

## A prospective study on the feto-maternal outcome in cases of borderline amniotic fluid index at term in a rural hospital

Payel Ray<sup>1,\*</sup>, Chandra Mouli A.<sup>2</sup>, Ratna Bulusu<sup>3</sup>, Chandrachur Konar<sup>4</sup>

<sup>1</sup>Associate Professor, <sup>2</sup>Assistant Professor, <sup>3</sup>Professor, <sup>4</sup>Junior Resident, Dept. of Obstetrics & Gynecology, MVJ Medical College & Research Hospital, Bengaluru, Karnataka

**\*Corresponding Author:**

Email: roy\_payel@yahoo.com

### Abstract

**Background:** to evaluate the fetomaternal risks and outcome associated with borderline AFI at term. To study the mode of delivery among these patients.

**Methods:** 107 pregnant subjects who were at 37-42 weeks period of gestation and ultrasonically diagnosed to have AFI between 5- 8cms were included in the study. They were monitored throughout labour and fetomaternal outcome was studied.

**Results:** out of the 107 subjects maternal morbidity observed in 7.4% pregnant women. Neonatal morbidity was significantly higher at the rate of 66.3%. IUGR (21.4%), non-reassuring NST(31.7%), apgar score less than 7 at 5 minutes(3.7%), respiratory distress(6.5%), meconium aspiration(0.9%) were observed. 50% pregnant women underwent caesarean section for fetal distress which was observed as the most common indication accounting for 41% of cases. Incidence of meconium stained liquor was found in 75% of cases which is significantly high.

**Conclusion:** That there is a high risk of adverse perinatal outcome and higher rate of operative delivery in cases of borderline AFI at term. Providing intensive intrapartum monitoring and good NICU facilities for such cases is necessary to optimise the fetomaternal outcome.

**Keywords:** Border line AFI, Oligohydramnios, IUGR, Meconium, Perinatal, Caesarean.

### Introduction

The amniotic fluid, commonly called a pregnant woman's water or waters (latin liquor amnii), is the protective liquid contained by the amniotic sac of a pregnant female. Amniotic fluid protects the developing baby by cushioning against blows to the mother's abdomen, allowing for easier fetal movement and promoting muscular/skeletal development. Amniotic fluid swallowed by the fetus helps in the formation of the gastrointestinal tract. It also prevents the fetus from mechanical jerks and shocks.

At first, amniotic fluid is mainly water with electrolytes, but by about the 12-14th week the liquid also contains proteins, carbohydrates, lipids and phospholipids and urea, all of which aid in the growth of the fetus. The amniotic fluid volume varies with the gestational age from 200ml at 16weeks, 1000ml at 28 weeks, 900ml at 36 weeks and 800ml at 40 weeks of gestation.<sup>(1)</sup>

A good clinical examination can pick up most subjects of abnormal liquor volume and can be confirmed by ultrasonographically.<sup>(2)</sup> As per working definition of liquor assessment an AFI less than 5cm is known as oligohydramnios, AFI 5 to 8 cm have been termed borderline AFI.<sup>(3)</sup> Antepartum oligohydramnios is associated with increased fetal malformations and in the absence of malformations, to be complicated by fetal growth restriction, maternal morbidity and adverse perinatal outcome.<sup>(2,4,5)</sup>

Hence, every case of oligohydramnios needs careful antenatal evaluation, parental counselling, individualized decision regarding timing and mode of

delivery, continuous intrapartum fetal monitoring and good neonatal care for optimum perinatal outcome.<sup>(6)</sup> The present study is done to assess the fetomaternal outcome in cases of borderline AFI (5-8 cm).

### Aim and Objectives

1. To evaluate the fetomaternal risks and outcome associated with borderline Amniotic fluid index: AFI 5 to 8 cm.
2. The mode of delivery, maternal and neonatal morbidity among these patients in our rural hospital will be studied.

### Materials and Methods

**Source of Data:** All pregnant women admitted at 37-42 weeks gestation in the Department Obstetrics & Gynaecology meeting the inclusion and exclusion criteria were considered in this study from November 2013 to October 2014 (1 year) in MVJ Medical College and Research Hospital, Hoskote.

### Inclusion Criteria

- a. Gestational age 37-42 weeks of gestation
- b. Borderline Amniotic fluid Index: 5- 8cm
- c. Fetus with no obvious congenital anomaly
- d. Intact membranes at the time of admission.

### Exclusion Criteria

- a. Women with Premature Rupture of Membranes before admission.
- b. Multiple pregnancy
- c. Gestational age < 37 weeks.
- d. Antepartum haemorrhage.

- e. Maternal complications like Hypertensive pregnancy disorders, gestational or
- f. Pre-gestational diabetes, maternal vascular disease, and any known chronic illness.

**Sample Size:** All the patients with borderline AFI during the study period was included and studied for the perinatal outcome after taking their consent for the study.

**Methods of Collection of Data**

1. Written informed consent was taken from patient for willingness to participate in the study.
2. Approved proforma was used for collecting clinical data, fetal biophysical profile sonographic assessment of amniotic fluid prior to delivery, mode of delivery, causes of reduced liquor, color of the liquor during delivery, fetal Apgar score on delivery, birth weight, need for NICU care, visible congenital abnormality after delivery.

**Investigations required**

- a. Clinical estimation of reduced liquor
- b. Routine Ultrasonography on admission to assess mainly AFI at admission.
- c. Admission NST
- d. Routine blood and urine investigations.

**Results**

In one year, 107 patients met the inclusion criteria and were studied.

**Table 1**

Parameters		Number of patients with borderline AFI (n = 107)
Maternal age	< 20 years	16 (15%)
	20 – 29 years	78 (73%)
	> 30 years	13 (12%)
	Mean: 28.3 years	Std. Dev: 3.2 years
Parity		
	Primi para	83 (78%)
	Multi para	24 (22%)
Gestational age		
	37 – 40 weeks	78 (73%)
	40.1 – 42 weeks	29 (27%)
Birth weight (Kg)	1000 to 2000 gms	4(4%)
	2001 to 3000 gms	77 (72%)
	More than 3000 gms	26 (24%)

**Table 2**

Parameters	Number of patients with borderline AFI
Maternal complications	
Malpresentation	3 (2.8%)
Prolonged labour	2 (1.8%)
PPH	3 (2.8%)
Neonatal complications	
IUGR	23 (21/4%)
Fetal congenital anomalies	2 (1.8%)
Non-reassuring NST	34 (31.7%)
Apgar score < 7 at 5 min	4 (3.7%)
Respiratory distress	7 (6.5%)
Meconium aspiration	1 (0.9%)
NICU admission	9 (8.4%)

**Table 3: Mode of delivery**

Parameters	Number of patients with borderline AFI (n = 107)
Induction of labour	
Normal vaginal delivery	48 (45%)
Cesarean Section delivery	54 (50%)
Emergency	37 (35%)
Elective	17 (15%)
Instrumental delivery	5 (5%)

**Table 4: Colour of liquor**

Parameters	Number of patients with borderline AFI (n = 107)
Clear	27 (25%)
Thin meconium	63 (59%)
Thick meconium	17 (16%)

**Table 5: Indications for Caesarean section**

Parameters	Number of patients with borderline AFI (n = 54)
Fetal distress	22 (41%)
Prolonged labour	2 (4%)
IUGR with Oligohydramnios	6 (11%)
Inco-ordinate uterine action	1 (2%)
CPD	11 (20%)
Malpresentation	3 (6%)
Deep transverse arrest	3 (6%)
Failure of induction	6 (11%)

In our study of one year total number of 107 pregnant ladies were included with amniotic fluid between AFI 5cm to AFI 8cm.

Table 1 shows characteristics of pregnant mother like age, parity, gestational age, AFI. Mean age of

patient was 28.3years with SD 3.2years. 15% were less than 20years, 73% were between 20-29years and 12% more than 30years. 78% were primigravida and 22% were multigravida. 73% of cases were between 37-40 weeks of gestational age and 27% were between 40 to 42 weeks.

Table 2 shows higher rate of neonatal complications than maternal complications. Maternal complications were malpresentations, prolonged labour, PPH accounting for 7.4% collectively. Among neonatal complications 31.7% cases had non reassuring NST. IUGR in 21.4%, congenital anomalies in 1.8%, meconium aspiration in 0.9%, respiratory distress in 6.5%, Apgar less than 7 at 5 minutes of birth in 3.7% were observed. Total of 9 babies had NICU admission.

Table 3 shows 50% of cases were delivery by caesarean for which fetal distress was commonest indication (41%). 45% cases had normal delivery and 5% cases had instrumental delivery. Incidence of meconium stained liquor was as high as 75% (Table 4).

Table 5 shows the indications for caesarean section reporting a high rate of caesarean for fetal distress followed by CPD (20%), IUGR(11%), failure of induction(11%).

## Discussion

Estimation of amniotic fluid volume is an integral part of antenatal fetal surveillance.<sup>(7)</sup>

Reduced amniotic fluid carries an increased risk of perinatal morbidity and mortality. Our study has been done to know the fetomaternal outcome in cases of borderline amniotic fluid index at term.

In the present study majority of cases were between the age group of 20 – 29 yrs(73%). In a study done by Tajinder K<sup>(2)</sup> 66.7% of cases were between the age group of 21- 25yrs and 85.29% belonged to the age group of 20 – 29yrs in a study done by AK Mahapatro.<sup>(8)</sup>

In our study 83 cases were primigravida which was 78%. AK Mahapatro<sup>(8)</sup> reported 76.47% of primigravida cases in his study. In a similar study done by Jayati Nath<sup>(4)</sup> majority of cases were multigravida (64.1%).

In our study 78 cases(73%) were between gestational age 37 to 40 weeks which was comparable with Jayati Nath<sup>(4)</sup> study which was 71.79%.

In our study birth weight of 77 babies (72%) were between 2- 3kg.

In the present study maternal complications were only 7.4%. A higher rate of neonatal complications of 66.3% was observed in our study. A high incidence of

non-reassuring NST (31.7%) and IUGR (21.4%) was noted in our study. Incidence of thin and thick meconium stained liquor were 59% and 16% respectively. This shows that borderline AFI has more adverse effect on perinatal outcome.

In our study 50% were delivered by caesarean section, most common indication being fetal distress(41%). This may suggest that with low liquor volume incidence of intrapartum fetal distress is high. In 5% instrumental delivery was done and 45% had normal vaginal delivery. Similar to our study AK Mahapatro<sup>(8)</sup> observed 66% vaginal delivery rate and 2% instrumental delivery, however caesarean rate was lower (29%).

## Conclusion

Our study concludes that there is a high risk of adverse perinatal outcome and higher rate of operative delivery in cases of borderline AFI at term. For identification of antepartum or intrapartum fetal distress, intensive and continuous fetal monitoring is required. Every case needs to be individualised with respect to timing and route of delivery. Also providing good neonatal intensive care facilities can optimise the perinatal outcome.

## References

1. Gary CF, Leveno KJ, Bloom SL, Hauth JC, Gilstrap L, Wenstrom KD. Disorders of Amniotic Fluid Volume. In: William Obstetrics, 23rd Edn., New York: McGraw Hill; 2010;491.
2. Kaur Tajinder, Sood Ruchika. Feto maternal outcome in pregnancies with abnormal AFI. IOSR Journal of Dental and Medical Sciences. 2016;15:71-75.
3. Moore TR. Clinical assessment of amniotic fluid. Clin Obstet Gynecol 1997;40:303-13.
4. Jayati Nath, Maneesha Jain, Rehana Najam. A Clinical study on oligohydramnios in the third trimester of pregnancy with special emphasis on the perinatal outcome. Journal of Evolution of Medical and Dental Sciences 2013;39:7386-91.
5. Loren N et al. Clinical significance of borderline amniotic fluid index and oligohydramnios in preterm pregnancy. Am J Obstet Gynecol 2011;117:338-42.
6. Sharayu Mirji, Meena Satia. Fetomaternal outcome in cases of oligohydramnios-A prospective observational study. International Journal of Scientific Research 2016;5:136-38.
7. Ott WJ. Current perspective in antenatally surveillance ultrasound. Rev Obst Gynaecol 2003;3:1-180.
8. Akshaya Kumar Mahapatro, Saubhagya Kumar Jena, Seetesh Ghose. Pregnancy outcome following induction of labour in oligohydramnios and borderline liquor at term: A comparative study. Journal of evolution of medical and dental sciences 2013;52:10289-94.