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Original Research Article

Fetomaternal outcome in pregnancy with oligohydramnios

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ABSTRACT

Background: Oligohydramnios has been correlated with increased risk of FGR, meconium aspiration, birth asphyxia, low APGAR scores and congenital anomalies. Early detection of oligohydramnios and its management may help in reduction of perinatal morbidity and mortality. The aim and objectives of the study was to study the effect of oligohydramnios on fetal outcome in form of FGR, fetal distress, altered APGAR scores, NICU admission and early neonatal morbidity and mortality and to study maternal morbidity in the form of operative delivery and induced labour.

Methods: 100 patients in third trimester of pregnancy with oligohydramnios confirmed by ultrasound measurement of AFI were selected randomly after satisfying inclusion and exclusion criteria.

Results: Incidence of oligohydramnios and operative intervention for the same was seen more in primipara (52%). Most common causes of oligohydramnios were idiopathic (52%) followed by PIH (25%). Operative morbidity was highest in PIH (60%). Most common indication of caesarean section was fetal distress due to cord compression or FGR. 7% patients had fetoplacental insufficiency on Doppler study.

Conclusions: Oligohydramnios demands intensive fetal surveillance and proper antepartum and intrapartum care. Due to high rates of intrapartum complications, perinatal morbidity and mortality, rates of caesarean section are rising, but decision between vaginal delivery and caesarean section should be well balanced so that unnecessary operative morbidity is prevented without jeopardizing the fetal well-being.

Keywords: Oligohydramnios, Pregnancy

INTRODUCTION

Amniotic fluid is vital to the well-being of the fetus. It cushions the fetus from injury, helps prevent compression of the umbilical cord, and allows room for it to move and grow. In addition, its bacteriostatic action helps prevent infection of the intra-amniotic environment. The quantity of amniotic fluid at any time during gestation is the product of water exchange between the mother, fetus, and placenta, and is maintained within a relatively narrow range. Disorders of this regulatory process can lead to either polyhydramnios or oligohydramnios, in which too much or too little fluid exists, respectively. These

disorders may result from abnormal fetal or maternal conditions and, conversely, may be responsible for alterations of fetal well-being as well. With the advent of real-time ultrasonography, assessment of amniotic fluid has been possible, resulting in earlier recognition of abnormal conditions and possible intervention.

Proper clinical assessment of amniotic fluid volume was difficult in the past. Better identification of at-risk fetus can be done now by using the Amniotic Fluid Index (AFI) method described by Phelan et al, where the four quadrant technique is employed during trans abdominal ultrasound.¹

Decrease in amniotic fluid volume or oligohydramnios is defined as “a condition where the liquor amnii is deficient in amount to the extent of less than 200 ml at term.” Sonographically, it is defined when the single largest vertical pocket of liquor is less than <2 cm (below 5th percentile). Absent of any measurable pocket of amniotic fluid is defined as anhydramnios. AFI between 5 cm and 8 cm is termed as borderline AFI or borderline oligohydramnios described by Hiralal Konar, D C Dutta.²

Oligohydramnios has been correlated with increased risk of fetal growth retardation (FGR), meconium aspiration syndrome (MAS), severe birth asphyxia, low APGAR scores and congenital anomalies. Oligohydramnios is also associated with maternal morbidity in form of increased rates of induction and/or operative interference carried out to improve the perinatal outcome described by Jeng Lee Wang Yang.³

Aim and objectives

- To study effects of oligohydramnios on fetal outcome in the form of:
 - FGR
 - Fetal distress during labour and APGAR scoring immediately post-partum
 - NICU admission leading to neonatal morbidity and/or mortality.
- To study maternal morbidity in the form of operative delivery and induced labour.

METHODS

Present study was done over a period from July 2015 to June 2016.

100 patients in the third trimester of pregnancy with oligohydramnios selected randomly after satisfying inclusion and exclusion criteria.

Inclusion criteria

Antenatal patients in their third trimester with intact membranes.

Exclusion criteria

Antenatal cases having premature rupture of membranes; multiple pregnancy; vomiting and dehydration in 1st trimester of pregnancy.

Method

- A detailed history taken and thorough examination is done.
- All required investigations done.
- Oligohydramnios confirmed by measuring AFI.

- Fetal surveillance was done by USG, Modified Biophysical profile (NST and AFI) and Doppler.
- Decision of delivery by either induction or elective or emergency LSCS was done as per required. Cases were then studied for maternal and perinatal outcome.

RESULTS

100 cases of oligohydramnios from the month of July 2015 to June 2016 admitted in our hospital were studied.

Table 1: Age, parity and maternal outcome of labour.

Age	Vaginal		Caesarean	Total (n=100)
	Normal	Assisted (Forceps)		
< 20	3 (75%)		1 ((25%)	4
20-25	39 (58.2%)	1(1.5%)	27 (40.3%)	67
26-30	10 (43.48%)		13 (56.52%)	23
>30	5(83.3%)		1 (16.66%)	6
Parity				
Primipara	22 (42.30%)	1(1.92%)	29(55.78%)	52
Multipara	35 (72.91%)		13 (27.09%)	48

Oligohydramnios was associated with following conditions which may operate as etiological factors.

Table 2: Associated conditions (etiology) and maternal outcome of labour.

Associated conditions	Vaginal delivery		Caesarean	Total (N=100)
	Normal	Assisted (Forceps)		
PIH	10 (40%)	-	15 (60%)	25
Postdatism	13 (65%)	-	7 (53%)	20
Fever	3(100%)	-	-	3
Idiopathic	31 (59.61%)	1 (1.92%)	20 (38.47%)	52

All patients undergone umbilical Doppler study on the basis of PI (pulsatility index) normal value in 3rd trimester: 1.18 (SD +/- 0.25). There are 7% found with fetoplacental insufficiency described by Carroll BC and manning et al.^{6,7}

Table 3: Doppler.

Doppler	Vaginal delivery		Caesarean delivery	Total (N=100)
	Normal	Assisted (Forceps)		
Normal	57 (61.29%)	1 (1.07%)	36 (38.71%)	93
Abnormal	1 (14.29%)	-	6(85.71%)	7

Table 4: Both biophysical profile (NST+AFI) and Doppler.

Delivery	Both N	Both Ab N	One Ab N	Total (N=100)
Vaginal	49	0	9	58
Caesarean	13	1	28	42

Induction of labour

Total 25 patients had induction of labour. Out of them cerviprime was used in 18 and misoprost in 4 and oxytocin in 3 patients.

Intrapartum complication

Out of 100, 31 patients had intrapartum complication in form of MSL with non-reassuring heart rate pattern.

Indications of caesarean section

Out of 100 patients LSCS was done in 42 patients for following indications.

Table 5: Indications of caesarean section.

Indications	Casey et al ⁴	Present study
Fetal Distress	32.6%	21%
Oligohydramnios	-	9%
FPI, IUGR	-	8%
Breech	-	2%
Others	-	2%

Table 6: Oligohydramnios and perinatal outcome.

Factors associated with perinatal outcome	Present study	Casey BM ⁴	Manning et al study ⁸
Growth retardation	82%	75.5%	64%
AGA	18%	24%	36%
SGA			
APGAR Score (< 7 in 1-5 min)	15%	-	15%
NICU admission	22%	-	43%
Congenital anomaly	1%	10%	13%
abN biophysical profile (abN NST+AFI)	32%	48%	
Perinatal death	4%	6.3%	-

DISCUSSION

Mean maternal age - Casey et al 23.9 years - present study - 23.66 years.⁴

Thus, incidence of oligohydramnios was more in primipara (52%) in our study. And operative morbidity

was also more in primipara (57.7%). Most common cause of oligohydramnios is idiopathic (52%), and second commonest cause is PIH (25%). Operative morbidity is highest in PIH (60%). Idiopathic is most common cause of oligohydramnios in Casey BM (60.5%) and Magnan EF (28.5%) like our study (52%).^{4,5} Casey BM show highest operative delivery 71% which is found in our study (85.71%).⁴ So operative morbidity was significantly higher in patients with altered Doppler. As our patients had oligohydramnios, a non-reactive NST + AFI <5 indicated fetal geopardy as per revised Biophysical profile scoring by manning et al and this fetal geopardy is reflected as increased operative interference in our study.⁸

38 patients had one of the investigations abnormal and rates of caesarean delivery were increased in this group. Casey BM shows 68% vaginal deliveries in induced patients of oligohydramnios and 32% by LSCS which is comparable to our study as vaginal deliveries 64% and LSCS 34% respectively.⁴

Maternal morbidity outcome

In Present study, 25% of the patients had undergone induction of labour by cerviprime, misoprost or oxytocin. All of them had antepartum fetal surveillance in form of biophysical profile and Doppler described by magnan meta-analysis.⁹ No induction was performed in abnormal Doppler. So 16 patients out of 25 total induced patients were delivered vaginally, whereas 9 patients delivered by LSCS. In our study, we had intrapartum complication in form of MSL with non-reassuring heart rate pattern (26%) and fetal distress alone (5%). Which is comparable to study done by Casey et al - (32%) and manning et al - (38%) most common reason to perform caesarean was fetal distress which was either due to cord compression or IUGR.^{4,8} Results are comparable with Casey et al study, which show significant higher proportion of CS due to fetal distress.⁸ There is high rate of operative delivery (instrumental + LSCS) in all the studies which are comparable to present study. Thus, oligohydramnios is associated with increased operative delivery and therefore, increased maternal morbidity.

The Fetal outcome in pregnancy with isolated reduced AFV in third trimester described by Robert and Walinshaw.¹⁰ Causes of 4 perinatal death:1 due to Septicemia ,1 due to prematurity and 2 due to meconium aspiration syndrome in present study.

Neonatal morbidity outcome

8 mothers had abnormal biophysical profile (NST +AFI) out of which 2 delivered vaginally and 6 by caesarean and all babies survived. Out of them 3 delivered by LSCS and 2 delivered vaginally were admitted in NICU but on discharge all babies were well. No neonatal mortality noted in this study. An abnormal biophysical profile (NST+AFI), induction and vaginal delivery can be

contemplated hoping successful perinatal outcome described by Kennedy K et al and Williams and simultaneously maternal operative morbidity can be reduced.^{11,12}

CONCLUSION

Oligohydramnios is frequent occurrence and demands intensive fetal surveillance and proper antepartum and intrapartum care. Oligohydramnios is frequent findings in pregnancies involving IUGR, PIH and pregnancies beyond 40 weeks of gestation. AFI is a predictor of fetal tolerance in labour and its decrease is associated with increased risk of abnormal heart rate and meconium stained fluid. Due to intrapartum complication and high rate of perinatal morbidity and mortality, rates of caesarean section are rising, but decision between vaginal delivery and caesarean should be well balanced so that unnecessary maternal morbidity prevented and other side timely intervention can reduce perinatal morbidity and mortality.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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