



A Case Report on the Amino Acid Infusion in Pregnancy complicated by Garbhodakavikriti (Oligohydramnios): BOON OR NOT?

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ABSTRACT

A primigravida female patient of 26 years of age came to Prasuti Tantra outpatient door (OPD) on 25th November 2021 with chief complaints of Amenorrhoea for 9 months and decreased fetal movement since night with no history of labor pain, leaking and bleeding per vaginal. The patient first visited OPD on 15th September 2021 for routine Antenatal checkup with 6 months of gestation. Ultrasonography was done as a part of Routine Antenatal investigations in which no any fault was seen and adequate amniotic fluid volume was found. Thereafter she was irregularly visiting OPD for her routine checkup, even though she was advised for proper fluid intake, iron and calcium rich diet and advised to look for daily fetal movement. But due to some faulty dietary habits and negligence, during her 38th week of gestation patient felt decreased fetal movement since the night of 24th November 2021 and then she consulted back to hospital where an ultrasonography was performed in which moderate oligohydramnios and decreased fetal heart rate was found. Patient was advised for intravenous amino acid infusion of 200 cc per day for 3 days. There was a significant improvement found in amniotic fluid volume on repeat USG after Amino Acid Infusion and also reduced incidence of operative interference. The patient delivered normally with a healthy baby without any pre induction and augmentation. No any sign of fetal distress was found.

Keywords: Amino Acids, Garbhodaka, Garbhodakavikriti, Oligohydramnios

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INTRODUCTION

The *Garbhodaka* is rich in nutrients and growth factors essential for fetal growth and provides the mechanical cushioning and bacteriostatic properties thereby protecting the fetus. Fetal breathing of *Garbhodaka* is essential for normal lung growth, and fetal swallowing permits gastrointestinal tract development. It guards against umbilical cord compression and protects the fetus from trauma. *Garbhodaka* also keeps the temperature of the fetus stable and due to its floating characteristics facilitates the movement and symmetrical growth of the fetus.

Pregnancy complicates the already complex metabolism of amino acids. The fetus receives a continuous stream of amino acids from the mother via placenta [1] the amino acid crosses the placenta by a complex series of transport systems. Amino Acids concentrations are typically somewhat higher in the fetus than in the mother [2]

In Ayurveda classics, Oligohydramnios is considered as *Garbhodakavikriti*.

Acharya Charaka mentioned Madhura Aushadha Sidha Taila Matrabasti at ninth month for achieving Sukhprasava [3] Acharya Sushruta mentioned the use of Brimhaniyapaya (milk) in the treatment of Garbhashosha[4]

Acharya Sushruta says that, germination of a seed occurs only when there is favourable season, fertile field, proper irrigation and nutrition to a good quality seed, the same way if (Ritu, Kshetra, Ambu, Bija) are together then conception occurs. [5]

During the first trimester the major source of *Garbhodaka* is maternal blood and maternal plasma volume is directly associated with amniotic fluid volume. Fetal kidneys begin to make urine before the end of the first trimester and then become the main source of *Garbhodaka* production thereafter, increasing till term. The average *Garbhodaka* volume at term is about 800 ml. Hence, amniotic fluid volume is a reflection of fetal status, making *Garbhodaka* assessment an essential part of evaluation of maternal and fetal health.

Amniotic fluid index assessment is one of the reliable, inexpensive, good predictor and standard technique for assessment of fetal wellbeing in antepartum period. The most likely cause of oligohydramnios in IUGR babies is decreased urine output of mother.[6]

Garbhodaka is usually quantified in terms of amniotic fluid index (AFI), which is measured on ultrasound by **four- quadrant technique**. It is the sum of deepest vertical fluid pocket (measured in cm) in four quadrants of abdomen. When AFI is < 5cm or single deepest pocket of *Garbhodaka* is below 2 cm it is termed as oligohydramnios. Oligohydramnios affects 7-8% of total pregnancies.[7] Causes are both maternal and fetal factors. [8]

Maternal factors:

Pregnancy induced hypertension, maternal diabetes, placental insufficiency, premature rupture of membranes, post maturity syndrome, maternal medications like ACE inhibitors, prostaglandin synthesis inhibitors.

Fetal factors:

Fetal congenital gastrointestinal or urinary tract anomalies and intrauterine growth restriction, while idiopathic cases are 10%. It comprises almost 30- 40% of all cases of oligohydramnios. Oligohydramnios is a significant sign of fetal malnutrition and results in poor fetal outcomes such as intrauterine growth restriction, Fetal anomaly malpresentation, Impaired fetal lung development and Fetal distress in labour. It is associated with increased incidence of meconium liquor, still birth and cord compression. [9]. To study the effect Amino Acid Infusion in treating oligohydramnios at term.

CASE STUDY

Chief Complaints:

Amenorrhoea in the last 9 month

Reduced fetal movement since night of 24th November 2021 with no history of labor pain, leaking and bleeding per vaginal.

History of Present Illness:

A 26 year old primigravida patient came to Prasutitantra outpatient door on 25th November 2021 with the chief complaint of amenorrhoea since 9 month and reduced fetal movement since night of 24th November 2021. The patient first visited OPD on 15th September 2021 with 6 months of amenorrhoea with ultrasonography containing single live intrauterine pregnancy with all parameters normal. Patient was advised to visit regularly for routine follow up and to take appropriate diet rich in fluids, iron, calcium also advised ultrasonography as a routine antenatal work up. Amniotic fluid volume was found adequate and all other parameters were also found normal. But due to faulty dietary habits, negligence, and irregular antenatal visit by the patient she felt decreased fetal movement from the night of 24th November 2021. According to patient, she had developed diarrhoea prior few days due to faulty diet and she also reduced fluid intake from past few days. At night on 24th November 2021 patient visited hospital and ultrasonography was done there in which Amniotic fluid index was found <5cm. She was examined properly for fetal and maternal condition.

Personal history:

Appetite- Normal

Sleep- Disturbed

Bowel- Satisfactory

Micturition- Clear

Addiction- No any

Allergic history- No any

Diet- Mixed

Past Medical / Surgical / Family History:

Not significant

Menstrual History:

Last menstrual period – 1/3/2021

Expected date of delivery – 6/12/2021

Period of gestation – 38 weeks + 3 days (on 25/11/2021)

Obstetric History:

O/H- G1 P0 L0 A0 (G1- Present pregnancy)

Married life: 1.5years

On General Examination:

General Condition: fair

Blood Pressure: 110/60 mm of Hg

Pulse Rate: 82/ min

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Temperature: 97.8°F

Height: 5'4"

Weight: 76 kg

Pallor: Absent

Pedal Edema: Absent

On Systemic Examination:

Digestive System, Cardiovascular System, Respiratory System, Central Nervous System appears normal.

Per Abdominal Examination: On palpation fundal height was found less than the period of gestation, lie was longitudinal with cephalic presentation. Fetal parts were easily felt. On auscultation fetal heart sound was present but with diminished frequency of 120 beat per minute. No contractions were found.

Per Vaginal Examination:

Pelvis was found adequate with no dilatation and effacement. No leaking and bleeding per vagina seen.

Antenatal investigations: All blood and urine investigations found normal.

Table 1 Ultrasonography findings before management

DATE	ULTRASONOGRAPHY FINDINGS
12/8/2021	Single live intrauterine pregnancy of approximate 23weeks 4 days. Fetal Heart Rate - 138/min. Amniotic fluid - adequate (A.F.I. - 12.1cm)
7/10/2021	Single live intrauterine pregnancy of approximate 32 weeks 5 days. Fetal Heart Rate - 146/min. Amniotic fluid - adequate (A.F.I. - 11cm)
24/11/2021	Single live intrauterine pregnancy of approximate 37 weeks 5 days Fetal Heart Rate - 117/min Amniotic fluid - less (A.F.I. - <5cm)

MANAGEMENT PROTOCOL

Pregnancy outcome was assessed with respect to:

- Gain in AFI
- Mode of delivery
- Fetal outcome with regards to birth weight
- APGAR score at one and five minutes.

From 25th November 2021 onwards patient was given intravenous amnio acid infusion of 200 cc per day for 3 days after informed consent. Fetal kick counts and NST [Non- Stress Test] was performed as and when indicated. Patient was followed up till delivery.

RESULT

Full term pregnant patient came to Prasuti tantra OPD with decreased fetal movement and amniotic fluid index < 5cm with no contraction and no leaking and bleeding per vagina with 38 weeks and 3 days of gestation. After intravenous amnio acid infusion of 200 cc per day for 3 days, patient perceived improvement in fetal movement in uterus day by day.

On per abdomen examination fundal height was improving, fetal parts were not palpable so easily and ballottement was found positive. Ultrasonography report was done on 29th November 2021 which mentioned that there was single live fetus of 37-38 weeks of gestation with Amniotic fluid index 8 cm, Fetal Heart Rate 140/min, normal fetal movement present.

On 1st December at 3:30am with gestational age of 39 weeks 2 days patient felt mild leaking per vagina without labor pain. Patient was advised for rest and she was kept under observation in hospital. Then at 10:00am contractions and active labor started. Patient delivered normally at 12:15pm. The final outcome was full term normal vaginal delivery with vertex presentation with right medio-lateral episiotomy, and lady delivered a live healthy female child of weight 2.84 kg on 1st December 2021 at 12:15pm. There was no any sign of fetal distress seen at the time of labor.

At the time of birth baby was found active and cried well. APGAR score was found normal. Third stage of labor also completed in 10 min without any complications.

DISCUSSION

Oligohydramnios is a condition arises due to the Kshaya of Jaliya Mahabhuta.

The two principles of ayurveda concerning treatment of any disease are prakrati vighata and nidana parivarjana.[10]

Oligohydramnios and foetal growth restriction have been widely researched since no distinct therapeutic options have been developed for their treatment. Oligohydramnios and foetal growth restriction causes foetal heart abnormalities, meconium staining of amniotic fluid, lower APGAR scores, foetal acidosis and poor tolerance of labor. Inadequate maternal nutrition is an important cause attributed to foetal growth restriction. Thus, a considerable amount of research focuses on improving the maternal nutrition so as to improve the perinatal outcome. Improvement of foetal out-come in pregnant patients with oligohydramnios is done by infusion or supplementation of amino acids. Amino acids form an important nutrient component of amniotic fluid. Maternal caloric consumption may profoundly alter amino acid concentration in amniotic fluid. The rise in mean AFI seen in this case after maternal intravenous infusion of amino acids is indicative of possible intrauterine nutrient deficiency. The intravenous amino acid preparations improve the AFI by improving the maternal nutritional status. Amino acids cross the placenta by an active transport system with a resultant higher concentration in fetus compared with mother. Nevertheless, a lower serum concentration of amino acids was found in growth retarded fetuses having oligohydramnios as well, when compared with normally grown fetuses.

CONCLUSION

An amniotic fluid index of <5cm detected between 28- 40 weeks of gestation is an indicator of intrauterine growth restriction and poor perinatal outcome. Intravenous infusion of amino acids if given for 3 days as a regimen increases short term AFI and also improves fetal weight and thus has a beneficial effect to both mother and fetus in case of oligohydramnios in developing countries. More study is needed to elucidate the role of placenta in amino acids supply to the fetus and its relationships to fetal growth.

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