

To Study the Effect of Oligohydramnios on Maternal and Fetal Outcomes in Term Pregnancy

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1. Introduction

Amniotic fluid is divine liquor produced flawlessly from the time of first human being till today. Human fetus is originally an aquatic animal whose survival without amniotic fluid is not possible like survival of fish without water. The amniotic fluid is baby's life support system. Oligohydramnios literally means "amniotic fluid volume is less, expected for that gestation age". The most accepted definition of oligohydramnios is AFI less than 5cm for particular gestation age and single deepest vertical pocket <2 cm (ACOG 2016)⁽¹⁾. In Moore nomogram, below 2.5 percentile taken as threshold, which is equal to AFI <5cm. It complicated approximate 1 to 2% of pregnancies⁽²⁾. It is clear, pale, odorless, slightly alkaline fluid, composed of water(98-99%), carbohydrate, protein, lipids, hormones, enzymes, various suspended particles like vernix caseosa, lanugo hairs, epithelial cells, stem cells. There is progressive increase in amniotic fluid volume for 30ml at 10 week to 400ml at 20 weeks, further increases to 800 to 1000 ml at 28 weeks, that constant till term and decline to 400ml at 42 weeks. Both mother and fetus contribute to amniotic fluid production however mother is key contributor in early gestation. Later amniotic fluid dynamics is regulated by fetus. It has a number of vital functions like protection of fetus from trauma (cushioning effects), maintaining body temperature, development of musculoskeletal system, digestive system and provide essential nutrients to fetus⁽³⁾. Amniotic fluid volume abnormality may reflect abnormality in production, consumption, or its circulation, such as underlying maternal, fetal or placental abnormality. Maternal conditions such as uteroplacental insufficiency, hypertension, diabetes, and chronic hypoxia, rupture of amniotic membranes, dehydration, and post-term gestation have associated with oligohydramnios. Fetal causes like congenital absence of kidneys, obstructive uropathy or decreased renal perfusion also contribute it. However most oligohydramnios cases are idiopathic. During antenatal surveillance, amniotic fluid assessment is crucial barometer to know the fetal wellbeing.⁽³⁾

Aims and Objective-

To study the effect of oligohydramnios on **maternal outcomes**:

- 1) Incidence of spontaneous labor v/s induction of labor
- 2) Incidence of vaginal delivery v/s operative delivery

To study the effect of oligohydramnios on **fetal outcomes**:

- 1) Birth weight
- 2) Fetal distress

- 3) APGAR score
- 4) NICU admission

2. Material and method

Study Location-Department of obstetrics and gynecology, Dr. S.N. Medical College, Umaid hospital, Jodhpur, Rajasthan, India.

Study duration – January 2020 to June 2020

Study design- Prospective observational case control study.

Study population – Antenatal mothers admitted in umaid hospital with oligohydramnios after completed 37 week of gestation were enrolled as cases and antenatal mother with normal amniotic fluid were enrolled and both groups were matched for age, parity and gestation age.

Inclusion criteria

- 1) Singleton pregnancy
- 2) AFI < 5cm
- 3) Gestation age >37 week

Exclusion criteria

- 1) Multiple pregnancies
- 2) Medical co morbidities like diabetes mellitus, hypertension, pre-eclampsia
- 3) Premature rupture of membrane.

Sample Size

This study consisted of 100 pregnant females with 37 completed week which equally divided into two groups according to inclusion and exclusion criteria, 50 study groups with Oligohydramnios compared with 50 control group with no oligohydramnios; studied for maternal and fetal outcome.

3. Methodology

This was a hospital based study; pregnant women enrolled for this study, were subjected to detailed history, thoroughly examination and judicious investigation, and monitored for maternal and fetal outcome to calculate AFI patient was subjected to ultra-sonography (TAS) for measuring AFI. AFI calculated by dividing the abdomen externally into four quadrants by two imaginary lines, first line passes vertically through linea nigra divided into right and left half and second, horizontal line from umbilicus divide into upper and lower half to abdomen. The vertical diameter of the largest

pocket in each quadrant devoid of umbilical cord and limbs was measured. All four values were summed up to calculate AFI.

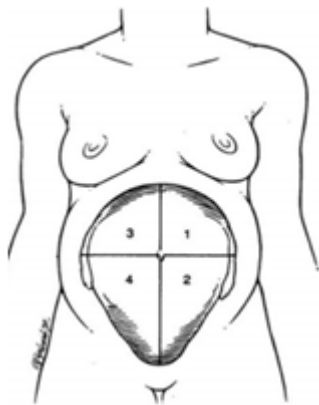


Figure 1



Figure 2

4. Results

Table 1: Age Distribution

Age (Years)	No. of patients
<20	10
20-39	35
>30	5

Oligohydramnios is more common in 20-39 year age group (70%).

Table 2: Gestational Age (weeks)

Gestational age	No. of patients
37-38	10
39-40	17
>40	23

By gestational age 46% of women were in the gestational age >40 weeks.

Table 3: Parity

Gravida	No. of patients
Primi	29
Multi	21

Oligohydramnios was more common in primi gravida.

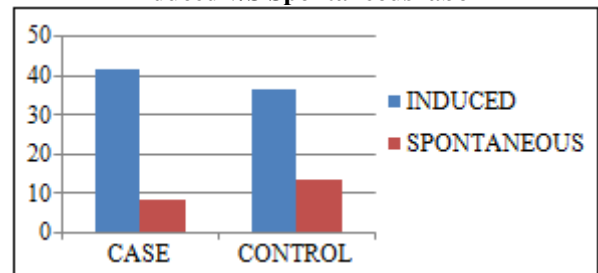
Table 4: Geographical distribution

Rural	24
Urban	26

There was slightly high incidence of oligohydramnios in urban patients as compared to rural patients.

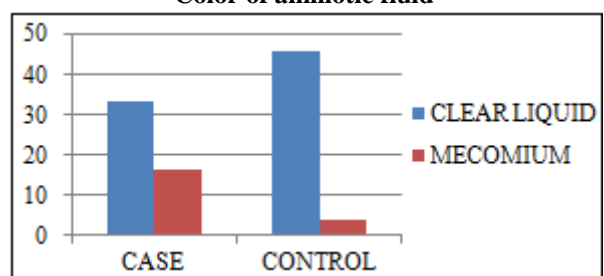
Maternal outcome

Induced v/S Spontaneous labor



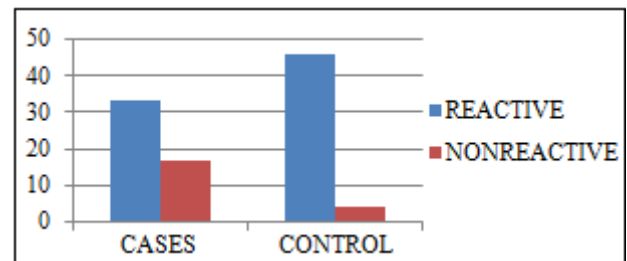
Labor was induced in 42% of study group and 32% in control group.

Color of amniotic fluid



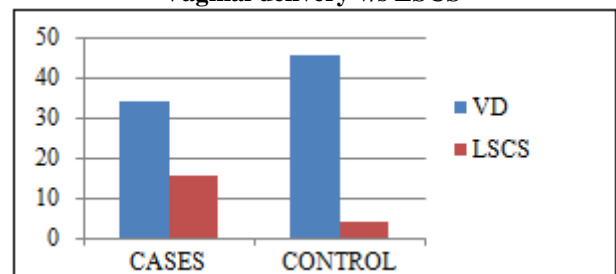
In study group 33.33 % showed meconium stained liquor and 8.4% in control group.

Fetal status assessment in NST



NST was non-reactive in 33.3% of study group and 8.4% in control group.

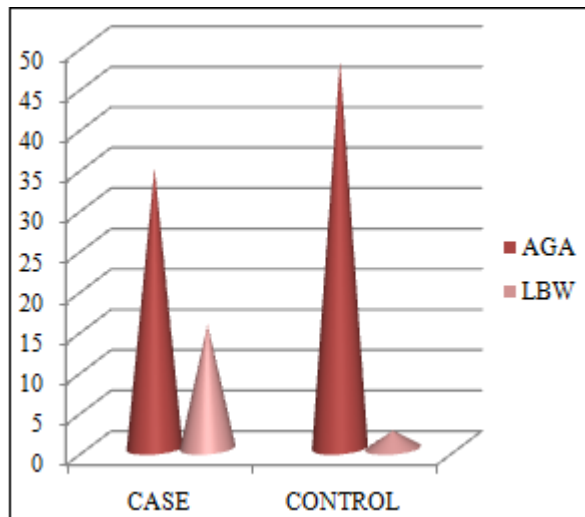
Vaginal delivery v/s LSCS



LSCS was done in 31.7% of study group and 7.8% in control group.

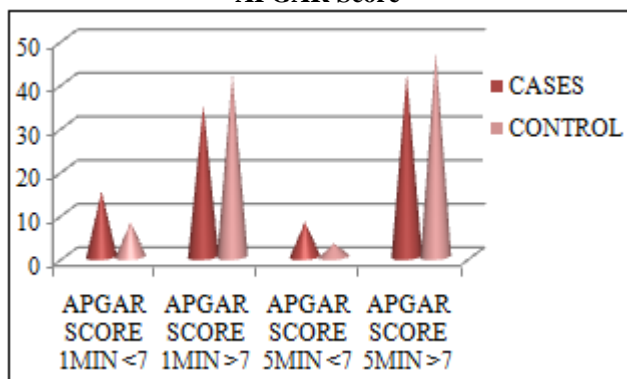
Fetal Outcome

Fetal Weight



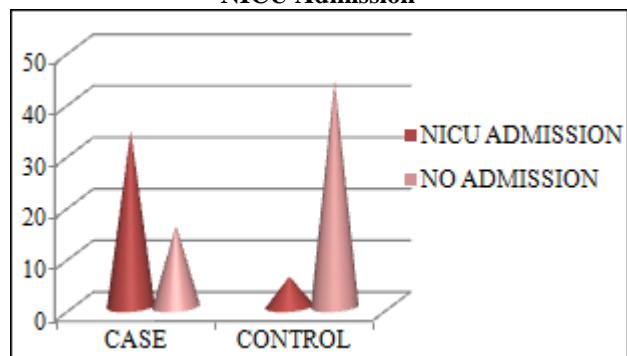
The occurrence of birth weight < 2.5 kg was seen in 30.4% of study group and 7% in control group.

APGAR Score



Apgar score at 1 and 5 min was <7 in 15% and 8% respectively in study group which was poor than control group.

NICU Admission



NICU admission was 68.33% in study group and 11.7% in control group.

5. Discussion

Assessment of amniotic fluid volume during the antenatal period is surrogate marker of fetal health and help in predicting outcomes.

In our study maximum numbers of women (70%) were in the age group of 20-29 years. This reflected the Indian trend of early marriage and pregnancy. It is more common in primi gravida i.e. 64% and associated with postdated pregnancy (46%). **Magnan et al**⁽³⁾ found that amniotic fluid volume decreased by approximately 8% per week beyond 40 week. **Swati et al**⁽⁵⁾ was found that 72% women were in age group of 20-29 years with more than 40 week of gestation of age(48%). Oligohydramnios was more common in primi gravida than in multi gravida (56% v/s 44%).

There is increased incidence of labor induction because if not delivered at time, chances of poor pregnancy outcomes increased. In this study labor was induced in 42% of cases as compare to 32% in control group so labor induction was more in case group but the results were not statistically significant. Same results was observed by **Swetha et al**⁽⁶⁾. Labor induction was 83.3% in case group v/s 73.3% in control group. **Sangeetha et al**⁽⁷⁾ found that labor induction was 56% in case group as compare to 36% in control group. The difference was statistically significant.

Oligohydramnios was associated with postdated pregnancy so meconium stained liquor was also common in this group. In our study 33.33% had MSL in case group than 8.4% in control group. Also same results found in **Swapandas et al**⁽⁸⁾ in which 40% case group and 12% in control group. So nonreactive NST was more common in case group 33.33% vs. 8.4% in control group. **Swapandas et al** found the same results that were 36% vs. 18%.

Oligohydramnios was associated with MSL, nonreactive NST, and IUGR so operative delivery was comparatively high in this group. Most of LSCS was done for fetal distress. In our study LSCS done in case group was 31.7% as compare to 7.4% in control group. Various studies also proven this, like **Nankali et al**⁽⁹⁾ 75.3% in case group vs 36.5% in control group.

Oligohydramnios was associated with fetal hypoxia, early induction and delivery so baby weight was comparatively low as compare to average weight. Its occurrence was 30.7%. **Kolsum et al**⁽⁴⁾ was also that show that LBW in oligohydramnios in 1.9 times higher than non-oligohydramnios.

APGAR score at 1 min and 5 min was also worst in case group as compare to control group. In case group at 1 min <7 was 15% and control group 8%. At 5 min it was 8% vs 3%. **Ashish et al**⁽¹⁰⁾ also found same results. APGAR score <7 at 1 min and 5 min was 13% in case group and 5% in control group.

The current findings reveal that statistically significant difference was noted between the two groups as regards admission to neonatal intensive care unit. As 30% of oligohydramnios group admitted in NICU as compared to 7% in no-oligohydramnios group. This is consistent with the study of **jhonshon et al**⁽¹¹⁾ who found that 20% of neonates had NICU admission in oligohydramnios group

6. Conclusion

An AFI <5cm detected after 37 week of gestation in a low risk women is an indicator of poor pregnancy outcome. It is being detected more often these days due to routine use of obstetric usg. In presence of Oligohydramnios the occurrence of labor induction, rate of LSCS, non-reactive NST abnormal fetal heart tracing, meconium stained liquor, low birth rate, low APGAR score, NICU admission were high. Hence every case of Oligohydramnios need careful antenatal evaluation so that they can be picked up early, optimally managed and mitigated maternal and fetal complications. Prevention of oligohydramnios without any complicating factors is an area of further researches.

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