

# Comparison of Mean Amniotic Fluid Index in Maternal Oral Hydration Therapy with Routine Hydration in Third Trimester Oligohydramnios

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## ABSTRACT

**Objective:** The objective of the study was to compare mean Amniotic Fluid Index (AFI) in maternal oral hydration with routine hydration in third trimester oligohydramnios. **Study design:** Randomized control trial. **Settings:** Department of Gynea/Obs Faisalabad Medical University, Faisalabad. **Duration of study:** 6 months from 1<sup>st</sup> June to 30<sup>th</sup> November 2016. **Methodology:** A total of 80 cases (40 in each group), were included in the study, Group A was oral hydration group and was enquired about daily water intake. They are bound to take 2 liters of water in addition to their daily intake for 7 days. Group B was routine hydration group and continued to drink water determined by thirst and followed up on OPD basis according to the hospital protocol. Ultrasonography was done by radiology department and reported by radiologist after completion of 7 days and revised amniotic fluid index was noted. All the information was recorded on proforma. **Results:** In this study, (40 in each group), 65%(n=26) in Group-A and 57.5%(n=23) in Group-B were between 18-30 years and 35%(n=14) in Group-A and 42.5%(n=17) in Group-B were between 31-45 years of age, mean±sd was calculated as 27.88±5.40 years and 28.80±5.72 years respectively, pre-treatment mean AFI volume was in-significant between the two groups. Post-treatment mean AFI volume was recorded as 6.83±0.81 in Group-A and 5.05±0.75 in Group-B, p value was calculated as 0.001 which shows significant difference between the two groups. **Conclusion:** We concluded that oral hydration appears to be significantly increased in mean AFI as compare to routine hydration in third trimester oligohydramnios, this therapy can be used instead of expectant management or invasive techniques in patients of third trimester oligohydramnios.

**Keywords:** Oligohydramnios, third trimester, maternal oral hydration, routine hydration, mean AFI

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## INTRODUCTION

Amniotic fluid surrounds the fetus after the first few weeks of gestation. It serves to protect the fetus and umbilical cord from compression, has antibacterial properties that may protect the fetus<sup>1</sup> keeps the temperature of the fetus stable, and prevents attachment to the fetal membranes. Its volume and composition changes with the progress of pregnancy. Adequate amniotic fluid (AF) volume is considered to be important for fetal well-being.<sup>2</sup>

Oligohydramnios is defined as a decreased amniotic fluid volume measured on ultrasound criteria which include an AFI < 5 cm and an AFI < 5th percentile for gestational age.<sup>3</sup> Oligohydramnios occurs in 8.2% of antepartum patients, in 37.8% of laboring patients, and is associated with significantly increased perinatal morbidity and mortality. There are multiple causes of oligohydramnios, and

management of the condition is individualized based on the maternal or fetal condition.<sup>4</sup>

It associated with adverse perinatal outcome such as fetal distress (ante/intrapartum fetal heart rate declarations and meconium passage, cord compression), induction of labor, operative delivery and poor APGAR score at birth.<sup>5</sup> Hence, it is of utmost importance, to detect and treat this complication as early as possible.

Number of techniques are being used to detect oligohydramnios but in our study two-dimensional Ultrasonography was used for this purpose.<sup>3</sup>

In our study amniotic fluid index (AFI) measurement was done by ultrasonographic criteria cr. The AFI was interpreted as:

- Oligohydramnios — 0 to <5 cm

Several management options available to restore amniotic fluid in order to reduce the associated perinatal mortality and morbidity include serial trans-

abdominal amniotomies, intramniotic sealing techniques, and fetal cystoscopy. But these options are not cost effective need hospital admission, surgical interventions and are risky as well.<sup>6</sup> Oral hydration therapy for oligohydramnios is noninvasive method of increasing amniotic fluid index by improving uteroplacental perfusion and changes in maternal plasma osmolarity.<sup>7</sup>

## METHODOLOGY

**Study Design:** Randomized control trial

**Settings:** Department of Gynea/Obs Faisalabad Medical University, Faisalabad.

**Duration of Study:** 6 months from 1st June 2016 to 30th November 2016

**Sample Size:** 80 (40 in each group)

**Sample Technique:** Non probability purposive technique

**Sample Selection**

**Inclusion criteria:**

- AFI of <5 after 28 weeks of gestational
- Intact membranes confirmed by history
- Singleton pregnancy confirmed by scan

**Exclusion criteria:**

- Maternal complication (moderate to severe anemia, cardiac disease, renal disease, moderate/ severe pre-eclampsia or hypertension and diabetes)
- Fetal structure malformation confirmed by scan
- Evidence of fetal distress confirmed by CTG

**Data Collection Procedure**

After taking approval from ethical committee, patients with third trimester oligohydramnios presenting to OPD and emergency department that fulfill inclusion and exclusion criteria were included. Patients were randomly divided in two groups by computer generated random number table. Group A was oral hydration group and was enquired about daily water intake. They are bound to take 2 liters of water in addition to their daily intake for 7 days. Group B was routine hydration group and continued to drink water determined by thirst and followed up on OPD basis according to the hospital protocol. Ultrasonography was done by radiology department and reported by radiologist after completion of 7 days and revised amniotic fluid index was noted. All the information was recorded on proforma by myself.

## RESULTS

A total of 80 cases (40 cases in each groups) fulfilling the inclusion/exclusion criteria were enrolled to compare mean AFI in maternal oral hydration with routine hydration in third trimester oligohydramnios. Age distribution of the patients was done which shows that 65%(n=26) in Group-A and 57.5%(n=23)

in Group-B were between 18-30 years and 35%(n=14) in Group-A and 42.5%(n=17) in Group-B were between 31-45 years of age, mean±sd was calculated as 27.88±5.40 years and 28.80±5.72 years respectively. (Table No. 1)

**Table 1: Age distribution (n=80)**

Age (in years)	Group-A (n=40)		Group-B (n=40)	
	No. of patients	%	No. of patients	%
18-30	26	65	23	57.5
31-45	14	35	17	42.5
<b>Total</b>	<b>40</b>	<b>100</b>	<b>40</b>	<b>100</b>
<b>mean±sd</b>	<b>27.88±5.40</b>		<b>28.80±5.72</b>	

Gestational age of the patients was done which shows that 45%(n=18) in Group-A and 52.5%(n=21) in Group-B were between 28-36 weeks and 55%(n=22) in Group-A and 47.5%(n=19) in Group-B were between 37-40 weeks of gestational age, mean±sd was calculated as 35.83±3.23 weeks and 35.20±3.41 weeks respectively. (Table No. 2)

**Table 2: Gestational age (n=80)**

Gestational Age (in weeks)	Group-A (n=40)		Group-B (n=40)	
	No. of patients	%	No. of patients	%
28-36	18	45	21	52.5
37-40	22	55	19	47.5
<b>Total</b>	<b>40</b>	<b>100</b>	<b>40</b>	<b>100</b>
<b>Mean±SD</b>	<b>35.83±3.23</b>		<b>35.20±3.41</b>	

Pre-treatment mean AFI volume was recorded as 3.45±0.50 in Group-A and 3.40±0.49 in Group-B, p value was calculated as 0.656 which shows no significant differences between the two groups. (Table No. 3)

Post-treatment mean AFI volume was recorded as 6.83±0.81 in Group-A and 5.05±0.75 in Group-B, p value was calculated as 0.001 which shows significant differences between the two groups. (Table No. 4)

**Table 3: Pre-treatment mean AFI volume (n=80)**

Group-A (n=40)	Group-B (n=40)
3.45±0.50	3.40±0.49

P value=0.656

**Table 4: Post-treatment mean AFI volume (n=80)**

Group-A (n=40)	Group-B (n=40)
6.83±0.81	5.05±0.75

P value=0.001

## DISCUSSION

Amniotic fluid is a dynamic component that is continuously and closely related to both the mother and the fetus. It is an element of fundamental importance for the fetus.

Oral hydration therapy for oligohydramnios is noninvasive safe and well tolerated method of increasing amniotic fluid index by improving uteroplacental perfusion and changes in maternal plasma osmolarity. In view of the numerous obstetric situation in which a reduced Amniotic Fluid Volume may pose a threat, particularly to the fetus, the possibility of increasing Amniotic Fluid Volume with a simple and inexpensive practice like Maternal Hydration therapy may have potential clinical applications.

In our study, 65%(n=26) in Group-A and 57.5%(n=23) in Group-B were between 18-30 years and 35%(n=14) in Group-A and 42.5%(n=17) in Group-B were between 31-45 years of age, mean±sd was calculated as 27.88±5.40 years and 28.80±5.72 years respectively, pre-treatment mean AFI volume was in-significant between the two groups. Post-treatment mean AFI volume was recorded as 6.83±0.81 in Group-A and 5.05±0.75 in Group-B, p value was calculated as 0.001 which showed significant difference between the two groups.

Our findings were in agreement with a randomized controlled trial conducted at institute of Child and Mother Health, Dhaka.<sup>8</sup>

Our findings were in contrast with Yan Rosenberg who concluded that it was not the hydration itself that increased the amniotic fluid index.<sup>9</sup>

Literature suggests that oral hydration increases the Amniotic fluid index in both oligohydroamnios and normal pregnancy by 2.01cm (95% CI; 1.43-2.56) and 4.5cm (95% CI; 2.9-6.1), respectively.<sup>93-94</sup> Fait et al,<sup>95</sup> reported similar results and pointed that short term improvement in amniotic fluid volume persists into long term, when maternal hydration is continued by drinking '2' Litres/day for a week which is confirmed in present study when mean AFI increased up to 80.6 mm after 48 hours.

Our study results are comparable with another study conducted by Malhotra.<sup>10</sup>

Our study showed significant increase in AFI after oral hydration as compare to normal hydration. These results were comparable to the study conducted by AC-ROSSI in 2013.<sup>11</sup>

Another study conducted in 2015 by Salvatore Gizzo was also favoring our results.<sup>7</sup>

The hypothesis of the study that "maternal oral hydration is better than routine hydration in terms of

mean amniotic fluid index in third trimester oligohydramnios" is justified.<sup>12</sup>

## CONCLUSION

We concluded that oral hydration appears to be significantly increased in mean AFI as compared to routine hydration in third trimester oligohydramnios, this therapy can be used instead of expectant management or invasive techniques in patients of third trimester oligohydramnios.

If oral hydration appears to increase mean AFI this therapy can be used instead of expectant management or invasive techniques in patients of third trimester oligohydramnios as it is not practice locally because of absence of local studies. It can be a non invasive simple to perform, easy to accept method to increase AFI.

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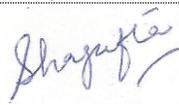
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