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Garbhini Pandu (Anemia in Pregnancy): A Conceptual Study

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ABSTRACT

Pregnancy is a unique and transformative stage in a woman's life, accompanied by numerous physical and physiological changes that may predispose her to various health complications. Among these, anaemia particularly gestational anaemia is one of the most prevalent and concerning conditions, especially in developing countries. The global prevalence of anaemia in pregnancy is 36.8% [(1),] while in India it is significantly higher at 52.2% [(2)]. Iron-deficiency anaemia remains the most common type, primarily due to inadequate dietary intake, poor absorption, and low socio-economic status. Anaemia during pregnancy is associated with adverse outcomes such as preterm labour, stillbirth, increased susceptibility to infections, postpartum haemorrhage, and maternal depression. Ayurveda places strong emphasis on women's health and provides detailed descriptions of pregnancy-related disorders under the concept of Garbhopadravas. Garbhini Pandu, considered analogous to anaemia in modern science, is not described as a separate disease but can be understood through references to Pandu Roga and pregnancy-related complications. According to Ayurvedic principles, during pregnancy, Rasa and Rakta Dhatus of the mother are heavily utilized for fetal nourishment. Their depletion due to increased physiological demand, poor digestion (Agnimandya), and inadequate nutrition leads to Pitta imbalance and impairment of Rakta Dhatu, resulting in Garbhini Pandu. Clinically, it manifests as pallor, fatigue, weakness, and other systemic symptoms that may adversely impact both maternal and fetal health.This study aims to explore the etiology, pathogenesis, clinical features, and Ayurvedic management of Garbhini Pandu, correlating it with iron-deficiency anaemia in pregnancy. Ayurvedic management emphasizes early diagnosis and a holistic approach involving Ahara, Vihara, and Aushadhi to balance doshas, enhance Dhatu quality, and promote optimal maternal-fetal health.

Keywords: Pregnancy, Anaemia, Iron-deficiency, Garbhini Pandu, Rasa Dhatu, Rakta Dhatu, Agnimandya, Ayurveda, Maternal health, Fetal health.

INTRODUCTION

Female play a fundamental role for Shreyasipraja. The healthy progeny as the developing fetus is entirely dependent on the mother for nutrition. In Ayurveda, although the term Garbhini Pandu is not categorically mentioned in classical texts, it is indirectly referred by Acharya Harita under the eight Garbhopadravas, particularly through the symptom Vivarnata (pallor or discoloration[(3)]. According to acharya Charaka Pandu Roga is characterized by Panduta (pallor), arising from qualitative and quantitative deficiencies in

Rasa and Rakta Dhatus, and is predominantly a Pittavitiated disorder affecting the Rasavaha and Raktavaha Srotas[4].Ayurvedic descriptions of Masanumasika Garbha Vruddhi highlight a marked increase in Mamsa and Shonita during the fifth and sixth months of gestation. This heightened demand may result in Balavarnahani[5], which closely resembles the clinical presentation of gestational anemia or Garbhini Pandu. In the context of Rakta Gulma, Acharya Kashyapa has described Pandu as a symptom of Garbhini[6]. In Brhatrayee the term Garbhini Pandu is not explicitly mentioned in classical Ayurvedic texts however, several references describe symptomatology that closely resembles anaemia during pregnancy.
Iron deficiency anemia is the most prevalent form encountered during pregnancy. The total iron requirement is approximately 1000 mg 300 mg for fetal and placental development, 500 mg for maternal red cell mass expansion, and 200 mg lost through excretion[7]. During pregnancy due to increased demands of iron, diminished intake of iron, and diminished iron absorption (only 10% of total ingested iron).This creates a daily requirement of 200 mg of ferrous sulphate (containing 60mg of elemental iron)[8].Iron deficiency adversely affects pregnancy outcomes, increasing the fetal and maternal complications and neonatal iron deficiency. Diagnosis includes hemoglobin estimation, red cell indices, peripheral blood smear examination, and iron studies. The National Nutritional Anemia Prophylaxis Program in India recommends daily supplementation of 100 mg elemental iron and 500 µg folic acid per day for at least 100 days starting after the first trimester at 14-16 weeks of gestation for all non anemic pregnant women followed by same dose for 100 days postpartum[9]. Oral iron supplimentation is widely used, but there are certain drawbacks of oral iron therapy also such as intolerance is evidenced by gastrointestinal distress, nausea and vomiting, epigastric distress, constipation or diarrhea, flatulence, metallic taste.[10] There are substances which inhibit iron absorption such as phytates, polyphenols(herbal tea,coffee) , Oxalic acid (beans, nuts), and certain proteins (casein, whey, Eggwhite), which mainly block non-heme iron. On the other hand Calcium inhibits both heme and non-heme iron at the intestinal uptake level[11]. Parenteral iron therapy demonstrates a faster erythropoietic response and more complete correction of deficiency, but it carries risks such as hypersensitivity reactions, thrombosis, and, rarely, cardiac arrest[12].

AIM AND OBJECTIVE

To discuss detail literary study of about Garbhini Pandu and Anemia in pregnancy,
To understand Garbhini Pandu in detail.

MATERIAL AND METHODS

Review of literature taken from Bhrihatrayees, Laghutrayees, Ayurveda literatures related to Garbhini Pandu,Journals, Published articles.
TYPE OF STUDY: Conceptual study

GARBHINI PANDU AS PER DIFFERENT ACHARYAS

Pandu Roga, as described in Ayurveda, is characterized by Pandu Varna (pallor), primarily due to Raktalpata. Derived from "Padi Nishne Dhatu," the term reflects the loss of natural body colour, aligning with the modern understanding of anaemia. Charaka attributes its pathogenesis to Pitta pradhana tridosha vitiation, leading to Dhatu shithilata and guruta, which in turn causes bala, varna,Sneha oja and dhatu kshaya contributes Rakta alapta ,Medaalapta Nihsarata and Vaivarnyata in body known as Pandu roga[13].Sushruta also explained that in different types of Pandu Roga, due to the consumption of excessive

Amla,Lavana,Rasa and madya, indulging in Diwaswapa,mritikabhankshad (pica eating), causes vitiation of different Doshas, which in turn contaminates Rakta dhatu and change the skin colour in pandu varna[14].

NIDANA OF PANDU [15, 16,17,18]

Aharaja	Kshar, Amla, Ushna, Teekshna, Viruddha and Asatmya, Vidahi ahar sevana, Atimadhyapaan, Mritikabhakshan,
Viharaja	Divaswap, Ativyayam, AtiMaithun, Vegvidharana
Manasika	Kaam, Chinta, Bhaya, Krodh, Shoka
Anya nidanas	Garbhopadrava janya, Garbhavrudhhi

SAMPRAPTI[19]

NIDANA

↓

Vitiation of Tridosha predominantly pitta dosha

↓

In turns vitiation of Raktadi dhatu

↓

Shaithilyata and Guruta in dhatu poshana krama

↓

Bala, Varna, Sneha, Oja decreases in body

↓

Alparakta , Alpameda, Nihsarata, Indriyashithilata, Vaivarnyata

PANDUROGA

TYPES

- According to Acharya *Charaka, Vagabhatta, And Madhavakara* described five types of pandu roga i.e., vataja, pittaja, kaphaja, sannipataja and mritikabhakshana janya with with general clinical features of pandu
- Acharya *Susruta* has mentioned four types of pandu roga i.e. Vataja, Pittaja, Kaphaja,and Sannipataja with with general clinical features of pandu.

Si. no	Vataja	Pittaja	Kaphaja	Sannipataja	Mrida bhakshan
1.	Krishnata	Pitata	Gaurava	Jwara	Balanaash
2.	Panduta	Haridrata	Tandra	Aruchi	Varnanasha
3.	Rukshata	Jwara	Chardi	Hrilllasa	Agninaasha
4.	Arunata	Daah	Shwetata	Chardi	Akshikootshoth
5.	Angamard	Trishna	Prasheka	Trishna	Ganda,bhru shotha
6.	Ruja	Murcha	Lomaharsha	All lakshna of vata , pitta kapha	Paad, nabhi shotha

7.	Toda	Mala – mutra pitata	Bhrama		Krimikoshtha
8.	Kampa	Atisweda	Shwasa, kasa		Raktamishrita mala tyaga
9.	Parshvashoola	Sheetakamita	Aalasya		
10.	Shushkamala	Aruchi	Aruchi		
11.	Aasyavairashya	Katuashyata	Shotha		
12.	Shopha	Dhaurgandhya	Ushnakamita		
13.	Aanaha	Tama			
14.	Balakshaya	Atisara			

SAMANYA LAKSHNA[20]

- Karna Kshveda (tinnitus)
- Hata anala (indigestion)
- Duarbalya (weakness)
- Srama (fatigue)
- Bhrama (vertigo)
- Gatrashoola(bodyache)
- Jwara (fever)
- Aruchi (anorexia)
- Shirnaloma (hair fall)
- Shwasa (exertional dyspnoea)
- Akshikoot shotha (swelling around eyes)
- Shishirdhweshi (Avertion to cold)
- Atinidra (excessive sleep)
- Pindikoudveshtana (Cramps in calf region)
- Gauravam (Heaviness)

VISHESHA LAKSHNA[21]

TYPES	LAKSHANA
VATAJA	1.Krishna pandu anga – black and pale-yellow complexion, 2.Ruksha anga – dryness, 3.Aruna anga – reddish discolouration of the body, 4.Anga marda – malaise 5.Ruja – ache 6.Toda – pricking pain 7.Kampa – tremor 8.Parshav ruja – pain in the sides of the chest, 9.Shiro ruja – headache

	10.Varcha Shosha – dryness of feces 11.Mukha Vairasya – distaste in the mouth, 12.Shopha – swelling, 13.Anaha – constipation and 14.Bala kshaya – Weakness
PITTAJA	1.Peeta Harita Varna – complexion becomes yellow or green 2. Jwara Daha Samanvitah – fever and burning sensation 3. Trushna Murccha Pipasa – Faints, because of excessive thirst and suffers from morbid thirst 4. Pita mutra – His urine and stool becomes yellow in colour 5. Svedanah Sheeta kamita – Sweating and develops longing for cold things 6. Annam Abhinandati – He does not relish food 7. Katuka Aasya – Feeling pungent taste in mouth and 8. Ushna Upashete Amla meva cha – hot and sour things do not suit him 9. Amla udgara – sour eructation and 10. Vidaha Vidagdhe Anne – burning sensation due to indigestion of food 11. Mukha Daurgandhya – bad breath and 12. Bhinna varchas, Daurbalyam, tama eva cha – He gets loose motions, weakness and fainting.
KAPHAJA	1.Gauravam – Heaviness, 2. Tandra – Drowsiness, 3. Chardim – Vomiting, 4. Shvetavabhasa – whitish complexion, 5. Prasekam – Salivation, 6. Loma harsha – Horripilation, 7. Murchha- fainting, 8. Bhrama – Giddiness, 9. Klama – mental fatigue, 10. Shvasa – dyspnoea, 11. Kasa – cough, 12. Aalasya – laziness, 13. Aruchi – anorexia, 14. Vaksha savara graham – obstruction in speech and voice, 15. Shukla akshi varchas – whitish discolouration of urine, eyes and faces 16. Katu ruksha ushna kamata – Longing for pungent, unctuous and things and 17. Shwathu – Oedema and 18. Madhura aasya – sweet taste in the mouth.
TRIDOSHAJA	All Tridoshaja lakshana
MRIDA BHAKSHANA	1.Shuna ganda akshi kuta – Oedema in the cheek, eye sockets and eye bones

JANYA	2. Oedema in feet, umbilical region and the pudendum 3. Krimi koshta – Appearance of worms in Kostha (intestine) and 4. Atisara – Loose motions, the stool being associated with blood and mucus (Kapha).

CHIKISTA [22]

Ayurvedic texts has explained a variety of treatment options for the management of Pandu Roga which can be classified into

Nidana Parivarjana -Shodhana - Shamana

As Acharya Charaka has stated, Garbhini should be treated as *Poornameva Tailapatram*[23] hence, in Garbhini Tikshna aushadha, vyavaya, vyayama varjaneeyanaam[24]is contraindicated so shodhna chikitsa should be avoided in garbhini .Only Samana Chikitsa mentioned for Paṇḍu Roga should be adopted in Garbhini Paṇḍu. In Ayurveda, for correcting haemoglobin along with managing Rasaduṣṭi and Dhatukṣaya, therapies such as Amapacana, Agnidipana, Pittasamana, Dhatvagni-vardhana, Raktavardhaka and Rasayana are effective, safe during pregnancy, and commonly used in day to day practice, such as
Dhatri lauha,
Punarnava mandura,
Pandughni vati[25],
Draksha ghrita,
Dhatryavleha,Dadim avaleha.

3. Shamana chikitsa

Rasa/ Bhasma/ lauha/ Mandoora	Punarnava mandura Navayasa lauha Dhatri lauha Mandoor Bhasma.
Vati	Mandora vataka Abhaya vati Takra vati Shilajatu vataka
Churna	Amalaki Churna Triphala churna, Vishaladi churna
Kwatha	Phalatrikadi kwatha, Punarnavashtak kwatha
Asava	Kumaryasava, Lauhasava, Punarnavasava, Drakshasava
Awaleha	Dhatriawaleha Darvyadi awaleha, Dhrksha awaleha
Ghrita	Mahatikta ghrita Kalyanaka ghrita Rohitaka ghrita
Rasayana	Yogaraj, Triphala rasayana, Mandoora rasayana, Amalaki rasayana

UPADRAVA [26]

Aruchi, Pipasadhiya, Chardi, Jwara, Shirashoola,Shosha, Hridpeedanam ,Agnimandhya Balashaya Murcha, Atisara, Daha, Klama Swarabheda and different types of vata vikaras.

IN CONTEMPORARY SCIENCE

Anemia in pregnancy is defined by Center of Disease Control (CDC) hemoglobin less than 11 g/dl (Hematocrit (Hct) < 33% in the first and third trimester and less than 10.5 g/dl (Hct < 32%) in the second

trimester while WHO defines anemia in pregnancy as Hb values less than 11gm/dl[27]. According to the National Family Health Survey-5 (NFHS-5), 52.2% of pregnant women in India are anemic.[28] According to WHO the Anemia in pregnancy is responsible for approximately 20% of maternal deaths and contributes indirectly to another 20% by exacerbating complications such as post partum hemorrhage, sepsis, and obstructed labor[29].

Classification of Anemia in Pregnancy

1. **Based on Hemoglobin Concentration [30]:**

Severity	**Hemoglobin Level (g/dL)**
Mild	**10.0 – 10.9**
Moderate	**7.0 – 9.9**
Severe	**<7.0**

2. **Based on Red Cell Morphology:**

Type	**Description**	**Common cause**
Microcytic	Small,pale RBCs	Iron deficiency, Thalassemia
Macrocytic	Large, RBCs	Folate or B12 Deficiency
Normocytic	Normal RBCs	Chronic disease, acute blood loss

TYPE OF ANEMIA	**ETIOLOGY**	**DIAGNOSIS**	**TREATMENT**
Iron deficiency Anemia	Inadequate dietary intake,Increased demand in pregnancy Chronic blood loss in (menstrual, hookworm infestation)	**Complete Blood Count (CBC):** **HB-<10g%**, MCV↓ MCHC↓, PCV↓, MCH↓ **Peripheral Blood Smear:** Microcytic, hypochromic RBCs **Serum Ferritin:** <15 ng/mL indicates iron deficiency **Serum Iron, TIBC** **Stool test:** To detect helminthic infections	**Pregnancy <30 weeks** Oral iron (100–200 mg elemental iron/day) Parenteral iron if severe/intolerant **Pregnancy >36 weeks** Blood transfusion **Deworming:** In Hookworm infestation Albendazole 400 mg after the first trimester

Megaloblastic Anemia (Folate/B12 Deficiency)	Poor diet, Malabsorption ,Increased demand (fetus placenta) Drugs (phenytoin, methotrexate)	Hb ↓ Macrocytic RBCs Hypersegmented neutrophils Serum folate<3ng/ml Vit.B12 <80pg/ml	Folic acid 5 mg/day With iron supplement Vitamin B12 injections (100 µg IM daily or on alternate day Nutritional advice
Anemia due to Chronic Disease -	Chronic infections (TB, HIV, Malaria) Inflammatory diseases Renal or liver disease	Normocytic or microcytic anemia Serum iron ↓, Ferritin normal/↑	Treat underlying cause Iron therapy less effective Recombinant Erythropoietin in renal disease
Hemolytic Anemia	Hereditary (Thalassemia, Sickle cell, G6PD deficiency) Autoimmune diseases	Hb ↓ Reticulocytosis ↑ Indirect bilirubin↑ Peripheral smear: abnormal RBC morphology	Folic acid supplementation 1mg/day Exchange Blood transfusion if severe Penicillin prophylaxis Genetic counseling (thalassemia, sickle cell)
Aplastic Anemia	Bone marrow failure Drugs, radiation, idiopathic	Anemia, Thrombocytopenia Leukopenia Hypocellular bone marrow	Repeated blood transfusions, antibiotics) Bone marrow transplant (rare in pregnancy in severe cases)

Pathophysiology

During pregnancy, plasma volume increases by up to 50%, while red cell mass increases only by 20–30%, resulting in physiological hemodilution. Iron requirements also increase significantly (estimated at 1000–1200 mg throughout pregnancy). If this demand is unmet, it leads to iron deficiency anemia, affecting oxygen delivery to maternal and fetal tissues.

Clinical Features

Symptoms may vary with severity:

- Fatigue

- Pallor (conjunctiva, palms)
- Dizziness
- Breathlessness
- Palpitations
- Edema in feet, face
- Poor appetite

Complications

Maternal Complications

Increased risk of postpartum hemorrhage
Cardiac failure
Poor wound healing
Susceptibility to infections
Maternal death (especially in severe anemia)

Fetal Complications

Intrauterine growth restriction (IUGR)
Low birth weight
Preterm birth
Intrauterine fetal demise
Perinatal mortality

Prevention Strategies in India

- **Anemia Mukt Bharat (AMB):** Launched by the Ministry of Health and Family Welfare in 2018, targeting a 3% reduction in anemia annually among women of reproductive age[31].
- **IFA Supplementation:** 60 mg elemental iron + 500 mcg folic acid daily during pregnancy
- **Deworming:** Albendazole 400 mg after the first trimester
- Nutrition counselling and diet diversification
- Promotion of delayed marriage and birth spacing

DISCUSSION

The concept of Garbhini Pandu is not directly described in the classical Ayurvedic texts, yet the clinical manifestations of Pandu Roga closely resemble anemia during pregnancy. Acharyas have explained Pandu as a Pitta pradhana Tridoshaja Vyadhi, resulting in vitiation of Rakta and Dhatu Kshaya. This ultimately leads to pallor, fatigue, weakness, and diminished Ojas, which are also characteristic of anemia. In pregnancy, increased demand for nutrients, physiological hemodilution, and improper diet or lifestyle (Ahara–Vihara) act as aggravating factors, thereby precipitating Pandu-like symptoms.From a modern perspective, anemia in pregnancy is a major public health concern, with iron deficiency being the leading cause, followed by folate and vitamin B12 deficiency. The clinical features described in Pandu Roga such as Hrudspandana (palpitation), Daurbalya (weakness), and Shwasa (breathlessness) show very much similarity to those observed in pregnant women with anemia. Ayurveda emphasizes Rasayana and Pushtikara Ahara dravya for nourishment, along with gentle formulations like Lauha Kalpans, avoiding Tikshna Aushadhi due to contraindications in pregnancy. Thus, the Ayurvedic view provides a holistic understanding of Garbhini Pandu, integrating both preventive and therapeutic strategies.

Conceptually, Garbhini Pandu combines the principles of Pandu Roga with the physiological needs of pregnancy. It emphasizes maternal well-being, fetal nourishment, and safe management, offering a bridge between Ayurveda and modern obstetric care.

CONCLUSION

Gestational anemia is a major health issue in pregnancy, especially in developing countries, needing timely care for the safety of both mother and child. Ayurveda, with its detailed descriptions of pregnancy and its challenges, highlights Garbhini Pandu, which can be correlated with gestational anemia. Ancient scholars successfully managed this condition, and their principles remain relevant even today. This study emphasizes the importance of understanding Garbhini Pandu, its Ayurvedic management, and its relation to modern concepts of gestational anemia for better maternal and fetal health.

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