

Perinatal Outcome in Pregnancies Complicated by Isolated Oligohydramnios at Term

UMBER A.

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Objective: To determine the perinatal outcome in pregnancies complicated by isolated oligohydramnios at term.

Study Design: Comparative / Cohort study.

Place and Duration of Study: This study was carried out in Unit-III at Sir Ganga Ram Hospital, Lahore from 14-05-2002 to 15-06-2003.

Patients and Methods: During this study 500 patients with singleton pregnancy were selected and Amniotic Fluid Index (AFI) was evaluated within 4 days of delivery in these patients with technique of Phelan et al. All selected outcome variables of these pregnancies were recorded on printed proformas. On the bases of AFI measurements patients were divided in two groups. Those who have AFI > 50 mm and \leq 50 mm. The significance of difference or comparison of means was measured by Chi square test (by Yates corrections). Perinatal outcomes in pregnancies with oligohydramnios were compared with those with normal amniotic fluid volume.

Results: The selected outcomes showed significant variations in both groups. The statistical significance was present between advanced gestational age, presence of meconium, deceleration of fetal heart rate and chances of caesarean delivery. There were increased chances of induction of labor (41% Vs 22%) and caesarean delivery (32% Vs 23%) in oligohydramnios group.

Conclusion: Oligohydramnios is associated with an increased risk of caesarean delivery for fetal distress and perinatal morbidity.

Key Words: Isolated Oligohydramnios, perinatal outcome.

INTRODUCTION

Oligohydramnios defined as an AFI \leq 5th centile for the gestational age, AFI \leq 50 mm or maximum vertical pocket devoid of umbilical cord or fetal limbs measure < 30 mm, in the presence of intact membranes is a common obstetric complication, occurring in 3-5% of pregnancies at term. Some authors¹⁻⁴ state that such pregnancies are at an increased risk of adverse perinatal outcome such as fetal distress in labor, induction of labor, cesarean delivery for fetal distress, meconium passage, low Apgar score and neonatal resuscitation or neonatal intensive care unit admission. But others⁵⁻⁸ have not confirmed the association of adverse perinatal outcome with oligohydramnios; Instead they state that isolated oligohydramnios is not associated with adverse perinatal outcome. The objective of this study was to determine the association of isolated oligohydramnios at term with adverse perinatal outcome.

Aims and Objectives

To determine the perinatal outcome in pregnancies complicated by isolated oligohydramnios at term.

Patients & Methods

This study was carried-out in the Department of Obstetrics and Gynecology Unit III, Sir Ganga Ram Hospital Lahore during one year period from 14.05.2002 to 15.06.2003.

During this study 500 patients were selected, booked or unbooked attending antenatal clinic or labor room of Unit III in Sir Ganga Ram Hospital Lahore. Inclusion criteria for the study population was: women with singleton pregnancy with well established dates, at 40.0-42.0 weeks gestational age (GA), fetus with no anomalies, amniotic fluid volume evaluated within 4 days of delivery in these patients, and determination of amniotic fluid volume with technique of Phelan et al⁹. Following patients were excluded from the study: Patients with less than 40 weeks and unsure gestational age, patients with multiple pregnancy, patients with history of preterm rupture of membranes, patients with pre-eclampsia and uncontrolled gestational diabetes, and delivery after 4 days of evaluation of amniotic fluid volume.

Amniotic fluid measurements were performed by ultrasound on targeted patients. Equipment used in this study included Acuson model machine which was equipped with 3.5 and 5.0-MHz curvilinear transducers.

Estimates of amniotic fluid volume were recorded by means of AFI described by Phelan et al⁹. AFI values of \leq 50 mm were interpreted to represent oligohydramnios. All selected outcome variables of these pregnancies were recorded on printed proformas in the hospital, which were shifted to computer for analysis. Selected outcome variables included: spontaneous vaginal delivery, abnormal non-stress test-either with decelerations or non-reactive, instrumental

Table 1: Selected Outcomes in Women with ≤ 50 mm (Oligohydramnios) and Women with AFI > 50 mm.

Outcomes	AFI ≤ 50 mm (n = 147) (29.4%)	AFI > 50 mm (n = 353) (70.6%)	Statistical Significance
Induction of labor	61 (41%)	77 (22%)	p $> 0.1^*$
1. Gestational age 42 weeks	12 (8%)	37 (10.4%)	p $< 0.001^{**}$
2. Non-reassuring fetal heart rate	7 (4.7%)	10 (2.8%)	p $> 0.5^*$
3. Deceleration of fetal heart rate	71 (48%)	137 (38.8%)	p $< 0.001^{**}$
4. Meconium.	9 (6%)	30 (8.5%)	p $< 0.001^{**}$
5. Caesarean delivery	47 (32%)	81 (23%)	p $< 0.01^{**}$
6. Apgar score < 6 at 1 min.	12 (8%)	4 (1.1%)	p $> 0.05^*$
7. Apgar score < 7 at 5 min.	9 (6%)	2 (0.56%)	p $> 0.05^*$
8. Resuscitation required.	5 (3.4%)	3 (0.84%)	p $> 0.5^*$
9. Admission to Intensive Care Nursery.	10 (7%)	6 (1.7%)	p $> 0.3^*$
10. Birth weight 2.5 to 3.9 Kg.	90 (61%)	285 (80.7%)	p $< 0.001^{**}$
11. Birth weight ≥ 4 Kg.	4 (2.7%)	35 (10%)	p $< 0.001^{**}$

* Not-Significant

** Significant

delivery for fetal distress (forceps delivery, cesarean delivery), 1 minute Apgar score ≤ 6 (1 min $<$ or $=$ to 6), 5 minute Apgar score ≤ 7 (5 min $<$ or $=$ to 7), presence of meconium, resuscitation, birth weight, and neonatal intensive care unit admission (NICU).

The data analysis was computer based using SPSS statistical package. On the basis of division of patients with AFI ≤ 50 mm and the particular outcome, tables were constructed and the relative risk for each calculated. Oligohydramnios was defined as an amniotic fluid index ≤ 50 mm. Perinatal outcomes in pregnancies with oligohydramnios were compared with those with an amniotic fluid index of > 50 mm.

Results

Patients were divided in 2 groups on the basis of AFI measurements, those who have AFI > 50 mm and ≤ 50 mm; nearly 70% of patients showed values of AFI above 50 mm and 29% of patients showed AFI ≤ 50 mm (Oligohydramnios).

The selected outcomes showed significant variations in both groups. Oligohydramnios was associated with increased chances of induction of labor (41% Vs 22%), non reassuring fetal heart rate (4.7% Vs 2.8%), decelerations of fetal heart rate (48% Vs 38.8%), caesarean delivery for fetal distress (32% Vs 23%), Apgar score < 6 at 1 min (8% Vs 1.1%), Apgar score < 7 at 5, **but** the statistical significance was only present between advanced gestational age, pre-

sence of meconium, deceleration of fetal heart rate and chances of caesarean delivery (table 1).

Discussion

Since long oligohydramnios has long been correlated with adverse perinatal outcome, such as increased risk of intra-uterine growth restriction^{10,11} congenital abnormalities, post-dates pregnancy^{12,13} meconium passage¹⁴ abnormal fetal heart rate patterns, and lower Apgar scores.¹⁵

The study results analysis demonstrate that oligohydramnios is associated with increased chances of induction of labor (41% Vs 22%), non reassuring fetal heart rate (4.7% Vs 2.8%), decelerations of fetal heart rate (48% Vs 38.8%), caesarean delivery (32% Vs 23%), Apgar score < 6 at 1 min (8% Vs 1.1%), Apgar score < 7 at 5 min (6% Vs 0.56%), neonatal resuscitation (3.4% Vs 0.84%) and neonatal ICU admission (7% Vs 1.7%).

The results are favoured by a study by Rutherford et al,¹⁵ who observed an association between adverse perinatal outcome and oligohydramnios indicating that non-reactive non-stress tests (NST), FHR decelerations, meconium staining of amniotic fluid, cesarean section for fetal distress, and low Apgar scores are more common in patients with oligohydramnios. Similarly Sarno et al¹⁶ found that intrapartum oligohydramnios was associated with an increased risk of caesarean delivery for fetal distress, an Apgar score < 7 at 1 minute and abnormal fetal heart rate patterns.

However Grubb and Paul¹⁷ did not observe such asso-

ciation (no significant increase in intervention for fetal distress, either cesarean or operative vaginal delivery, in patients with oligohydramnios (AFIs of 20 to 49 mm) when compared to those with normal amniotic fluid volume (AFI of 50 mm or more). Similarly Chauhan et al^{18,19} failed to find an increased risk for cesarean delivery for fetal distress or low Apgar scores in patients with oligohydramnios.

However, although the study results analysis demonstrate that oligohydramnios is associated with increased chances of induction of labor, non reassuring fetal heart rate, decelerations of fetal heart rate, caesarean delivery, Apgar score < 6 at 1 min, Apgar score < 7 at 5 min, neonatal resuscitation and neonatal ICU admission, **yet the statistical significance was only present between advanced gestational age, presence of meconium, deceleration of fetal heart rate and chances of caesarean delivery.**

The most important constrain to influence the decision to proceed with caesarean delivery is objective interpretation of fetal heart rate tracing. Similarly, the caesarean delivery for fetal distress would be preferable only after a fetal scalp pH value is obtained.¹⁸ However, because of non trained personnel, non-availability of the machine, cervical dilatation, or other constraints, the fetal pH may not be attainable before emergency caesarean delivery. Similarly a low Apgar score may be the result of use of narcotics in labor, pre-term birth, or vigorous suctioning of the neonate. Similar results have been shown by Elizabeth et al⁽²⁰⁾ and Morris et al.²¹ Further studies are required to determine the association of isolated oligohydramnios at term with adverse perinatal outcome.

Conclusion

Oligohydramnios (AFI \leq 50 mm) is associated with an increased risk of caesarean delivery for fetal distress and poor Apgar scores.

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