153 women (67.1%) had vaginal delivery, 7 women (3.1%) had instrumental delivery and 68 women (29.8%) had cesarean delivery. Of the 228 induced women, the indications of induction were categorized into groups. 161 women (71%) were induced because of oligohydramnios, 18 women (8%) were induced for abnormal Doppler findings. 26 women (11%) were induced for hypertensive disorders, 13 women (6%) induced for GDM and 9 women (4%) had PROM for which they were induced.

Table No 7 Mode of delivery in induced women (n=228)

Mode of delivery	Frequency	Percentage
Vaginal	153	67.1
Instrumental	7	3.1
Cesarean section	68	29.8

259 women among the 600 study participants had cesarean section. The indications for cesarean section were categorized into groups. 84 women (32.4%) had CS for fetal distress, 61 women (23.6%) had for abnormal Doppler. 12 women (4.6%) had CS for oligamnios. 32 (12.4%) CS were for failed induction. 51 women (19.6%) had malpresentation. 4 women (1.5%) had severe preeclampsia/eclampsia and 4 women

5%) had premature rupture of membrane for more than 24 hours. 3 women (1.2%) had placenta previa. 2 women (0.8%) had fibroid complicating pregnancy.

There were 230 (38.3%) babies admitted in the neonatal intensive care unit (NICU) among the 600 babies. 122 babies (20.3%) had low APGAR (<7 at 1minute). 478 babies (79.7%) were having normal APGAR. 48 babies (8%) had respiratory distress syndrome (RDS), 552 (92%) babies didn't have RDS. Out of the 600 deliveries 35 had meconium stained amniotic fluid (MSAF) which constituted about 5.8%. 565 (94.2%) didn't have MSAF.

There were 13 neonatal deaths among the 600 babies. 10 NNDs were early preterm, 2 late preterm and one term. One had anencephaly and four of them had other multiple congenital anomalies. One had Congenital diaphragmatic hernia. Five of the babies had severe perinatal depression and were ventilated later succumbed to death. One had meconium aspiration syndrome and one had congenital pneumonia.

The abnormal maternal outcomes were categorized into groups. 259 women (43.2%) had cesarean deliveries. 8 women (1.3%) had instrumental deliveries. 228 women (38%) had induction of labour. 74 women (12.3%) had malpresentation. 14 women (2.3%) had postpartum haemorrhage. 4 women (0.6%) had placental abruption.

There were 124 women (29%) who had Hypertensive disorders and 304 women (71%) who didn't have hypertensive disorders among those who were having abnormal maternal outcome. Among those who had normal maternal outcome 36 women (20.9%) were having hypertensive disorders and 136 women (79.1%) were not having hypertensive disorders. On doing bivariable analysis a P value of 0.04 is got which is significant. The odds ratio is 1.54 with a confidence interval of 1.01-2.35.

Table No. 8 Hypertensive disorders of Pregnancy

Variable		MATERNAL OUTCOME n=600 (%)		P Value	Odds ratio (95% C.I)
		Abnormal (n=428)	Normal (n=172)		
Hypertensive Disorders	Present	130 (29%)	30 (19.9%)	0.029	1.64 (1.05-2.57)
	Absent	319 (71%)	121(80.1%)		

Among the study participants who had abnormal maternal outcome 95 women (22.2%) were having abnormal umbilical artery Doppler. 333 women (77.8%) had normal Doppler values. Among those who had normal maternal outcome 11 women (6.4%) were having abnormal Doppler and 161 women (93.6%) were having normal Doppler values. The P value on doing bivariable analysis was 0.000 which is significant. The odds ratio was 4.17 with a confidence interval of 2.17-8.01

Mothers of 339 babies (91.4%) had a BMI less than 27 and 32 babies (8.6%) had a HMI more than 27 among the abnormal fetal outcome group. Mothers of 196 babies (85.6%) had BMI less than 27 and 33 (14.4%) had BMI more than 27 in the normal fetal outcome group. On doing bivariate analysis the p value is 0.027 which is significant. The odds ratio is 1.784 with a confidence interval of 1.06-2.99.

Discussion

Amniotic fluid volume is an important indicator of fetal well being. Antepartum surveillance with the assessment of amniotic fluid volume has become an integral component in the management of pregnancies at risk to avoid abnormal maternal and fetal outcome.

In this cross sectional study conducted at SAT Hospital for a period of 1 year, 600 women diagnosed with amniotic fluid abnormalities were studied. The primary objective of the study was to

find out the abnormal fetomaternal outcomes and the secondary objective was to find out the risk factors in abnormal fetomaternal outcome in amniotic fluid abnormalities.

Among the 600 study participants 428 (71.3%) had abnormal maternal outcome. The abnormal maternal outcomes were categorized into groups. 259 women (43.2%) had cesarean deliveries. 228 women (38%) had induction of labor. 74 women(12.3%) had malpresentation. 14 women (2.3%) had post partum hemorrhage. 8 women (1.3%) had instrumental deliveries. 4 women (0.6%) had placental abruption.

In a prospective clinical study done by Guin G et al the incidence of labor induction, cesarean delivery for fetal distress and premature labor were found out to be high.]

In this cross sectional study 259 women (43.2%) had cesarean delivery. In a study done by Chauhan SP et al fetal distress and abnormal umbilical artery Doppler are found to be a major indication for emergency cesarean section. In this study 61 women (23.6%) of the cesarean section was done for abnormal Doppler findings

In this study 228 women had induction of labor. The most common indication for induction of labor is oligamnios (57%). According to a study conducted by Casey BM et al³ oligohydramnios is associated with increased labor induction (42%).

There is higher incidence of malpresentation in abnormal amniotic fluid abnormalities. In

oligohydramnios it is due to the decreased chance for spontaneous correction due to the reduced liquor volume in late pregnancy and in polyhydramnios due to the excess of liquor. Malpresentation contributes to the incidence of cesarean section also. 74 women (17.3%) had malpresentation in the present study.

In a study conducted by Chen KC et al significantly higher incidence of placental abruption and post partum hemorrhage is seen in patients with polyhydramnios. In this study 2.3% had post partum hemorrhage and 0.6% had placental abruption.

Among the 600 study participants 371 (61.8%) had abnormal fetal outcome. The 371 abnormal fetal outcomes were categorized into groups. 197 (32.8%) babies were preterm, 313 babies (52.1%) had low birth weight (< 2.5 kg). 122 babies (20.3%) had low APGAR (<7 at one minute and 5 minute). 229 babies (38.2%) were admitted in NICU. 28 babies (4.7%) had congenital anomalies. 13 babies (2.1%) had neonatal death. 35 (5.8%) had meconium stained amniotic fluid.. 48 babies (8%) had respiratory distress syndrome. In this study 197 (32.8%) babies were preterm. According to Melamed N et al there is a considerable degree of iatrogenic prematurity in oligohydramnios group.

In this study 313 babies (52.1%) had low birth weight (< 2.5 kg). Oligohydramnios has the most consistent association with IUGR, the probable mechanism being due to uteroplacental insufficiency. Nicolaides and associates have observed a decrease in urine production rates in the growth restricted fetuses associated with lower umbilical venous PO₂. 122 babies (20.3%) had low APGAR (<7 at one minute and 5 minute) and 28 babies (4.7%) had congenital anomalies in the present study. According to a study conducted by Guin et al the overall incidence of congenital anomalies, perinatal mortality and low APGAR score were significantly higher in abnormal amniotic fluid volume. According to Hill LM 7% of pregnancies with oligohydramnios are associated with congenital malformations.

Polyhydramnios is a highly sensitive and specific for prenatal diagnosis of fetal malformation according to Kouame et al. In a study conducted by Baron et al there was no difference in the APGAR scores among the three groups but reported a significantly longer hospital stay of neonates in the oligohydramnios group compared to normal group. In a study conducted by Taskin et al significantly higher preterm labours and low APGAR scores were noted in idiopathic polyhydramnios group.

35 (5.8%) of the study participants had meconium stained amniotic fluid. MSAF has been reported by many investigations to be increased in patients with AFI less than or equal to 5. Baron et al reported the incidence to be 11.2% compared to 9.2% in normal liquor group. In the present study there are MSAF. Rutherford et al also reported an increase in the incidence of meconium staining in patients with oligohydramnios.

There were 13 neonatal deaths among the 600 babies. 10 NNDs were early preterm, 2 late preterm and one term. One had anencephaly and four of them had other multiple congenital anomalies. One had Congenital diaphragmatic hernia. Five of the babies had severe perinatal depression and were ventilated later succumbed to death.. One had meconium aspiration syndrome and one had congenital pneumonia. 48 babies (8%) had respiratory distress syndrome in the present study. In a study conducted by Casey BM et al³ perinatal outcomes in pregnancies with oligohydramnios were compared with those with normal amniotic fluid index and it was found out that NICU admission, meconium aspiration syndrome and neonatal deaths were higher in the group with oligohydramnios

The secondary objective of the study was to find out the risk factors in abnormal fetomaternal outcome among abnormal amniotic fluid abnormalities. Age, BMI, parity, regular ANC, regular intake of supplements, hypertensive disorders of pregnancy, GDM, overt DM, anemia, heart disease, PROM/PPROM and umbilical artery Doppler were studied in relation to the

abnormal maternal and fetal outcome. Bivariable analysis was done using Pearsons chi square test.

There were 366 women (80.8%) less than 30 years and 82 women (19.2%) more than 30 years of age who had abnormal maternal outcome. On doing analysis, age more than 30 years was found to be a risk factor for abnormal maternal outcome. According to a study conducted by Bloomberg et al advanced age is associated with abnormal maternal outcome. In a study conducted by Khalil et al also states that advanced maternal age is associated with abnormal maternal and fetal outcomes. In another study done by Kenny LC et al also found out that a number of adverse pregnancy outcomes occur in advanced maternal age.

There were 124 women (29%) who had Hypertensive disorders. Hypertensive disorders in pregnancy were found to be a risk factor for abnormal maternal outcome in amniotic fluid abnormalities. In a prospective clinical study done by Guin G et al gestational hypertension is associated with increased chance of oligohydramnios leading to abnormal fetal and maternal outcome. In a study conducted by Salazar et al preeclampsia is associated with oligohydramnios. In another study done by Hashimoto et al preeclampsia can lead to oligohydramnios associated with IUGR and other maternal complications like induction of labour. Hypertensive disorder of pregnancy is associated with increased risk of maternal-perinatal adverse outcome in a study conducted by Yucesoy et al

There were 48 women (11.2%) of more than a BMI of 27 among the abnormal maternal outcome. In this study it was found out that BMI is not a risk factor for abnormal maternal outcome among amniotic fluid abnormalities. In a study conducted by Bautista Castano et al higher BMI is associated with abnormal maternal outcome

Among the abnormal maternal outcome 89 women (20.8%) had GDM .5 women (1.2%) had overt DM among abnormal maternal outcome. So in this study gestational diabetes mellitus and overt DM were not associated with abnormal

maternal outcome. In a study done by Saxena P et al gestational diabetes is associated with polyhydramnios macrosomia cesarean section etc, but this study couldn't elicit any relation may be due to the smaller no of gestational diabetes and polyhydramnios among the study participants.

Among the study participants who had abnormal maternal outcome 95 women (22.2%) were having abnormal umbilical artery Doppler. On doing analysis, abnormal umbilical artery Doppler was found to be a risk factor for abnormal maternal outcome. In a study done by Chauhan SP et al fetal abnormal umbilical artery Doppler are found to be a major indication for emergency cesarean section.

32 babies (8.6%) had a BMI more than 27 among the abnormal fetal outcome group. There is significant association between maternal BMI and fetal outcome.

A BMI more than 27 is found out to be a risk factor for abnormal fetal outcome in the present study. There were 109 women (29.4%) who had Hypertensive disorders among abnormal fetal outcome. But no significant association was found in the present study.

Among the abnormal fetal outcome 55 women (14.8%) had GDM. On doing analysis, gestational diabetes was found to be a risk factor for abnormal fetal outcome. 3 women (0.8%) had overt DM among the abnormal fetal outcome. There was no significant association between overt DM and abnormal fetal outcome in the present study. This may be due to smaller number of study participants with overt DM. In a study done by Saxena P et al gestational diabetes is associated with polyhydramnios macrosomia cesarean section etc

Among the study participants who had abnormal fetal outcome 92 women (24.8%) were having abnormal umbilical artery Doppler. Abnormal umbilical artery Doppler was a risk factor for abnormal fetal outcome in the present study. 63 women (17%) had PROM/PPROM among those who were having abnormal fetal outcome.

In the present study PROM/PPROM was a risk factor for abnormal fetal outcome. According to a study conducted by Ekin et al premature rupture of membrane is associated with prematurity, early neonatal sepsis and low Apgar.

Conclusion

This hospital based cross sectional study was carried out with a sample of 600 antenatal women admitted at SAT hospital with amniotic fluid abnormalities. The study was conducted for a period of one year. The primary objective of the study was to find out the abnormal fetomaternal outcome in pregnancies with amniotic fluid abnormalities. The secondary objective was to find out the risk factors in the abnormal fetomaternal outcome among amniotic fluid abnormalities.

It was observed that 428 women (71.3 %) had abnormal maternal outcome. The abnormal outcome was categorized into groups. The abnormal maternal outcomes were categorized into groups. 259 women (43.2%) had cesarean deliveries. 8 women (1.3%) had instrumental deliveries. 228 women (38%) had induction of labor. 74 women (12.3%) had malpresentation. 14 women (2.3%) had post partum hemorrhage. 4 women (0.6%) had placental abruption.

In this study 371 women (61.8%) had abnormal fetal outcome. The 371 abnormal fetal outcomes were categorized into groups. 197 (32.8%) babies were preterm. 313 babies (52.1%) had low birth weight (< 2.5 kg). 122 babies (20.3%) had low APGAR (<7 at one minute). 229 babies (38.2%) were admitted in NICU. 28 babies (4.7%) had congenital anomalies. 13 babies (2.1%) had neonatal death. 35 babies (5.8%) had been admitted in NICU due to meconium stained amniotic fluid. 48 babies (8%) had respiratory distress syndrome.

To study the risk factors in abnormal maternal outcome bivariable analysis was done. Maternal age more than 30, Hypertensive disorders of pregnancy and abnormal umbilical artery Doppler were found to be risk factors for abnormal

maternal outcome. In this study no association was elicited between maternal BMI, parity, regular ANC, regular supplements, GDM, overt DM, anemia and heart disease with abnormal maternal outcome.

Maternal BMI more than 27, gestational diabetes mellitus, abnormal umbilical artery Doppler, PROM/PPROM and anemia were found to be risk factors for abnormal fetal outcome. There was no association between maternal age, parity, regular ANC, regular supplements, hypertensive disorders, overt DM and heart disease with abnormal fetal outcome.

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