

# A STUDY OF CONGENITAL ANOMALIES AND PERINATAL OUTCOME IN OLIGOHYDRAMNIOS

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## ABSTRACT

**Background:** The amniotic fluid is a cocoon of protection in fetal life. Amniotic fluid volume is an indicator of fetal well-being. Too little amniotic fluid is called oligohydramnios and is associated with increased incidence of congenital malformations and neonatal mortality.

**Aims & Objective:** To estimate the incidence of congenital malformations and to study the perinatal outcome in oligohydramnios.

**Material and Methods:** This prospective study was conducted in the Neonatal intensive care unit and the maternity wards of Father Muller Medical College Hospital, Mangalore. Ultrasound assessment of amniotic fluid index was recorded and cases of oligohydramnios detected were followed up. Congenital malformations were observed both by ante natal and post natal ultrasounds, other relevant investigations were also done when necessary. The perinatal outcome in terms of fetal distress, mortality and intrauterine growth retardation were recorded.

**Results:** 120 cases of oligohydramnios were recorded. Seven newborns with congenital malformations were detected (5.8%). The most common congenital malformation was hydronephrosis. Four neonatal deaths were recorded in the study (3.3%). Fetal distress was observed in nine neonates (7.5%) and thirty neonates (25%) had intrauterine growth retardation.

**Conclusion:** Congenital malformations, neonatal mortality, fetal distress and intra uterine growth retardation are significant risks in oligohydramnios. The lower the amniotic fluid index more is the risk of both mortality and congenital anomalies.

**Key-Words:** Congenital Anomalies; Neonatal Mortality; Oligohydramnios

## Introduction

The amniotic fluid that bathes the fetus is necessary for its proper growth and development. It cushions the fetus from physical trauma, permits fetal lung growth, and provides a barrier against infection. Oligohydramnios is defined as amniotic fluid index less than 5 cm.<sup>[1,2]</sup> The incidence of oligohydramnios is 0.5-1% of all pregnancies<sup>[3]</sup>. It can lead to deformation syndromes such as cranial, facial or skeletal abnormalities, pulmonary hypoplasia, urinary tract malformations, intrauterine growth retardation and adverse perinatal outcome.<sup>[4]</sup> Oligohydramnios is also circumstantially associated with a variety of ominous pregnancy outcomes such as prenatal death, fetal distress in labor, poor infant condition and structural fetal anomalies. The lower the amniotic fluid volume, the greater the incidence of perinatal morbidity and mortality. There is an inverse relationship

between amniotic fluid outcome and pregnancy outcome.<sup>[5]</sup> The purpose of this study was to estimate the incidence of congenital malformations and to study the outcome in oligohydramnios.

## Materials and Methods

This prospective study was conducted in the maternity wards and the neonatal intensive care unit of Father Muller Medical college hospital, Mangalore. The study period was 2 years, 120 newborns were included in this study. Oligohydramnios was confirmed by ultrasonographic assessment of amniotic fluid index. Following a detailed history and clinical examination, postnatal ultrasound, x rays, CT scans were obtained if the clinical situation warranted it. Chi square test, Gaussian test and Fischer's exact test were used to calculate the statistical significance of the data obtained.

## Results

During the study period of two years, there were 120 cases of oligohydramnios; congenital malformations were observed in 7 cases (5.8%). The new born mortality was 4 (3.3%). In our study the most common congenital malformation was hydronephrosis (3 cases), one case each of hydrocephalus, meningocele and diaphragmatic hernia were also observed. One newborn had multiple congenital malformations. Thirty newborns (25%) among the one hundred and twenty deliveries had intrauterine growth retardation. Nine newborns (7.5%) had fetal distress. The mode of delivery was Caesarean in 39 (32.5%). When the total number of cases, were further classified on the basis of the amniotic fluid index as less than 3 (62 cases) and between 3-5 (58 cases), the corresponding incidence of congenital malformations was 8% and 3% and the corresponding mortality was 5% and 2%.

**Table-1: Incidence of Congenital Malformations in Oligohydramnios and Relationship to Amniotic Fluid Index (AFI)**

AFI	Cases	Congenital Malformations	Incidence
3-5	58	02	3.4%
<3	62	05	8%
Total	120	07	5.8%

**Table-2: Incidence of Neonatal Mortality in Oligohydramnios and Relationship to Amniotic Fluid Index (AFI)**

AFI	Cases	Neonatal Mortality	Incidence
3-5	58	01	1.7%
<3	62	03	4.8%
Total	120	04	3.3%

**Table-3: Congenital Malformations in Oligohydramnios**

Congenital Malformation	Number
Hydronephrosis	03
Hydrocephalus	01
Meningocele	01
Diaphragmatic Hernia	01
Multiple congenital anomalies	01

## Discussion

In the present study there were 7 newborns with congenital malformations among 120 newborns born to mothers with oligohydramnios. This constituted 5.8% of the total cases. Higher incidence of congenital malformations were observed in the studies conducted by Adrien Bastide<sup>[6]</sup> (13%) and Brian M Casey<sup>[3]</sup> (10%). The study by Guin G et al<sup>[7]</sup> observed fetal congenital

anomalies in 4.2%, which is comparable to our study.

In a study conducted by Levine D et al<sup>[8]</sup>, the most common congenital anomalies observed were hydronephrosis, ventriculomegaly, intestinal atresias, congenital diaphragmatic hernia, hydrops, skeletal dysplasias, cloacal malformations and gastroschisis. In the study conducted by C Stoll et al<sup>[9]</sup> the more frequent malformations associated with oligohydramnios were urinary, musculoskeletal, digestive and cardiac. In a study conducted by Guin G et al<sup>[7]</sup> the congenital malformations were Bilateral Polycystic Kidney, hydronephrosis with hydroureter and omphalocele. In our study the most common congenital anomaly was Hydronephrosis.

Fetal distress was noticed in 9 newborns (7.5%) in our study which was more than what Baron<sup>[10]</sup> observed in her study. Caesarean delivery was the mode of delivery in 39 cases in this study (32.5%) which was almost three times that observed in the study by Collen Baron.<sup>[10]</sup> In our study 25% of the newborns had intrauterine growth retardation, this was more than the 14% observed in the study by Guin G et al.<sup>[7]</sup>

The mortality rate of newborns in our study was 3.3%, this mortality rate was significantly lower than the incidence in the study conducted by Adrien Bastide<sup>[6]</sup> (13.2%). The perinatal mortality rate was also higher in the Guin et al study<sup>[7]</sup> (12.6%).

## Conclusion

Congenital malformations and perinatal mortality are a significant risk in oligohydramnios. The incidence of fetal distress and intrauterine growth retardation also increases significantly with oligohydramnios. Hydronephrosis was the most common congenital malformation observed in our study. There was an inverse relationship between amniotic fluid index and both- newborn mortality and congenital malformations in our study. Serial assessment of the amniotic fluid index by ultrasound along with clinical monitoring of the ante natal subjects with a low AFI could play a major role in determining the perinatal outcome.

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