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Comparision of oral and iv hydration therpy on maternal and fetal outcome in oligohydraminos patients

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Abstract
The pregnant women attending antenatal clinics or labour room in C.P.R. Hospital ,Kolhapur were screened by ultrasonography. The cases with gestational age more than 28 weeks with AFI equal to or less than 7 were included in study. The data was collected during 2013-2014. Cases falling into exclusion criteria were later excluded from study. Patients with AFI below 5cm were included in oligohydramnios group and AFI between 5cm to 7cm were included in low AFI group. All patients are distributed randomly between 180 and 120. As the particular therapy ,cases selected for IV therapy on random basis if cases are refused for iv therapy were given oral fluid therapy. So distribution became unequal. There are similar groups with AFI <7 after comparing various factors. In our study, 180 patients were asked to drink 2 litres of water in 2 hours, preferably 250 ml every 15 minutes to cause minimal discomfort. 120 patients received IV hydration therapy, 2 litres of Ringer's solution in 2 hours. Post hydration AFI was repeated at 48 hours.. Oral hydration and IV hydration group are separately studied. Both therapy has beneficial outcome in oligohydramnios patient.

Keywords: AFI, IV (intravenous), oral, oligohydramnios

Introduction
Amniotic fluid provides a specialized environment for normal development, growth and wellbeing of fetus. In fact it is essential for normal fetal lung development and to avert umbilical cord compression [1, 2]. Amniotic fluid protects the fetus from trauma, allows musculoskeletal development. It also maintains temperature and has a minimal nutritive function. Amniotic fluid volume is a result of a balance between its absorption and production. Various factors are involved in this dynamic process [3, 4]. Abnormal amount of amniotic fluid such as oligohydramnios (decreased amniotic fluid) and polyhydramnios (increased amniotic fluid) are associated with increased maternal and f*et al* mortality and morbidity. Because of higher chances of cord compression in oligohydramnios the fetus is jeopardized commonly showing increased incidence of fetal distress meconium staining, birth asphyxia [3]. Today, with availability of ultrasonography, abnormal quantities of amniotic fluid can be detected easily. Hence the risk to mother as well as to fetus can be predicted. Amniotic fluid index is the ultrasound method used to measure amniotic fluid volume [5]. Amniotic fluid index is used to measure the amniotic fluid volume because of its reliability, ease of measurement, normal range is has been defined and procedure is non invasive [6]. Oligohydramnios is defined when amniotic fluid index is less than 5th percentile of the standard [4]. Oligohydramnios is often associated with various maternal and perinatal outcomes. So this study is conducted to understand clinical profile and role of maternal hydration on AFI and to assess the maternal and perinatal outcomes.

Materials and Method
The pregnant women attending antenatal clinics or labour room in C.P.R. Hospital , Kolhapur from all units were screened by ultrasonography. The cases with gestational age more than 28 weeks with Amniotic Fluid Index (AFI) equal to or less than 7 were included in study. The data was collected during 2013-2014. Cases falling into exclusion criteria were later excluded from study. All the patients were admitted in antenatal ward for the study. Patients with AFI below 5cm were included in oligohydramnios group and AFI between 5cm to 7cm were included in low AFI group. All the women were subjected to detailed history, thorough general, systemic examination and obstetric examination with special reference to symphysiofundal height, abdominal girth and clinical amount of liquor. Per speculum examination was done for any leak or show. On per vaginal examination Bishops score was calculated from cervical dilatation, effacement, consistency and station. Ultrasonography was done for determination of fetal wellbeing, serial determination of AFI, gestational age and expected fetal weight. All patients are distributed randomly between 180 and 120. As the particular therapy, cases selected for IV therapy on random basis if cases are refused for iv therapy were given oral fluid therapy.

So distribution became unequal. These are similar groups with AFI <7. Mean AFI of both groups before hydration and after hydration has been calculated and compared. In our study, 180 patients were asked to drink 2 litres of water in 2 hours, preferably 250 ml every 15 minutes to cause minimal discomfort. 120 patients received IV hydration therapy, 2 litres of Ringer's solution in 2 hours. Post hydration AFI was repeated at 48 hours. Fetal monitoring was done by using Daily Fetal Movement Count (DFMC), Non Stress Test for any non assuring FHR and Colour Doppler for uteroplacental and fetoplacental blood flow. Mode of induction of labour and Mode of delivery whether normal delivery or Instrumental Delivery in the form of Forceps/ Ventouse or LSCS was noted. Neonatal assessment was done by Apgar score at one minute and five minutes. NICU admission and neonatal intervention or any other fetal complication in the form of meconium aspiration syndrome was noted .Mothers and babies were observed in the hospital until discharge from hospital and any postnatal maternal and neonatal complications were noted. The observations were recorded in a Performa. The data were analysed for correlation of operative interventions and overall maternal and neonatal outcome

Inclusion Criteria: 1) Pregnancy with more than 28 weeks of gestation. 2) AFI equal to or less than 7 cm. 3) Intact amniotic membrane.

Exclusion Criteria :1) Patients with premature rupture of membrane. 2) Multiple gestation. 3) Patients with fetal congenital anomaly. 4) Intrauterine death. 5) Ante partum haemorrhage.

Statistical Anyalysis: Data analysis was done by p value and chi square method to find out association between group and significant difference between them.

Observation and Result

Table 1: Distribution of age groups in hydration therapy

Age (Years)	Oral hydration	IV hydration	Total
<20	6	3	9
21-25	100	70	170
26-30	50	40	90
31+	24	7	31
Total	180	120	300

Chi square Df=3	P at < 0.05
4.924	0.17S NS

There was no statistically significant difference with respect to age in group of oral hydration and IV hydration.

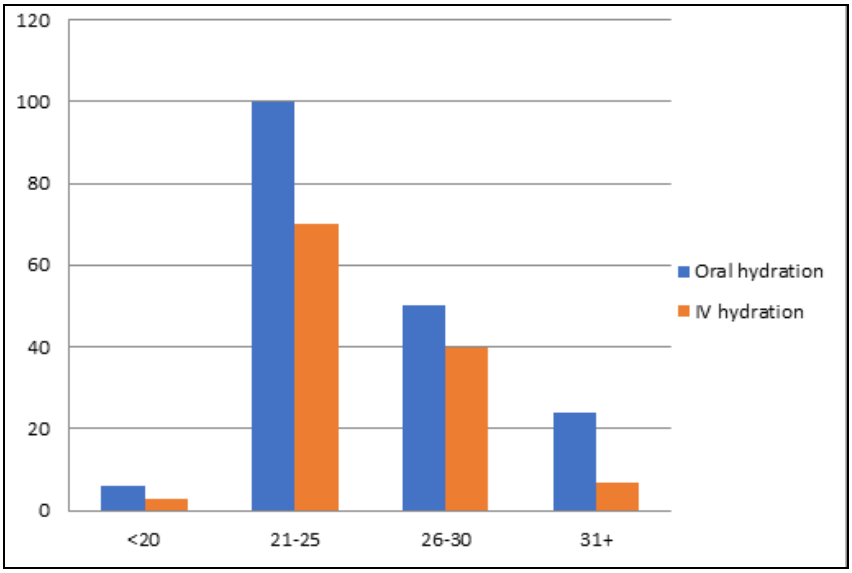

Fig 1: Distribution of age groups

Table 2: Distribution of Gravidity and hydration therapy:

Gravidity	Oral hydration	IV hydration	Total
Primigravida	94	54	144
Multigravida	86	66	156
Total	180	120	300

Chi square Df=1	P
1.502	0.22 NS

Association gravidity between oral hydration and IV hydration are not statistically significant in study.

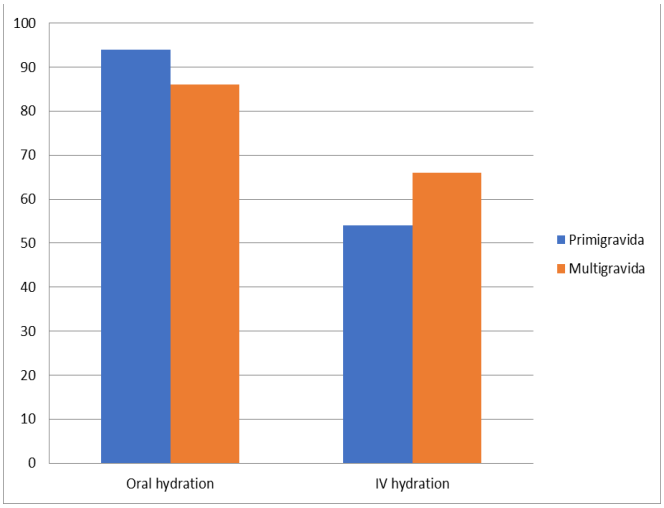

Fig 2: Distribution of Gravidity and hydration therapy

Table 3: Distribution of gestational age

Gestational Age (weeks)	Oral hydration	IV hydration	Total
<32	4	3	7
32+1 -36	70	37	107
36+1 -40	86	63	149
>40+1	20	17	37
Total	180	120	300

Chi square Df=3	P
2.20	0.056 NS

37 patients were with prolonged pregnancy and 149 patients were between gestational ages 36-40 weeks. 7 patients were between gestational ages 28-32 weeks.

There was no statistically significant difference with respect to gestational age in group of oral and IV hydration therapy.

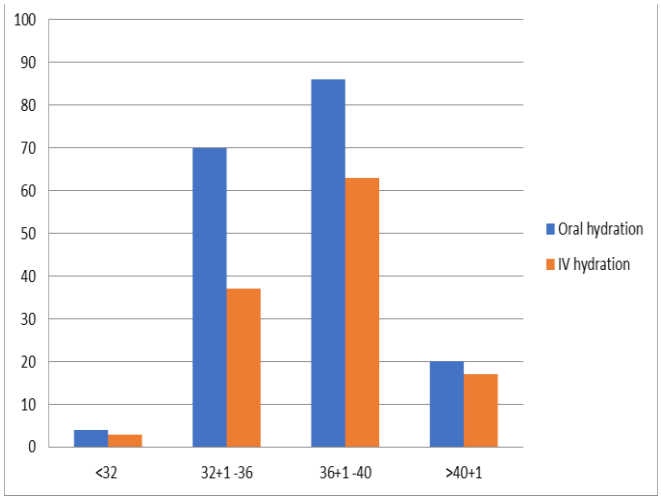

Fig 3: Distribution of gestational age

Table 4: Association of IUGR and hydration therapy:

IUGR	Oral hydration	IV hydration	Total
Present	84	43	127
Absent	96	77	173
Total	180	120	300

Chi square Df=1	P

Association IUGR between oral hydration and IV hydration are not statically significant

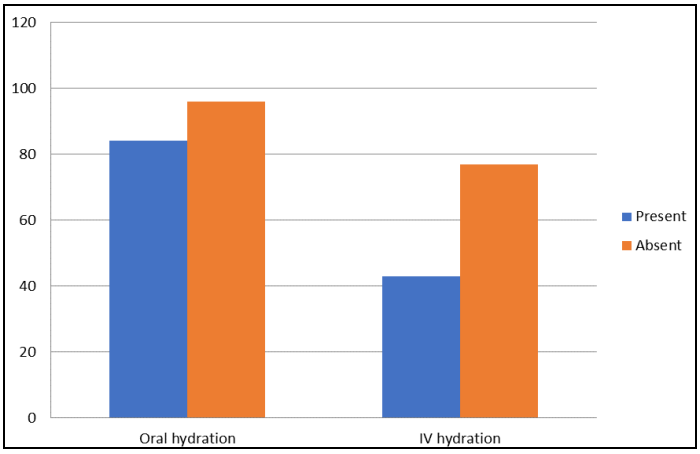

Fig 4: Association of IUGR and hydration therapy

Table 5: Association of PIH and hydration therapy

PIH	Oral hydration	IV hydration	Total
Present	54	35	89
Absent	126	85	211
Total	180	120	300

Chi square Df=1	P
0.024	0.87NS

Association of PIH in between oral hydration and IV hydration are not statistically significant.

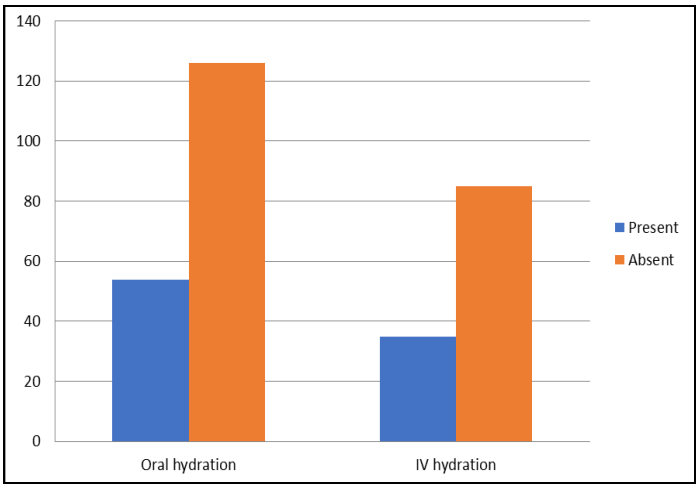

Fig 5: Association of PIH and hydration therapy

Table 6: Result of Maternal Hydration Therapy

	Oral Hydration Group (n= 180)	Intravenous Hydration group (n=120)
Mean AFI on admission(cm)	4.89	5.10
Mean AFI 48 hours after hydration therapy(cm)	6.02	5.70
Delta AFI(cm)	1.16	0.60

Delta AFI- Difference between AFI on admission and AFI post treatment. The mean AFI on admission was 4.89 cm in patients with oral hydration therapy and 5.10 cm in patients with IV hydration therapy. 48 hours after hydration mean AFI was 6.02 cm and 5.70cm respectively in both groups.

Table 7: Comparison of Maternal Outcome between Oral and IV hydration.

Maternal outcome	Oral Hydration	IV hydration	Total
Elective LSCS	16	12	28
Emergency LSCS	46	22	68
Instrumental	4	3	7
Preterm Vaginal delivery	36	29	65
Fullterm vaginal delivery	78	54	132
Total	180	120	300

Chi Square DF=3	P
2.39	0.66

62 patient out of 180(oral hydration) require lscs and 34 out120(iv hydration) require LSCS.
There is no statically significant of maternal outcome between oral and IV hydration.

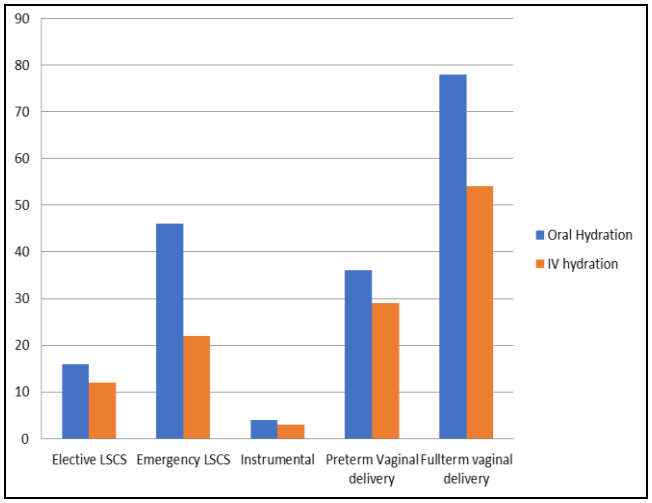

Fig 6: Comparison of Maternal Outcome between Oral and IV hydration

Table 8: Comparison of Fetal outcome (Apgar)between Oral and IV hydration.

Apgar score	Oral hydration	IV hydration	Total
< 7	47	20	67
>7	133	100	233
Total	180	120	300

Chi Square DF=3	P
3.7	0.056

47 outof 180 patient(oral hydration) have apgar score <7 and 20 out of120 patient have apgar score <7 . There is no statically significant difference of fetal outcome between oral and IV hydration.

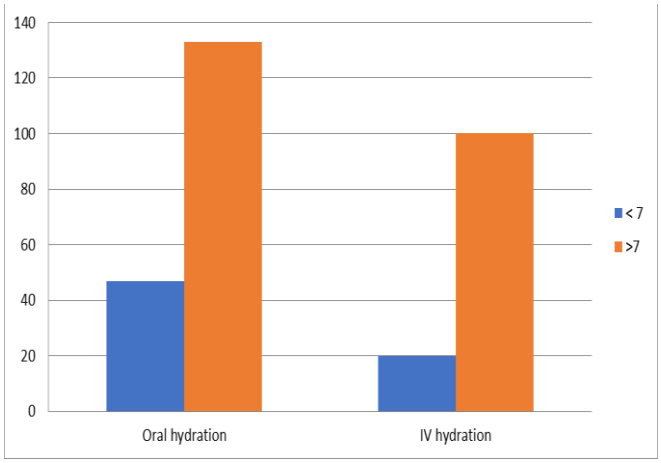

Fig 7: Comparison of Fetal outcome (Apgar) between Oral and IV hydration.

Table 9: Comparison of *et al* outcome (NICU Admision) between Oral and IV hydration

NICU	Oral hydration	IV hydration	Total
Yes	40	20	60
Nill	140	100	240
Total	180	120	300

Chi Square DF=3	P
1.38	0.23

40 out of 180 patient (oral hydration) require NICU and 20 out of 120 patient(iv hydration) require NICU. There is no statically significant difference of fetal outcome between oral and IV hydration.

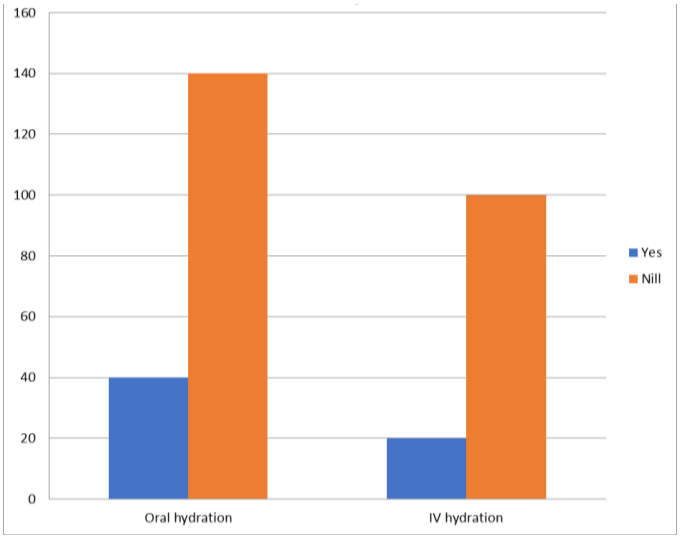

Fig 8: Comparison of *et al* outcome (NICU Admission)between Oral and IV hydration

Discussion

Comparison between oral and iv hydration is not affected by factor aget (table no.1), gravity (table no.2), gestaional age (table no.3), IUGR (table no.4), PIH (table no.5).
The mean AFI on admission was 4.86 cm in patients with oral hydration therapy and 5.11 cm in patients with IV hydration therapy. 48 hours after hydration mean AFI was 6.02 cm and 5.70cm respectively in both groups (Table 6). Shahnazi M *et al* (2012) in their study found that Hydration of mothers significantly increased the amniotic fluid index in the case group (mean change: 1.5 cm; 95%CI: 0.46 - 2.64; P = 0.01). The mean

change of amniotic fluid index in the control group did not significantly increase (P = 0.06). The elevation of amniotic fluid index in the hydration group (32%) was significantly higher than the control group (1%) (P = 0.03) [4]. Umber A (2010) in their study found that Maternal hydration increased amniotic fluid volume in intravenous hydration group (mean change in amniotic fluid index 4.5 cm ± 1.25, C.I 4.00 to 5.00; P value < 0.05); as well as in oral hydration group (mean change in Amniotic fluid index 4.3 ± 1.23, C.I 3.80 to 4.79; P value < 0.05). However, percentage increase in mean AFI was 58.6% in the intravenous hydration group, which was not significantly greater (P value > 0.05) than the percentage increase of 58.2% in oral hydration group. In table no,7 shows 62 patient out of 180(oral hydration) require lscs and 34 out 120 (iv hydration) require LSCS. Thus there is no statically significant of maternal outcome between oral and IV hydration [9]. In Doi S (1998) study they didn't found significant difference between these two therpy.

In table no.8,47 outof 180 patient(oral hydration) have apgar score <7 and 20 out of120 patient have apgar score <7 . There is no statically significant difference of fetal outcome in relation to apgar score between oral and IV hydration [9]. In Doi S(1998) study they didn't found significant difference.

In table no.9 40 out of 180 patient (oral hydration) require NICU and 20 out of 120 patient (iv hydration) require NICU. There is no statically significant difference of fetal outcome between oral and IV hydration.

Conclusion

Both therapy oral and IV hydration has beneficial outcome in oligohydramnios patient. There is no significant difference between two therapy on maternal and fetal outcome. But both therpy an absolutely simple, effective, cost free, no side effects, easily available Measure of hydration therapy can serve not only a therapeutic but also prophylactic function in low AFI and oligohydramnios. We can advice oral hydration or iv hydration therpy as per patient preference as there is no significant difference found. Hydration therapy benefits in the Intrapartum and Perinatal outcome by decreasing the fetal heart rate decelerations, meconium staining of amniotic fluid, need of LSCS due to fetal distress and incidence of cord compression and stillbirths. It also helps in improving Apgar Score at birth. It is simple, cost effective, easily available method.

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