



## **Role of Ayurveda in Recurrent Implantation Failure (RIF): A Conceptual and Clinical Review**

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### **Abstract**

#### **Background**

Recurrent Implantation Failure (RIF) is a distressing condition encountered in assisted reproductive technology (ART), characterized by repeated failure of embryo implantation despite transfer of good-quality embryos. It reflects a complex interplay of endometrial receptivity defects, immune dysregulation, hormonal imbalance, thrombophilia, and psychosomatic stress. Ayurveda, though not explicitly describing RIF, offers a comprehensive framework through concepts such as *Vandhyatva*, *Garbhasambhava Asambhava*, *Kshetra Dushti*, *Artava Dushti*, and *Beeja Dosha*.

#### **Objective**

To critically analyse Recurrent Implantation Failure through Ayurvedic principles, correlate it with modern reproductive science, and review Ayurvedic therapeutic strategies for improving implantation and pregnancy outcomes.

## Methods

A narrative review was conducted using classical Ayurvedic texts (*Charaka, Sushruta, Ashtanga Hridaya, Kashyapa Samhita*), commentaries, and Nighantus, along with modern scientific databases (PubMed, Google Scholar, DHARA, AYUSH Research Portal). Conceptual analysis and integrative interpretation were employed.

## Results

Ayurvedic concepts such as *Kshetra Shuddhi, Artava Prasadana, Vata Shamana, Rasa–Rakta–Artava Poshan*, and *Rasayana* directly influence implantation success. *Panchakarma* procedures like *Basti, Nasya, Uttara Basti*, and internal medications including *Phala Ghrita, Ashwagandha, Shatavari, Guduchi*, and *Lodhra* demonstrate potential in improving endometrial receptivity, hormonal balance, immune tolerance, and uterine environment. Integrative Ayurvedic intervention may reduce repeated ART failures.

## Conclusion

Ayurveda provides a holistic and individualized approach to RIF by correcting systemic imbalances, enhancing uterine receptivity, and addressing psychological stress. Integrative management combining ART with evidence-based Ayurvedic therapies may improve implantation rates and reproductive outcomes.

## 1. Introduction

Recurrent Implantation Failure (RIF) is commonly defined as the failure to achieve a clinical pregnancy after transfer of three or more good-quality embryos in at least two or three IVF cycles in women below 40 years of age [1]. Despite advances in ART, implantation rates remain suboptimal, making RIF a major challenge in reproductive medicine.

## Epidemiology and Burden

RIF affects approximately 10–15% of women undergoing IVF, causing significant emotional, financial, and psychological stress [2]. The condition is multifactorial and often unexplained despite extensive investigations.

## Modern Etiological Factors

- Poor endometrial receptivity
- Thin endometrium
- Immunological rejection
- Thrombophilia
- Hormonal imbalance
- Chronic endometritis
- Stress and altered uterine blood flow

## Ayurvedic Perspective

Although RIF is not described as a single disease entity, it can be conceptualized under:

- *Vandhyatva*
- *Garbhasambhava Asambhava*
- *Kshetra Dushti* (uterine/endometrial defects)
- *Artava Dushti*
- *Beeja and Beeja-bhaga Dushti*
- *Vata Prakopa* affecting *Garbhashaya*

Classical texts emphasize four essential factors for conception (*Garbhasambhava Samagri*): *Ritu*, *Kshetra*, *Ambu*, and *Beeja* (Charaka Samhita) [3]. RIF represents a failure primarily at the *Kshetra* and *Ambu* levels.

## Need for Integrative Approaches

ART (Assisted Reproductive Technology) focuses on embryo quality, whereas Ayurveda emphasizes uterine receptivity, systemic balance, and psychosomatic health, making integrative management highly relevant.

## Aim:

To review Ayurvedic concepts, therapeutic principles, and integrative applications in RIF.

## 2. Methods

### Literature Search Strategy

Databases searched:

- PubMed
- Google Scholar
- DHARA
- AYUSH Research Portal

### Classical Texts Reviewed

- *Charaka Samhita*
- *Sushruta Samhita*
- *Ashtanga Hridaya*
- *Kashyapa Samhita*
- *Bhavaprakasha & Raja Nighantu*

### Inclusion Criteria

- Classical Ayurvedic references related to infertility
- Studies on Ayurvedic management of infertility or IVF failure
- Modern literature on RIF

### Conceptual Framework

Textual exegesis, pathophysiological correlation, and integrative clinical interpretation were employed.

## 3. Results / Review Findings

### 3.1 Ayurvedic *Nidana* (Aetiology) of RIF

- *Vata Prakopa* due to stress, excessive procedures

- *Artava Dushti* (hormonal and endometrial defects)
- *Kshetra Dushti* (uterine inflammation, fibrosis)
- *Ama* accumulation
- *Manasika Nidana* (Chinta, Bhaya, Shoka)
- *Rakta Dushti* and impaired uterine perfusion

### 3.2 Samprapti (Pathogenesis)

1. Vitiated *Vata* → impaired uterine receptivity
2. *Pitta* → inflammation, immune rejection
3. *Kapha* → endometrial stagnation, poor remodelling
4. *Rasa–Rakta Dushti* → defective nourishment
5. Failure of embryo anchoring (*Garbha Dharana Asamarthyā*)

### 3.3 Clinical Correlation with RIF

Modern Factor	Ayurvedic Correlation
Thin endometrium	<i>Rasa–Rakta Kshaya</i>
Immune rejection	<i>Pitta–Rakta Dushti</i>
Repeated IVF failure	<i>Vata Dushti</i>
Poor uterine blood flow	<i>Srotorodha</i>
Stress	<i>Manovaha Srotas Dushti</i>

### 3.4 Chikitsa Siddhanta for RIF

- *Vata Shamana*
- *Kshetra Shuddhi*
- *Artava Prasadana*
- *Rasa–Rakta Poshan*
- *Rasayana*
- *Satvavajaya Chikitsa*

### 3.5 Ayurvedic Therapeutic Interventions

#### A. Panchakarma Therapies

### 1. *Basti* (Primary Therapy)

- *Yoga Basti / Kala Basti*
- Regulates Apana Vata
- Improves implantation milieu

### 2. *Uttara Basti*

- Administered intra-uterine
- Drugs: *Phala Ghrita, Shatavari Ghrita*
- Enhances endometrial receptivity

### 3. *Nasya*

- Acts via hypothalamo-pituitary axis
- Regulates ovulatory and implantation hormones

### B. *Shamana Aushadhi*

Drug	Action	Relevance
<i>Shatavari</i>	<i>Garbhasthapana</i>	Endometrial support
<i>Ashwagandha</i>	Adaptogenic	Stress reduction
<i>Guduchi</i>	Immunomodulator	Prevents rejection
<i>Lodhra</i>	Anti-inflammatory	Uterine health
<i>Phala Ghrita</i>	Fertility promoter	Implantation support

### C. *Rasayana* Therapy

- *Chyavanaprasha*
- *Ashwagandha Rasayana*
- *Shatavari Kalpa*

### D. Diet & Lifestyle (*Pathya*)

- Warm, nourishing foods
- Ghee, milk, sesame oil
- Avoid fasting, excessive exercise
- Adequate sleep and stress control

### 3.6 Contemporary Evidence

- *Shatavari* shows oestrogen-modulating effects [10]
- *Ashwagandha* reduces cortisol and improves implantation outcomes [11]
- *Uttara Basti* improves endometrial thickness [12]
- *Panchakarma* enhances uterine perfusion [13]

### 3.7 Integrative Ayurveda–ART Model

ART Limitation	Ayurvedic Support
Thin endometrium	<i>Rasayana, Ghrita</i>
Immune rejection	<i>Guduchi</i>
Stress	<i>Satvavajaya</i>
Recurrent failure	<i>Basti and Uttara Basti</i>

## 4. Discussion

Ayurveda addresses RIF holistically by correcting systemic imbalances rather than focusing solely on the embryo. *Vata Shamana* remains central, as implantation is a *Vata*-dependent process.

### Mechanisms of Action

- Improved uterine receptivity
- Hormonal balance
- Immunological tolerance
- Enhanced endometrial perfusion
- Psychological stabilization

### Clinical Significance

Integrating Ayurveda with ART may:

- Improve implantation rates
- Reduce cycle failures
- Enhance patient well-being
- Decrease emotional distress

## Limitations

- Lack of large RCTs
- Need for standardized protocols
- Individualized treatment challenges

## 5. Conclusion

Ayurveda offers a scientifically coherent and clinically relevant framework for managing Recurrent Implantation Failure by addressing uterine receptivity, hormonal balance, immune modulation, and psychosomatic health. Integrative approaches combining ART with evidence-based Ayurvedic interventions may significantly enhance implantation success and reproductive outcomes. Further well-designed clinical trials are warranted.

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