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# Managing FGR Due to Placental Insufficiency with Narikela Rasayana - A Case Report

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**KEYWORDS**

Fetal Growth Restriction,

Garbhashosha,

Ayurveda,

Narikela Rasayana,

Rasa Dhatu,

Vata Dosha,

Garbha Poshana,

Case Report.

**ABSTRACT:** Fetal Growth Restriction (FGR) is a significant pregnancy complication with risks of perinatal morbidity and long-term developmental issues. Conventional management mainly involves monitoring rather than intervention. This case report presents Ayurvedic management of FGR in a 46-year-old G3P2L2 woman at 25 weeks gestation, showing reduced fetal biometrics and borderline amniotic fluid. Treatment with Narikela Rasayana and Kharjuradi Mantha was administered orally for four doses over one week, alongside conventional medications (low-dose aspirin and labetalol). Serial ultrasonography revealed improvement in Biparietal Diameter (BPD), Head Circumference (HC), Abdominal Circumference (AC), Estimated Fetal Weight (EFW), and amniotic fluid index. The patient delivered a stable male neonate via emergency LSCS at 27 weeks. No adverse maternal or fetal effects were observed.

**Introduction:** FGR occurs when a fetus fails to achieve its growth potential, often due to placental insufficiency or maternal comorbidities. Ayurvedic literature describes Garbhavriddhi as governed by Matruja Rasa Dhatu and Vata Dosha; their imbalance leads to Garbhashosha. Nutritional milk-based preparations (Brihmaniya Ghana Siddha Ksheeraprayoga) are recommended to enhance fetal growth.

**Objectives:** Evaluate Ayurvedic intervention in idiopathic FGR, observe clinical and ultrasonographic changes, and explore correlations between Garbhashosha and modern FGR diagnosis.

**Methods & Clinical Findings:** The patient had gestational hypertension, fatigue, and smaller-than-expected fundal height. Ultrasound confirmed early-onset FGR with EFW 454 g and abnormal Doppler flows. Hemoglobin was 11.8 g/dL.

**Therapeutic Intervention:** Narikela Rasayana with Kharjuradi Mantha (90 ml orally) was given four times over a week, alongside ongoing aspirin and labetalol.

**Outcome & Follow-Up:** Post-treatment, EFW increased to 512 g, fundal height and maternal hemoglobin improved. Emergency LSCS delivered a stable neonate weighing 780 g.

**Discussion:** Ayurvedic therapy nourishes Rasa Dhatu and pacifies Vata Dosha, supporting fetal growth. Ingredients like Shatavari, Ashwagandha, Bala, and Yashtimadhu provide antioxidant, anti-inflammatory, and adaptogenic benefits, improving uteroplacental circulation and fetal nutrition.

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**Conclusion:** Ayurvedic intervention, alongside conventional therapy, can support fetal growth in FGR cases. Larger studies are needed to validate efficacy and develop standardized protocols.

## 1. Introduction

Fetal Growth Restriction (FGR) remains one of the most prevalent complications of pregnancy, contributing significantly to perinatal morbidity and mortality worldwide. The global prevalence of FGR is estimated at approximately 7.7%, with affected fetuses failing to achieve their genetically determined growth potential due to various pathological factors (1). Clinically, FGR is identified when the estimated fetal weight (EFW) or abdominal circumference (AC) falls below the 10th percentile for gestational age (2–4). The etiology is multifactorial, with placental insufficiency, maternal comorbidities, and fetal abnormalities being key contributors.

Contemporary obstetric management emphasizes surveillance-based approaches, including Doppler ultrasonography, maternal nutritional support, and timely delivery to mitigate adverse outcomes. However, these strategies primarily aim to monitor rather than directly enhance intrauterine growth, often resulting in preterm birth.

In contrast, Ayurvedic literature describes Garbhavriddhi (fetal growth) as being governed by Matruja Rasa Dhatu (maternal nutritional essence) and the balance of Vata Dosha (physiological force of movement) (5). An insufficiency in Rasa Dhatu and aggravated Vata can lead to a condition known as Garbhashosha or Vatabhipanna Garbha, characterized by Akukshi Poorana (undersized uterus) and Manda Garbha Spandana (reduced fetal movements) (6,7). Brihmaniya Ghana Siddha Ksheeraprayoga (nutritional milk-based preparations) is the principal therapeutic modality indicated for such conditions.

This case report explores the application of Ayurvedic intervention in managing idiopathic FGR, aiming to improve intrauterine fetal growth and promote favorable maternal and neonatal outcomes.

## 2. Objectives

The primary objective of this case study is to evaluate the effectiveness of Ayurvedic management in a clinically diagnosed case of idiopathic Fetal Growth Restriction (FGR), with specific reference to Narikela Rasayana therapy.

The specific objectives are:

1. To assess the role of Brihmaniya (nourishing) Ayurvedic formulations in promoting intrauterine fetal growth.
2. To observe changes in clinical parameters such as fundal height, fetal movements, and ultrasonographic measurements following
3. Ayurvedic intervention.
4. To explore the correlation between Ayurvedic concepts of Garbhashosha and modern diagnosis of FGR.
5. To highlight the potential of classical Rasayana therapy as a supportive intervention in improving fetal development without adverse maternal or fetal outcomes.

## 3. Methods

The patient was a 46-year-old female, gravida 3, para 2, live 2 (G3P2L2), presenting at 25 weeks and 3 days of gestation for routine antenatal evaluation.

She reported complaints of fatigue and generalized weakness persisting for two weeks but experienced normal fetal movements. Her last menstrual period (LMP) was dated January 26, 2023, with an estimated delivery date (EDD) of November 11, 2023.

The patient's obstetric history was significant for a tubectomy performed 20 years prior. Following her second marriage two years ago, she conceived via her third cycle of in vitro fertilization (IVF).

She had a history of gestational hypertension diagnosed approximately two and a half months earlier, managed pharmacologically with labetalol and low-dose aspirin.

Her menstrual cycles were regular prior to conception, and there was no family history of genetic disorders or pregnancy complications. She denied smoking, alcohol use, or recreational drug consumption.

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| Table 1. Timeline of the study | | |
|---|---|---|
| **Date** | **Gestational Age** | **Event** |
| 21/04/2023 | 11 weeks 5 days | Nuchal translucency (NT) scan |
| 06/06/2023 | 18 weeks 2 days | Diagnosis of fetal growth restriction (FGR) via ultrasonography |
| 27/06/2023 | 21 weeks 5 days | Detailed anomaly scan |
| 17/07/2023 | 24 weeks 1 day | Routine Doppler and growth scan |
| 24/07/2023 | 25 weeks 1 day | Follow-up growth scan |
| 26/07/2023 | 25 weeks 3 days | 1st administration of Narikela Rasayana + Kharjuradi Mantha (90 ml once daily for 1 week) |
| 28/07/2023 | 25 weeks 5 days | 2nd administration of Narikela Rasayana + Kharjuradi Mantha |
| 31/07/2023 | 26 weeks 1 day | 3rd administration of Narikela Rasayana + Kharjuradi Mantha |
| 03/08/2023 | 26 weeks 4 days | 4th administration of Narikela Rasayana + Kharjuradi Mantha |
| 07/08/2023 | 27 weeks 1 day | Delivery via emergency lower segment cesarean section (LSCS) |

Early pregnancy was uneventful, with a normal nuchal translucency scan and negative screening for chromosomal abnormalities. However, at 18 weeks gestation, a mildly elevated uterine artery Doppler pulsatility index suggested possible placental insufficiency.

At 25 weeks gestation, routine growth ultrasound confirmed fetal growth restriction attributed to placental insufficiency. Despite ongoing conventional medical management at a tertiary care hospital, fetal parameters did not improve, prompting referral for Ayurvedic intervention.

**4. Clinical findings:**

On examination, the patient was in fair general condition. Her height measured 5 feet 1 inch, and her current weight was 63 kg, compared to a pre-pregnancy weight of 54 kg.

Vital signs revealed blood pressure of 160/100 mmHg and a pulse rate of 92 beats per minute. Mild pallor was noted on general inspection.

Abdominal examination showed a fundal height smaller than expected for the gestational age of 25 weeks and 3 days.

Palpation confirmed the uterus size was not corresponding to the expected period of gestation. Fetal heart sounds were auscultated and recorded as regular with a rate of 144 beats per minute.

These clinical findings, combined with the patient's history and ultrasonographic data, supported the diagnosis of fetal growth restriction secondary to placental insufficiency and maternal hypertension.

**5. Diagnostic assessment:**

The diagnosis of Fetal Growth Restriction (FGR) was established primarily through serial ultrasonographic evaluations and Doppler studies, supplemented by clinical examination.

First Trimester Ultrasound (21/04/2023): A single live intrauterine fetus consistent with 11 weeks and 5 days gestation was confirmed. Nuchal translucency measured 1.20 mm, within normal limits.

Screening for chromosomal abnormalities including Down syndrome, Trisomy 18, and Trisomy 13 was negative. Uterine artery Doppler showed a mean pulsatility index (PI) of 2.250,

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slightly elevated for the gestational age. Cervical length was 36 mm, within normal range.

Fetal Anomaly Scan (06/06/2023): At 18 weeks and 2 days gestation, ultrasonography revealed mild growth restriction consistent with early-onset FGR. The uterine artery Doppler remained positive for abnormal flow patterns, suggesting placental insufficiency as the likely etiology. Estimated fetal weight (EFW) was 178 grams, and amniotic fluid volume was adequate.

Routine Growth and Doppler Scan (24/07/2023): At 25 weeks and 1 day, ultrasonography confirmed progression of growth restriction (stage 2 FGR). Amniotic fluid index (AFI) measured 8.5 cm. Umbilical artery Doppler showed absent end-diastolic flow (EDF) with intermittent reversed flow. Middle cerebral artery (MCA) Doppler pulsatility index was below the 5th percentile, consistent with fetal adaptation to hypoxia. Estimated fetal weight was 454 grams, and fetal heart rate was 138 beats per minute. Maternal Hemoglobin: Laboratory investigations revealed hemoglobin level at 11.8 g/dL, indicating mild anemia

These findings collectively confirmed the diagnosis of early-onset FGR secondary to placental insufficiency in the context of gestational hypertension.

**6. Therapeutic intervention:**

Upon confirmation of fetal growth restriction (FGR) due to placental insufficiency, the patient continued conventional pharmacological management with oral low-dose aspirin (Tab Ecospirin 75 mg, 0-1-1) and antihypertensive therapy (Tab Labetalol 100 mg, 1-1-1).

At 25 weeks and 3 days gestation, Ayurvedic treatment was initiated with Narikela Rasayana combined with Kharjuradi Mantha (90 ml orally once daily) for one week. This regimen aimed to nourish the maternal Rasa Dhatu and balance Vata Dosha to support fetal growth. The Narikela Rasayana was administered in four weekly doses on 26/07/2023, 28/07/2023, 31/07/2023, and 03/08/2023, alongside continued conventional therapy.

Following completion of the Ayurvedic course, conventional medications were maintained for an additional week. The integrative therapeutic approach was monitored closely with serial clinical and ultrasonographic assessments to evaluate maternal and fetal response.

**Table 2. Treatment Protocol**

| Notes | Date | Intervention | Dosage/Frequency |
|---|---|---|---|
| 1st dose | 26/07/2023 | Narikela Rasayana + Kharjuradi Mantha | 90 ml orally, once daily |
| 2nd dose | 28/07/2023 | | |
| 3rd dose | 31/07/2023 | | |
| 4th dose | 03/08/2023 | | |

**Oral Medications continued throughout:**

- Tab Ecospirin 75 mg (0-1-1)
- Tab Labetalol 100 mg (1-1-1)

**Table 3. Contents of Narikela Rasayana**

| Ingredient | Quantity |
|---|---|
| Narikela flowers | As required (fresh) |
| Badam (Almond) | 4 pieces |
| Kharjura (Date Palm) | 2 pieces |
| Draksha (Grape) | 4 pieces |

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| | |
|---|---|
| Khanda Sharkara | 1 pinch |
| Ashwagandha Churna | As required |
| Shatavari Churna | As required |
| Yashtimadhu Churna | As required |
| Bala Churna | As required |
| Milk | Quantity sufficient |

**7. Preparation of Narikela Rasayana**

1. Fresh *Narikela* (coconut) flowers were collected and ground thoroughly with an adequate quantity of milk to form a fine paste. The mixture was then filtered using a clean cloth to extract the liquid portion.
2. Separately, the *Prakshepaka Dravyas* — including *Badam* (almond), *Kharjura* (date palm), and *Draksha* (grape) — were ground together with milk to create a homogeneous mixture.
3. To this mixture, *Kalka Dravyas* — powdered herbs such as *Shatavari* (*Asparagus racemosus*), *Ashwagandha* (*Withania somnifera*), *Yashtimadhu* (*Glycyrrhiza glabra*), and *Bala* (*Sida cordifolia*) — were incorporated, forming a thick paste.
4. Finally, the paste formed from the *Prakshepaka* and *Kalka* dravyas was combined with the liquid extract obtained from the *Narikela* flowers, thoroughly mixed, and adjusted to a semiliquid consistency suitable for oral administration.

**8. Follow-up and Outcome**

A follow-up evaluation was conducted one month after treatment initiation, assessing clinical parameters, maternal hemoglobin levels, ultrasonographic measurements, and Doppler studies. Significant improvements were observed across these parameters, including an increase in estimated fetal weight from 454 g to 512 g within one week of Ayurvedic therapy (Tables 4 and 5).

The patient subsequently underwent an emergency lower segment cesarean section (LSCS) at 27 weeks and 1 day gestation due to placental insufficiency, gestational hypertension, absent end-diastolic flow with intermittent reversal on Doppler, and elevated maternal health risk. A male neonate weighing 780 grams was delivered and admitted to the neonatal intensive care unit. Despite low birth weight, the neonate remained stable without complications such as hypoglycemia or respiratory distress. The integrative Ayurvedic management appeared to contribute positively both antenatally and postnatally, supporting neonatal growth through the pharmacological properties (rasa, guna, virya, vipaka, prabhava) of the administered formulations.

**Table 4. Symphysis-Fundal Height and Maternal hemoglobin (Hb) levels**

| Parameter | Before Treatment | After Treatment |
|---|---|---|
| Symphysis-Fundal Height | 28 cm | 33 cm |

**Table 5. Maternal Hemoglobin (Hb) Levels**

| Parameter | Before Treatment | After Treatment |
|---|---|---|
| Hb Level | 12.4 g/dL | 13.3 g/dL |

**Table 6. Ultrasonographic Parameters Before and After Treatment**

| Parameter | Before Treatment | After Treatment |
|---|---|---|
| Gestational Age | 25 weeks 1 day | 26 weeks 1 day |
| Biparietal Diameter (BPD) | 59.5 mm | 60.5 mm |
| Head Circumference (HC) | 208.0 mm | 219.0 mm |
| Abdominal Circumference (AC) | 164.0 mm | 171.0 mm |
| Femur Length (FL) | 37.0 mm | 39.0 mm |
| Estimated Fetal Weight (EFW) | 454 g | 512 g |

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| | | |
|---|---|---|
| Amniotic Fluid Index (AFI) | 8.5 cm | 8.8 cm |

**9. Discussion**

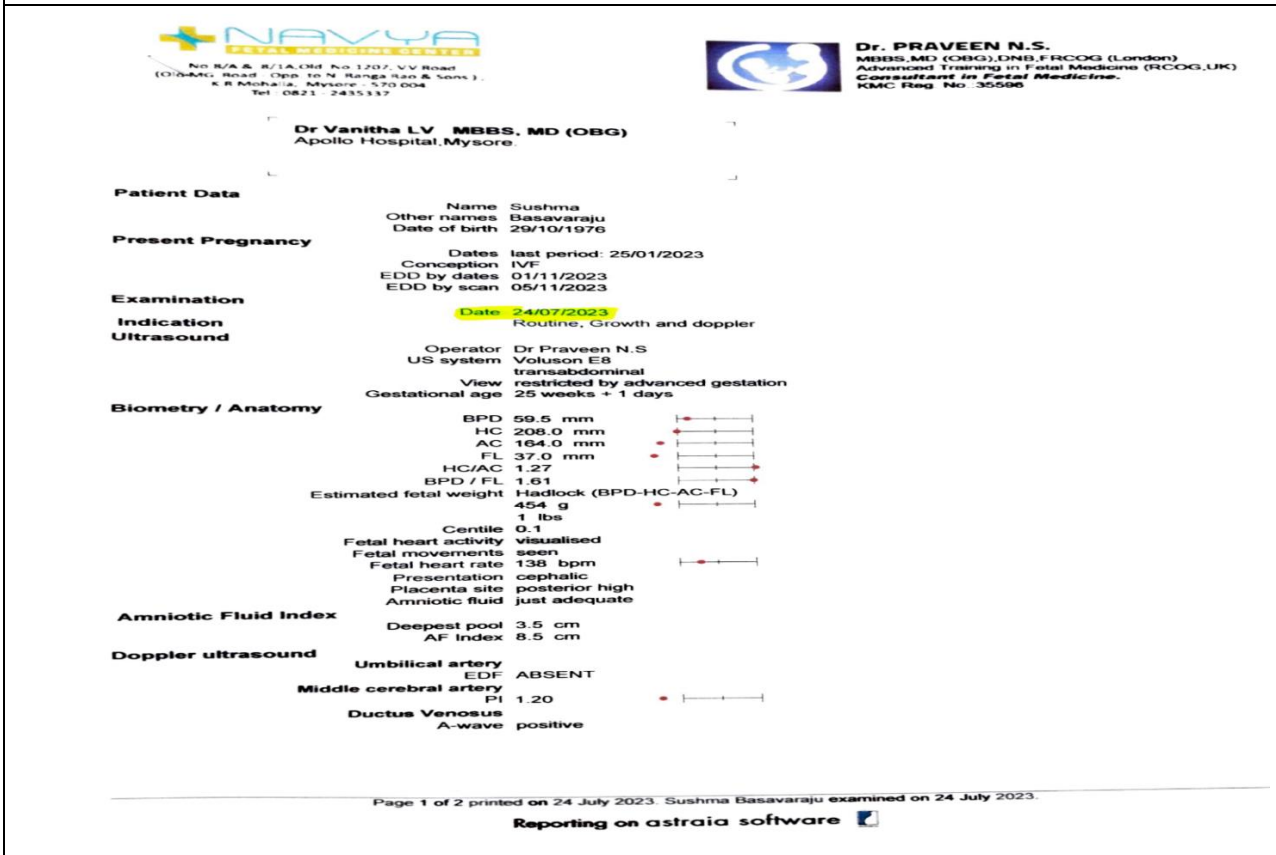
In Ayurveda, fetal growth (Garbhavriddhi) is governed by Matruja Rasa Dhatu and Vata Dosha. Rasa Dhatu provides essential nourishment to the fetus, and its deficiency leads to Garbhashosha (fetal growth restriction). Vata Dosha regulates nutrient transfer through Matruja Rasavaha and Garbhanabhi Nadi, and its imbalance can impair fetal growth.

The therapeutic approach, Brihmana Chikitsa, focuses on enhancing Rasa Dhatu (Rasa Prasadana) and pacifying Vata (Vata Shamana) to ensure proper nutrient supply. Accordingly, Narikela Rasayana and Kharjuradi Mantha were administered for one week.

Narikela Rasayana, rich in lipids, facilitates placental diffusion and supports fetal growth. Its sugar content enhances efficacy, while Narikela (coconut flower) provides nutrients and hydration, and Ela (cardamom) acts as a cardiotonic and digestive stimulant. Key ingredients—milk, Shatavari, Bala, Yashtimadhu, and Ashwagandha exhibit nourishing, strengthening, tissue-building, antioxidant, anti-inflammatory, and adaptogenic properties, collectively improving Rasa and Rakta Dhatu for optimal fetal nourishment.

Shatavari mitigates oxidative stress, reduces uterine inflammation, improves uteroplacental blood flow, and supports hormonal balance. Bala and Yashtimadhu strengthen maternal physiology and counter vitiated Vata, while Ashwagandha enhances maternal nutrition, uterine circulation, and

**Before Treatment**



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Patient Data
Name Sushma
Other names Basavaraju
Date of birth 29/10/1976

Present Pregnancy
Dates last period: 25/01/2023
Conception IVF
EDD by dates 01/11/2023
EDD by scan 05/11/2023

Examination
Date 24/07/2023
Indication Routine, Growth and doppler
Ultrasound
Operator Dr Praveen N.S
US system Voluson E8
transabdominal
View restricted by advanced gestation
Gestational age 25 weeks + 1 days

Biometry / Anatomy
BPD 59.5 mm
HC 208.0 mm
AC 164.0 mm
FL 37.0 mm
HC/AC 1.27
BPD / FL 1.61
Estimated fetal weight Hadlock (BPD-HC-AC-FL)
454 g
1 lbs
Centile 0.1
Fetal heart activity visualised
Fetal movements seen
Fetal heart rate 138 bpm
Presentation cephalic
Placenta site posterior high
Amniotic fluid just adequate

Amniotic Fluid Index
Deepest pool 3.5 cm
AF Index 8.5 cm

Doppler ultrasound
Umbilical artery
EDF ABSENT
Middle cerebral artery
PI 1.20
Ductus Venosus
A-wave positive

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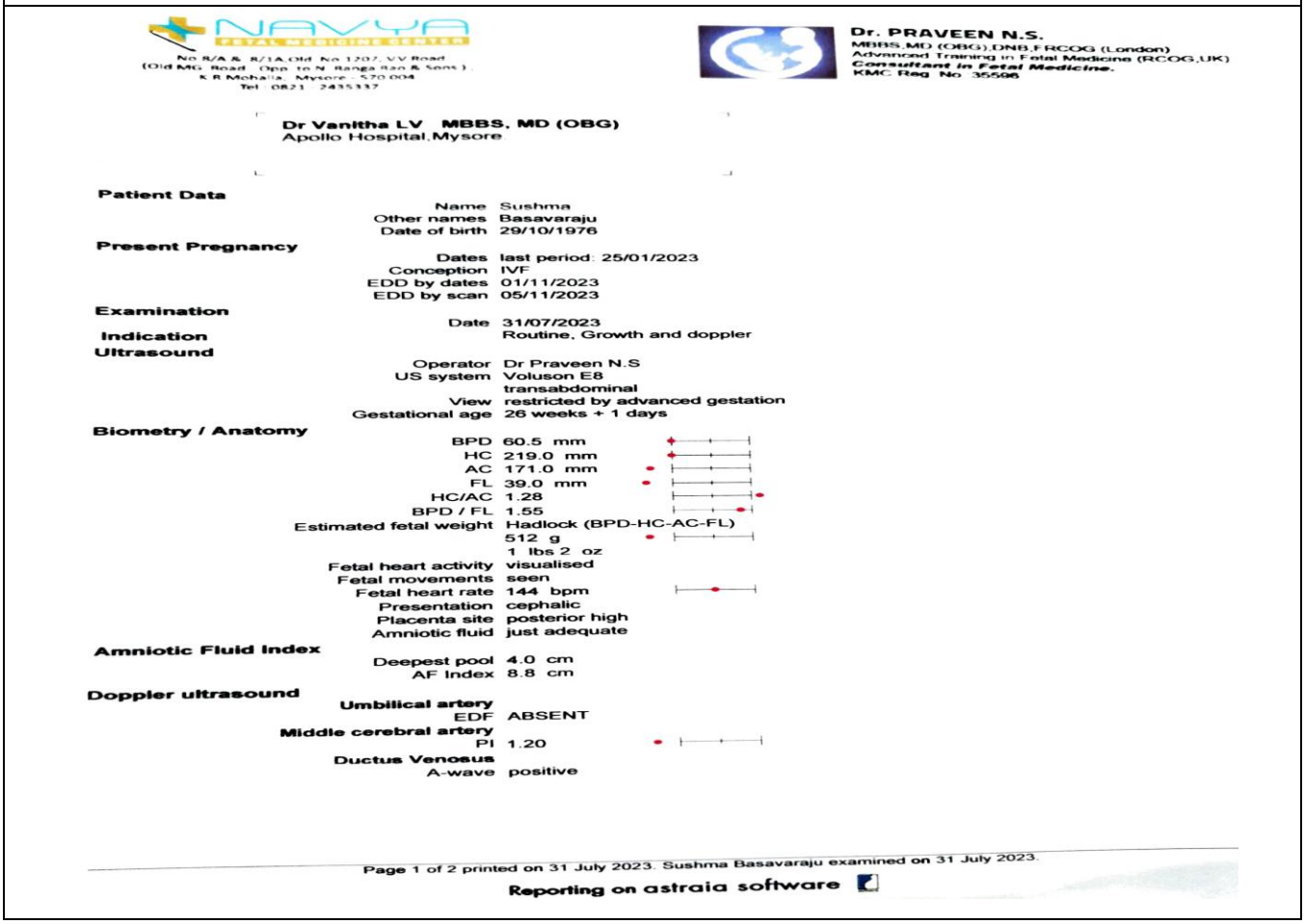
**After Treatment**



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Apollo Hospital,Mysore

**Patient Data**

| | |
|---|---|
| Name | Sushma |
| Other names | Basavaraju |
| Date of birth | 29/10/1976 |

**Present Pregnancy**

| | |
|---|---|
| Dates | last period: 25/01/2023 |
| Conception | IVF |
| EDD by dates | 01/11/2023 |
| EDD by scan | 05/11/2023 |

**Examination**

| | |
|---|---|
| Date | 31/07/2023 |
| Indication | Routine, Growth and doppler |

**Ultrasound**

| | |
|---|---|
| Operator | Dr Praveen N.S |
| US system | Voluson E8 |
| | transabdominal |
| View | restricted by advanced gestation |
| Gestational age | 26 weeks + 1 days |

**Biometry / Anatomy**

| | |
|---|---|
| BPD | 60.5 mm |
| HC | 219.0 mm |
| AC | 171.0 mm |
| FL | 39.0 mm |
| HC/AC | 1.28 |
| BPD / FL | 1.55 |
| Estimated fetal weight | Hadlock (BPD-HC-AC-FL) |
| | 512 g |
| | 1 lbs 2 oz |
| Fetal heart activity | visualised |
| Fetal movements | seen |
| Fetal heart rate | 144 bpm |
| Presentation | cephalic |
| Placenta site | posterior high |
| Amniotic fluid | just adequate |

**Amniotic Fluid Index**

| | |
|---|---|
| Deepest pool | 4.0 cm |
| AF Index | 8.8 cm |

**Doppler ultrasound**

| | |
|---|---|
| Umbilical artery | |
| EDF | ABSENT |
| Middle cerebral artery | |
| PI | 1.20 |
| Ductus Venosus | |
| A-wave | positive |

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placental function. Kharjuradi Mantha further enriches Rasa Dhatu, providing essential micronutrients like iron, calcium, and folic acid, critical for fetal development.

Together, these interventions support maternal and fetal health, promoting intrauterine growth and reducing risks associated with fetal growth restriction.

## 10. Conclusion

This case report demonstrates that Ayurvedic treatment, including Narikela Rasayana, Kharjuradi Mantha, and adjunct oral medications, can effectively support fetal growth in cases of Fetal Growth Restriction (FGR). The patient exhibited notable improvements in estimated fetal weight, fetal biometric parameters, and Doppler ultrasound findings, alongside enhanced maternal health indicators. These positive outcomes highlight the potential role of Ayurveda in complementing conventional approaches to managing FGR during pregnancy.

However, as this observation is limited to a single case, further research involving larger cohorts and controlled study designs is essential to substantiate these findings and to develop standardized, evidence-based Ayurvedic protocols for FGR management.

## 11. Patient's Perspective

Initially, the patient experienced anxiety regarding the diagnosis and potential risks to her fetus. As treatment progressed and fetal growth improved, her concerns diminished. Post-delivery, she expressed relief and satisfaction with the health status of her newborn.

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12. Informed Consent

Informed consent was obtained from the patient for publication of this case report.

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