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Pregnancy outcome in oligohydramnios in tertiary care centre, Goa medical college

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Abstract
Introduction: Amniotic Fluid Index of 5cm or less is oligohydramnios. It is associated with perinatal complications such as IUGR, low birth weight, acute fetal distress, perinatal morbidity and mortality. Incidence is 3.9% in all the pregnancies. Between 36-40 weeks, incidence is 2.4%.
Materials and Methods: It is cohort study of analysis of pregnancy outcome in 200 cases with AFI<5 after 34 completed weeks of gestation in comparison to 200 controls without oligohydramnios. The study and control group consisted of pregnant patients admitted in Goa Medical College, Goa over a period of 24 months.
Results and Analysis: The mean gestational age was 36.1 weeks. IUGR was associated with 43% cases (p value <0.001). 28% cases had gestational hypertension (p value <0.001). the non-stress test was non-reactive in 30% patients (p value <0.001%). 17.5% cases reported to have fetal heart rate decelerations during labor (p value <0.23). 63% patients underwent cesarean section and 7.5% patients required instrumental delivery. The mean birth weight in study group was 1.76kg (p value 0.51). The mean of the APGAR value at 1 minute and 5 minute of birth was 7.63 and 9 respectively (p value <0.01). 40.5% required NICU admission <p value 0.001).
Conclusion: In view of increased complications seen with oligohydramnios in pregnancy, it is important to follow stringent guidelines for early diagnosis in the interest of better pregnancy and neonatal outcome.

Keywords: oligohydramnios, AFI (amniotic fluid index), pregnancy outcome, NST (non-stress test)

Introduction
Oligohydramnios is defined as Amniotic Fluid Volume of more than 2 standard deviations below the mean for specific gestational age. Also, if AFV is reduced less than 5th percentile for a particular gestation. AFI of 5cm or less is oligohydramnios as originally defined by Phalen *et al* [1]. On this basis, volume of <300ml is oligohydramnios. It is associated with various omnious outcomes such as intra uterine growth restriction, low birth weight, acute fetal distress, perinatal morbidity and mortality, increase rate of caesarean sections, etc. Oligohydramnios in term pregnancy differ in etiology, management and outcome according to early and late onset oligohydramnios. Amniotic fluid creates a protective environment which supports growth of the fetus.

Incidence: Oligohydramnios is present in 3.9% of all the pregnancies. Between 36-40 weeks, incidence is 2.4% [2]. AFI when studied biweekly in antepartum period which demonstrated, patients with normal AFI (>8cm) had 0.54% chance of oligohydramnios to develop in next 4 days [3]. Biophysical profile, proposed by Manning [4] and colleagues is used for fetal surveillance, including non-stress test, fetal breathing, fetal movements, fetal tone and amniotic fluid volume.

Objective of the Study
To determine whether an antepartum oligohydramnios as a predictor of adverse pregnancy outcome in terms of:
1. Onset of labor
2. Mode of delivery
3. Occurrence of abnormal FHR pattern/fetal distress
4. Birth weight
5. APGAR score
6. Neonatal morbidity and mortality

Materials and Methods

This is a cohort study done in Goa Medical College, for a period of 24 months from January 2018 to December 2020.
Ethical approval was obtained from Institutional Ethics Committee.

Sample size: 200 patients (All patients presented from January 2018 to December 2020)

Sampling Method: Census method
Analysis of pregnancy outcome in 200 cases with AFI<5 after 34 completed weeks of gestation by USG in comparison to 200 controls without oligohydramnios was done. Various demographic factors, age, parity, gestational age, obstetrical complications, induced vs spontaneous labor, nature of amniotic fluid, FHR tracings, mode of delivery, indication for LSCS, birth weight, APGAR score, need for intensive care for neonate and neonatal mortality were noted. The outcome was compared with equal number of controls with normal Amniotic Fluid Index. The data was analyzed using SPSS version22. Categorical variables were expressed in percentages and proportions and quantitative variables in mean ± SD. Significance was checked using Student t test and p<0.05 was taken as significant.

Inclusion Criteria

1. AFI of less than or equal to 5cm
2. Single live intrauterine gestation with cephalic presentation
3. Intact membrane
4. 34 completed weeks

Exclusion Criteria

1. AFI more than 5cm
2. Post term
3. Associated fetal malformations.
4. Ruptured membranes
5. Malpresentation and multiple gestations

On admission, NST was done, non-reactive NST taken for LSCS.
Reactive NST, if, patient in labour, managed according to protocol and BISHOP score, induced or augmented with oxytocin drips.

Results and Analysis

During the present study, total of 200 patients were studied and compared with the same number of controls who did not had oligohydramnios.
Maximum number of patients belonged to 26-30 years of age group. The mean age for the study group was 27.55 years and for the control group was 28.59 years (p value 0.011)

Table 1: Age – wise distribution

Age (Years)	Control	Case
<20	7(3.5%)	20(10%)
21-25	51(25.5%)	64(32%)
26-30	74(37%)	70(35%)
31-35	49(24.5%)	29(14.5%)
>36	19(95%)	17(8.5%)

In this study, oligohydramnios cases were maximum seen in nulliparous or primigravida patients in both the study groups.
The mean gestational age for the study group was 36.1 weeks and for the control group was 37.35 weeks. The study group had maximum patients from 35-37 weeks as compared to control group of 37-39 weeks. (p value <0.001)

Table 2: Distributions of study subjects based on Gestational Age

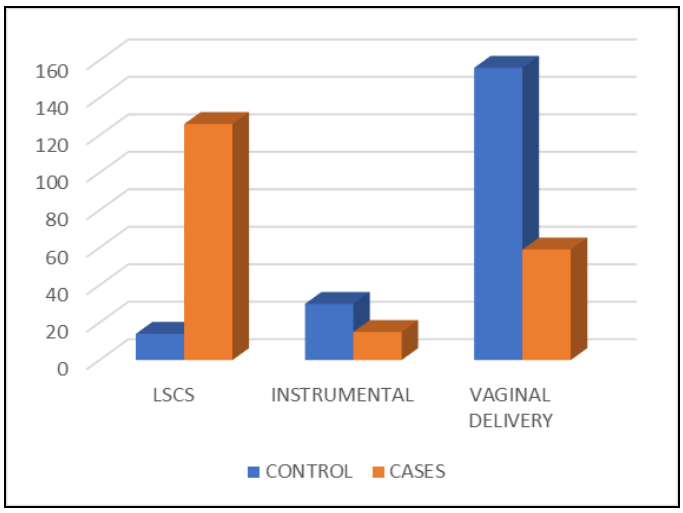
Gestation Age(Weeks)	Control	Case
<35	0(0%)	66(33%)
35.1-37	39(9.5%)	77(38.5%)
37.1-39	135(67.5%)	42(21%)
>39.1	26(13%)	15(7.5%)

The study group had AFI of <5cm, 36% patients had 4-5cm as compared to control group with 40% patients having AFI of 8cm.
IUGR had been more commonly associated with the study group being 43% as compared to 10.5% in control group (p value <0.001)
Gestational Hypertension or pre-eclampsia had been seen in association with reduced AFI. 28% patients were associated with increased blood pressure in study group and 11.5% in control group. (p value <0.001)
The non-stress test was non-reactive in 30% patients in study group while 1.5% in control group (p value <0.001)
Fetal heart rate decelerations in labour were seen in 17.5% of cases in comparison to only 0.5% in the control group. Also these patients had the amniotic fluid index in the lower range. (p value <0.23)
The amniotic fluid was meconium stained in 26 patients (13%) in the study group and the control group comprised of 13 patients (6.5%) having meconium stained liquor (p value 0.28).

Table 3: Association of obstetric complications with AFI

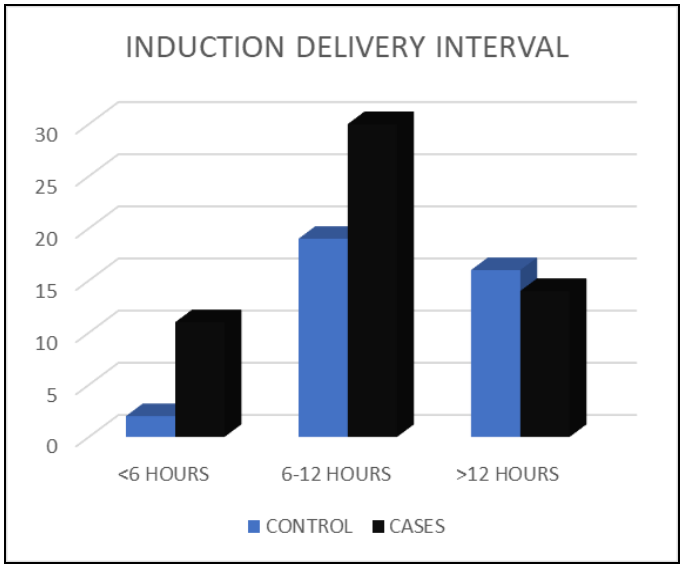
Obstetric Complication	Control	Case
Iugr	21(10.5%)	86(43%)
Gestational Htn	23(11.5%)	56(28%)
Non Reactive Nst	3(1.5%)	60(30%)
Fhr Deceleration	1(0.5%)	35(17%)
Msaf	13(6.5%)	26(13%)

63% of the patients from the study group had to undergo cesarean section as compared to 7% patients in control group. Instruments (forceps or vacuum) has been applied to 7.5% patients in the study group and 15% patients in control group.



Graph 1: Mode of delivery

Induction delivery duration is less than 6 hours in 5.4% patients in the control group as compared to 20% in study group. 43% from control group took more than 12 hours to deliver as compared to 25% in the study group. (p value 0.063)



Graph 2: Induction delivery interval

Amongst the various indications of the LSCS done in both the groups, study was done only for the fetal distress as indication. The group with oligohydramnios had 29 acute fetal distress out of 126 indications while control group had 4 out of 14 LSCS.

Table 4: Comparison of birth weight and APGAR score

Parameter	CASE (mean+/-sd)	CONTROL (mean+/-sd)	P VALUE
Birth Weight (kgs)	1.76+/-0.25	2.6+/-0.28	0.51
APGAR score 1 min	7.63+/-1.04	7.96+/-0.2	<0.01
APGAR score 5 min	9+/-0	8.79+/-0.75	<0.01

Using Student 't' test:

The mean birth weight in the study and control group respectively was 1.76kg and 2.6kg. (p value 0.51).
The mean of the APGAR value at 1minute of the birth was 7.63 and 7.96 in the study and control group respectively. (p value <0.01).
The mean of the APGAR at the 5minutes of birth was 9 in the study group and 8.79 in the control group. (p value <0.01)

Table 5: Distribution of study subjects based on neonatal outcome

Neonate	Control	Case
Nicu Admission	0(0%)	81(40.5%)
Neonate Death	0(0%)	31(15.5%)

81 neonates from the study group required NICU admission because of various reasons such as prematurity, low birth weight, birth asphyxia, Doppler changes for observation, meconium aspiration in case of MSAF. No babies required NICU admission in the control group. (p value 0.001)

Table 6: Validity of AFI</= 5 as a screening tool for LSCS

AFI	LSCS	Vaginal	Total
</=5cm	126 (a)	74 (b)	200
>5cm	14 (c)	186 (d)	200
TOTAL	140	260	400

Sensitivity= a/a+c* 100 = 90%
Specificity= d/b+d * 100 = 71.5%
Positive predictive value = a/ a+b * 100 = 63%
Negative predictive value = d/ c+d * 100 = 93%

Discussion

A cohort study had been done in Goa Medical College, Bambolim, Goa from January 2018 to December 2020 for analysis of the outcome of pregnancy in oligohydramnios and normal term pregnancies after comparing the various demographic variables.
The maximum number of patients belonged to mean age of 27.55 years in the oligohydramnios group in this study, 35% patients were of age group 26-30 years. Sharma[5] study in 2017 had 28.6% patients belonging to age group <20 years. Ahmar[6] study in 2018 had mean age group of 26.1 years in study group.
The mean parity in this present study is 0.5 comparable to the mean parity of 1 in Baron [7] *et al* study and 0.6 in Magann[8] *et al* study. Ahmar [6] study in 2018 had maximum patients as primigravida (64.4%) in study group.
In my study, IUGR was associated with 43% patients in the study group, comparable to 36% in Manning [4] *et al* study. The results were contrast in Sariya R [9] *et al* study and Rizwan[10] study, 16.6% and 16.7% respectively.
Pregnancy induced hypertension was associated with oligohydramnios in 28% cases in present study similar to 27.78% in Rizwan [10] study and 25% in Jagatia [11] study in 2013.
The incidence of non-reactive NST is more in the study group. The rate is 41% in Sriya [12] *et al* study and 40% in Kumar P [13] *et al* study. The result is comparable to 30% rate in the present study. The incidence of non-reactive NST is comparable to the Doppler changes in fetus, mostly being, absent end diastolic flow. These patients are taken up for emergency LSCS according to hospital protocols.
The fetal heart rate decelerations in the intrapartum period is suggestive of the fetal distress and is commonly seen in the oligohydramnios group. Most commonly seen is variable decelerations due to cord compression. The FHR decelerations is seen in 17% women in study group of this study compared to 36.11% in Sriya [12] *et al* study.
The incidence of meconium stained amniotic fluid is high in study group as compared to control group. In the present study, 13% patients had thick meconium as compared to 23.7% in Chandra [14] *et al* study and 38.88% in Sriya [12] *et al* study. According to hospital protocol, meconium stained liquor cases were taken up for emergency LSCS.
The rate of LSCS was more in women with oligohydramnios and non-reactive NST (100%). Even with the reactive NST, 25% women developed fetal distress, for which LSCS was done. The control group had 100% LSCS rate for non-reactive NST and 2% women with reactive NST had fetal distress.
LSCS rate differ in various studies for indication being fetal distress in oligohydramnios. In present study, rate was 23% which is less as compared to other studies being 40% 43.93%, 50%, 51% and 76.92% in Rizwan [10] *et al*, Sriya [12] *et al*, Sharma [5] *et al*, Casey [15] *et al* and Chandra [14] *et al* study respectively. The rates differ probably due to various fetal surveillance techniques such as fetal scalp blood sampling, acoustic stimulation amnio-infusion.
The effectiveness of oligohydramnios (AFI < 5cm) to predict fetal distress and the need for LSCS had a sensitivity of 90% and negative predictive value of 93% in the present study. But the positive predictive value and specificity of the study was poor. Therefore, this can be used as a screening tool for the occurrence of the fetal distress in the intrapartum period requiring LSCS.
In the present study, 78% babies had birth weight of <2.5kg. the results are similar to other studies such as Chandra *et al* study in 2000 and Sriya *et al* study in 2001 being 61.53% and 58.38%

respectively. The mean birth weight is less in the oligohydramnios group being 1.76kg compared to 2.6kg in the control group. This incidence may be due to the chronic placental insufficiency causing fetal growth restriction.

The mean of 5 minute APGAR score in the oligohydramnios group was 9 in this study. The findings in other groups were 9.72%, 21.4%, 23% and 23.07% in Sriya R *et al*, Sharma *et al*, Rutherford [16] *et al* and Chandra P *et al* respectively.

In our study, 40% neonates required NICU admission similar to Chandra P *et al* study in 2000 and Sriya R *et al* study in 2001 being 46.15% and 58.88% respectively. The admissions were due to various reasons such as birth asphyxia, prematurity, low birth weight, meconium aspiration.

In the present study, 15% babies died, contrary to other studies such as Chandra P *et al* study which reported only 1 neonatal death. Baron *et al* and Casey *et al* study reported no neonatal mortality because of excellent NICU care facilities. However, Rizwan study, Sharma study and Wolff F [17] *et al* study had 7.7%, 8.6% and 7.2% perinatal deaths.

Limitations

The limitations of the study included

- Only 200 cases were available satisfying the inclusion criteria.
- The diagnosis of fetal distress was based on CTG tracings. However, fetal scalp blood sampling or other possible methods were not used to diagnose fetal acidosis due to non-availability in the hospital set up.
- Neonatal follow up after 7 days was not fulfilled.
- Use of various back up surveillance methods such as fetal scalp blood sampling, acoustic stimulation, amnioinfusion would have altered the fetal outcome [18].

Conclusions

Amniotic Fluid Index determination is used as an adjunct for the surveillance of the fetus. A measurement of AFI <5cm detected after 34 weeks of gestation in a low risk pregnancy is a poor predictor of poor fetal outcome. If oligohydramnios is present, various associations such as meconium stained liquor, fetal decelerations, other abnormal fetal tracings on CTG monitor, acute fetal distress, non-reactive NST, low APGAR score, low birth weight, etc., perinatal mortality is high. AFI determination is an efficient method to predict the fetal distress in labor which requires cesarean section. It has Sensitivity 90%, Specificity 71.5%, Positive predictive value 63% and Negative predictive value 93%.

References

1. Phelan JP ah Mo Smith CV *et al* amniotic fluid index measurements during pregenacy J Reprod Med 1989;32:601-604.
2. Divon MY, Marks AD, Henderson CE. "Longitudinal measurement of amniotic fluid index in postterm pregnancies and its association with fetal outcome" Am J Obstet Gynecol 1995;172:142-6.
3. Lagrew DC, Pircon RA, Nagcotte M *et al* How frequently should the amniotic fluid index be repeated? Am J obstet Gynecol 1992;167:129-113.
4. Manning F *et al*. April "Ultrasound evaluation of amniotic fluid: outcome of pregnancies with severe oligohydramnios" Am J Obstet Gynecol 1986;154(4):895-900.
5. Sharma, Deepika D. "Maternal oral hydration with hypotonic solution (water) increases amniotic fluid volume in pregnancy". J Obstet Gynecol India 2002;52(1):49-21.
6. Ahmar, Abdelmoula YA. Amniotic fluid index versus single deepest vertical pocket as a screening test for preventing adverse pregnancy outcome. Cochrane Database Syst Rev 2008.
7. Baron *et al*. "Serial amniotic fluid index in severe preeclampsia: a poor predictor of adverse outcome" Am J Obstet Gynecol 1996;175:1018-23.
8. Magann EF. Nolan TF, Hess LW, Martin R. Wetal Measurement of amniotic fluid volume. Accuracy of ultrasonographic techniques. AM J. Obstet Gyneol 1992;167:1553-1537.
9. Sariya Cunningham FG, Gant Norman F, Leveno KJ *et al*. "Intrapartum assessment" Chapter 14 in Williams Obstetrics, 21 st Edn, Mc Graw Hill 2001, 330-360.
10. Rizwan. Biophysical methods of assessing fetal well being chapter 31 in Pregnancy at risk – Current concept 4 th Edn, Usha Krishna, DK Tank. Jaypee Bros: New Delhi 2001, 172-176.
11. Int J Med Sci Public Health 2013;2(3):724-727.
12. Sriya R, Singhai S *et al*. "Perinatal outcome in patients with amniotic fluid index <5cm" J Obstet and Gynaecol of India 2001;51(5):98-100.
13. Kumar P, Iyer S, Ramkumar V. "Amniotic fluid index- A new USG assessment of amniotic fluid", Doppler velocimetry, Am J Obstet and Gynaecol of India 1991;41(1):10-12.
14. Chandra P, Kaur SP, Hans DK, Kapila AK, Aug. "The impact of amniotic fluid volume assessed intrapartum on perinatal outcome". Obstet and Gynae Today 2000;5(8):478-81.
15. Casey BM, MC Intire DD, Donald D, *et al*. "Pregnancy outcome after diagnosis of oligohydramnios at or beyond 34 weeks of gestation" Am J Obstet Gynecol 2000;182:902-12.
16. Rutherford SE, Jeffrey P, Phelan J, Smith CV, Jacobs N. "The four quadrant assessment of amniotic fluid volume: An adjunct to antepartum fetal heart rate testing" Obstet Gynecol 1987;70:353.
17. Brace RA, Wolf EJ. "Normal amniotic fluid volume changes throughout pregnancy". Am. J Obstet Gynecol 1989;161:382-88.
18. Arias Fernando. Practical guide to high risk pregnancy and delivery. 2 nd edition, Mosby – year book Inc 1993;3-20:150-159.