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Maternal and Perinatal Outcomes in Oligohydramnios

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ABSTRACT: Amniotic fluid volume is the core component of a healthy pregnancy and decreased amount compared to gestational age is oligohydramnios. Evaluation of it provides important information about structural and functional integrity of fetus and is predictive of pregnancy outcome. In present study the aim to assess the effect of oligohydramnios on maternal and perinatal outcomes. A prospective study design was adopted to collect data from pregnant women. Each was interviewed to obtain socio- demographic and clinical data. Ultrasonography reports were noted for AFI estimation and were observed for the maternal and perinatal outcomes after delivery. Out of 500 pregnant women 45.6% lies between 26-30 years of age, 91.6%, 42.2%, 51.2% were non-working, primigravida, nulliparous respectively. Various outcome measures recorded were, gestational age at the time of delivery, Color of liquor amni, mode of delivery, birth weight, resuscitation required, NICU admission that were found to be statically significant. Oligohydramnios has deleterious effects on maternal and perinatal outcome, thus close monitoring of amniotic fluid volume in pregnancy will aid to avoid undesired maternal morbidity and enable prompt intervention to lower perinatal deaths and morbidity.

Keywords: Amniotic fluid index, oligohydramnios, maternal outcomes, fetal outcomes, amniotic fluid volume.

INTRODUCTION

One of the core components of a healthy pregnancy is the volume of amniotic fluid. It is a transparent, slightly yellowish liquid that encapsulates the fetus in an amniotic sac, serving as a cushion, avoids umbilical cord compression and facilitates fetal lung maturation (Figueroa *et al.,* 2020; Singh *et al.,* 2020). A delicate dynamic equilibrium between the mother and the fetus regulates the metabolism of amniotic fluid. (Jeyamani *et al.,* 2019). The most significant parameter used in antepartum fetal surveillance to identify fetuses at high risk of compromise and seeking interventions to improve perinatal outcome is its volume, which is one of its physical characteristics (Egagifo *et al.,* 2021). Decreased or less amniotic fluid amount compared to gestational age is the most common amniotic fluid disorder known as oligohydramnios (Ahmar *et al.,* 2018).

Incidence rates range from 1 to 3 % generally, but they can reach 19 to 20 % in high-risk pregnancies, this is primarily caused by the increased rates of antepartum test underlying maternal or fetal indication (Kaur *et al.,* 2016).

The most common means of AFI estimation is to externally segment the uterus into four equal quadrants and then ultrasound is used measure the vertical diameter of the deepest pocket in each quadrant, finally two measurements are then added to determine it (Patil *et al.,* 2019). AFI≤5 cm is the accepted cut off for the diagnosis of Oligohydramnios (Guin *et al.,* 2011).

Only 30 % of pregnant women in Uganda who need ultrasonography services actually receive them, resulting in numerous missed opportunities for early detection of oligohydramnios (Lalita *et al.,* 2019). Results are frequently poor when oligohydramnios is missed and patients do not receive appropriate and timely treatment (Twesigomwe *et al.,* 2022).

Oligohydramnios can have a notable effect on the outcome for both the mother and the fetus (Jayati Nath *et al.,* 2013; Prajapat *et al.,* 2019). Fetal issues like Low APGAR scores, cord compression, congenital abnormalities, meconium aspiration syndrome, sever birth asphyxia, fetal growth restriction, Neonatal Intensive Care Unit (NICU) admission and fetal mortality have all been associated to oligohydramnios (Panda *et al.,* 2017). It is also linked to maternal morbidity, which manifests as an increase in induction rates and/or operative interference (Jagatia *et al.,* 2013; Rathod *et al.,* 2017; Rathod *et al.,* 2014).

The assessment of amniotic fluid volume is a helpful tool in determining who is at risk for potentially adverse obstetric and perinatal outcome. Since Oligohydramnios has got significant impact on perinatal outcome and maternal morbidity. Thus the aim of the study was to assess the effect of oligohydramnios of maternal and perinatal outcomes in third trimester of the pregnancy.

MATERIAL AND METHODS

This study followed a prospective study design to assess the effect of oligohydramnios on maternal and perinatal outcome undertaken at a tertiary care hospital, Amritsar. The data was collected from 500 pregnant women at ≥ 28 weeks and were followed up till 72 hours after

delivery by using purposive sampling technique. Cases of multifetal pregnancy, polyhydramnios and diagnosed psychiatric disorders were excluded. Written permission was taken from ethical committee and authorities of SGRD Hospital, Vallah, Amritsar. Prior information was given to each subject and written consent was obtained. Enrolled pregnant women were interviewed to obtain socio demographic and clinical data. Ultrasonography reports were noted of each subject during follow-ups for AFI estimation and were observed till 72 hours after delivery for the maternal and perinatal outcomes from the records. The analysis was done using descriptive and inferential statistics.

RESULTS

In the present study Table 1 shows the distribution of demographic variables of the pregnant women observed over Age in which 5 % were in the age group of up to 20 years, 23.4 % falls in group of 21 to 25 years, 45.6 % were 26 to 30 years, 22 % had 31 to 35 years and 4 % were Above 35 years. Occupational Status reveals that 8.4 % of the pregnant women had been working and rest 91.6 % not working. 75 % of pregnant women were from rural and remaining 25 % from urban. These results were consistent with study by Rathod *et al.* (2014).

Table 2 depicts that 42.2% were primigravida followed by 33% 18.6% 4.2% had gravida 2, 3, 4 and only 2% with gravida ≥5. The most of 51.2% were nulliparous. Similar to studies done by Lalita *et al.,* (2019); Guin *et al.,* (2011) found out 41.1% were nulliparous.

Table 3 revealed that most of the pregnant women with oligohydramnios (53.8%) had 28-36 weeks of gestational age at the time of delivery compared to those with no oligohydramnios (19.8%) and this difference was statistically significant to establish the higher rates of preterm delivery among those with oligohydramnios which were comparable with the study conducted by Jayati *et al.,* (2013) About 68% patients were delivered at less than 37 completed weeks i.e. preterm delivery.

One of another salient finding was that the Meconium stained liquor was more (12.3%) in pregnant women with oligohydramnios then with no oligohydramnios (7.8%). The results are identical with study done by Lalita *et al.,* (2019). Most of (87.7%) women had Caesarean section in pregnant women with oligohydramnios and (68.1%) in pregnant women with no oligohydramnios which was found to be statistically significant (Jeyamani *et al.,* 2019) conducted similar study and found out that majority of the women with oligohydramnios (56.5%) delivered by caesarean section compared to those with normal AFI (42.4%).

Table 4 Shows the perinatal outcomes after delivery, in present study birth status revealed that intrauterine fetal death was 1.5% in pregnant women with oligohydramnios and 0.2% in non-oligohydramnios. 14.06 % babies of pregnant women with oligohydramnios and 2.76% babies of pregnant women with non-oligohydramnios had delayed cry after delivery. Birth weight <2.5(kg) was 51.4% in babies of women with oligohydramnios and 14.9% in babies of women with non-oligohydramnios was statically significant. Supported study led by Panda *et al.,* (2017) expose that Birth weight<2.5 kg is 23 (32 %) in AFI≤5 group and 30 (12 %) in >5 AFI group.

Resuscitation requirement was 9.4% in babies of women with oligohydramnios and 2.1% in babies of women non oligohydramnios that was statically significant. NICU admission was 78.1% in babies of women with oligohydramnios and 49.3% in babies of women with no oligohydramnios was also statically significant. That was compatible with results of Prajapat *et al.,* (2019) which affirms that 16 babies of study group while 6 babies of control group required NICU admission.

Perinatal mortality was 3% in pregnant women with oligohydramnios and 0.3% in non-oligohydramnios were found to be statically significant. This proportion was similar with study by Jagatia *et al.,* (2013) which acknowledge that 2% babies had perinatal mortality.

Table 1: Description of socio demographic variables of the pregnant women N = 500.

Characteristics	f	%
Age (in years)		
18 – 20	25	5.0
21 – 25	117	23.4
26 – 30	228	45.6
31 – 35	110	22.0
Above 35	20	4.0
Occupational status		
Working	42	8.4
Non-working	458	91.6
Residence		
Rural	375	75.0
Urban	125	25.0

Table 2: Description of Clinical Variables of the pregnant women N=500.

Characteristics	f	%
Gravida		
One	211	42.2
Two	165	33.0
Three	93	18.6
Four	21	4.2
Five and above	10	2.0
Parity		
Nulliparous	256	51.2
One	187	37.4
Two	50	10
3 & above	7	1.4

Table 3: Description of maternal outcomes after delivery in pregnant women N = 500.

Maternal outcomes	Oligohydramnios occurred				Chi square	p
	Yes (65)		No (435)			
	N	%	N	%		
Gestational age at time of delivery (in weeks)						
28 – 36	35	53.8	86	19.8	35.80	0.001**
≥ 37	30	46.2	349	80.2		
Colour of liquor amni						
Clear	47	72.3	401	92.2	70.78	0.001**
MSL	8	12.3	34	7.8		
Nil	10	15.4	0	0.0		
Mode of delivery						
Vaginal delivery	8	12.3	139	31.9	10.52	0.001**
Caesarean section	57	87.7	296	68.1		
If vaginal delivery nature of labour n= 147						
Spontaneous	5	62.5	105	75.5	0.68	0.408
Induced	3	37.5	34	24.5		

P value <0.01 ** Significant

Table 4: Description of perinatal outcomes after delivery.

Perinatal outcomes	Oligohydramnios occurred				Chi square	p
	Yes		No			
	N	%	N	%		
Birth status n= 500						
Live	64.00	98.5	434.00	99.8	2.431	0.119
Intrauterine fetal death	1	1.5	1	0.2		
Cry n= 498						
Immediate	55.00	85.94	422.00	97.24	17.63	0.001**
Delayed	9.00	14.06	12.00	2.76		
Birth weight (kg) n= 498						
< 2.5	33	51.59	65	14.9	48.36	0.001**
2.5 - 3.5	31	48.43	349	80.4		
> 3.5	0	0.0	20	4.6		
Resuscitation required n=498						
Yes	6.00	9.4	9.00	2.1	10.18	0.001**
No	58.00	90.6	425.00	97.9		
Congenital malformation n=500						
Yes	3.00	4.62	7.00	1.61	2.60	0.106
No	62.00	95.38	428.00	98.39		
NICU admission n=498						
Yes	50	78.1	214	49.3	18.59	0.001**
No	14	21.9	220	50.7		
Perinatal mortality n=500						
No	63	97.0	434	99.7	7.685	0.005**
Yes	2	3.0	1	0.3		

P value <0.01 ** Significant

CONCLUSION

The study reveals that oligohydramnios is a prevalent abnormality during antenatal period putting deleterious effects on maternal and perinatal outcome, giving a vital indication of close monitoring of amniotic fluid volume in pregnancy that will aid to avoid undesired maternal morbidity as preterm delivery, increased rates of operative inferences and on the flip side to enable prompt intervention to lower perinatal deaths and morbidity that includes low birth weight, resuscitation requirement, NICU admission.

FUTURE SCOPE

In future scope it can focus on assessment of the risk factors or contributing factors of oligohydramnios in pregnant women during second or third trimester of pregnancy.

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Conflict of Interest. It is declared as none.

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