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Therapeutic Bloodletting in Ayurveda concept mechanism and clinical relevance.

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ABSTRACT

Raktamokshana, the traditional Ayurvedic method of eliminating vitiated blood, is described in major texts including the Sushruta Samhita, Charaka Samhita, and Ashtanga Hridaya. These works describe procedures such as siravedha, prachchana, jalauka, shringa, and alabu as methods to correct Rakta–Pitta vitiation by removing vitiated blood and reducing srotas obstruction. Modern studies highlight its physiological benefits, including reduced inflammatory load, improved microcirculation, dissipation of heat, and immune modulation, with leech therapy gaining biomedical acceptance. Evidence also suggests usefulness in skin diseases, arthritis, varicose veins, and venous congestion. Proper case selection and aseptic technique remain essential. Further standardized clinical studies are needed to validate its broader clinical application.

Keywords: *Raktamokshana, Bloodletting, Ayurveda, Siravedha, Jalauka, Rakta Dushti, Clinical relevance.*

INTRODUCTION

Ayurveda describes Raktamokshana as a para-surgical procedure designed to remove pathological blood, listed under Shodhana therapies of Panchakarma[1]. This therapy is recommended when Rakta becomes dushta and contributes to disease through srotas obstruction, inflammation, and heat[2]. Traditionally, Raktamokshana is indicated in disorders

involving Pitta–Rakta vitiation, inflammatory skin diseases, vatarakta, abscesses, and other conditions related to blood impurities[3].

METHODS

A narrative review was conducted using primary Ayurvedic texts—Sushruta Samhita, Charaka Samhita, and Ashtanga Hridaya—to extract conceptual foundations and procedural guidelines for Raktamokshana. Secondary commentaries were reviewed for clarification. Modern literature covering venesection, microcirculation, inflammatory physiology, and leech therapy was sourced from PubMed, Google Scholar, and AYUSH repositories. Both classical and biomedical perspectives were synthesized to present an integrative understanding.

RESULTS

3.1 Classical Ayurvedic Framework

3.1.1 Conceptual Basis

Raktamokshana aims to remove vitiated blood that has undergone qualitative alterations such as changes in color, viscosity, smell, and heat[10]. These abnormalities produce srotas obstruction and inflammatory manifestations. Its removal restores physiological balance.

3.1.2 Classical Categories of Methods

The Ayurvedic texts classify bloodletting techniques into two major categories[4]:

A. Shastra (Instrumental) Methods

- **Prachchana** – superficial scarification used for shallow vitiation[5]
- **Siravedha** – venesection of specific veins, considered the most effective method[6]

B. Ashastra (Non-instrumental) Methods

- **Jalauka avacarana** – application of medicinal leeches, ideal for delicate patients and
- Pitta-dominant disorders[7]
- **Shringa avacarana** – suction using horn instruments[8]
- **Alabu** – suction using gourd apparatus[9]

3.2 Classical Mechanisms

Ayurvedic mechanisms include:

- **Correction of Rakta Dushti** causing inflammation, discoloration, and congestion[10]

- **Removal of Ama** adhered to or circulating with vitiated blood[11]
- **Relief of Srotas obstruction** through evacuation[12]
- **Reduction of Pitta-Rakta heat** leading to symptomatic relief[13]
- **Seasonal indications and precautions** for safe therapy[14]

3.3 Biomedical Interpretation

Modern physiology offers mechanisms parallel to classical explanations:

- Removal of inflammatory mediators[15]
- Lowered hematocrit and blood viscosity, improving microcirculation[16]
- Reduction of venous pressure and stasis[17]
- Pharmacological effects of leech saliva (hirudin, bdellins, eglins) producing anticoagulant and anti-inflammatory actions[18]
- Local analgesic and anti-edematous effects[19]
- These mechanisms provide biological plausibility for the observed clinical outcomes of Raktamokshana.

3.4 Procedure and Technique

Proper Raktamokshana requires:

- **Assessment of patient strength, age, constitution, and season**[20]
- **Local preparation** including cleansing and use of tourniquets or ligatures[21]
- **Controlled incision or puncture depth** to avoid injury[22]
- **Post-procedure care**, including herbal washes, medicated oils, bandaging, blood- stopping measures, dietary regulation, and rest[23]

3.5 Clinical Applications and Evidence

3.5.1 Classical Indications

Raktamokshana is indicated for kustha, visarpa, vatarakta, vidradhi, arsha, shonita dushti, and other Rakta-related conditions[24].

3.5.2 Clinical Evidence

- Improvements reported in eczema, dermatitis, and inflammatory skin diseases[25]
- Relief in lumbar spondylosis symptoms with shringa avacarana[26]
- Symptomatic improvement in varicose veins through siravedha[27]

3.5.3 Preventive Role

Classical texts also recommend seasonal Raktamokshana to prevent dosha aggravation[28].

3.6 Contraindications and Safety

Raktamokshana should not be performed in severe anemia, pregnancy, extreme debility, or unsuitable seasonal conditions[29].

Anatomical knowledge and strict aseptic practice are essential to prevent complications such as excessive bleeding, infection, and syncope[30].

3.7 Challenges and Limitations

Major limitations include procedural variation across practitioners, lack of standardization, limited clinical trials, risk of complications, and difficulty translating Ayurvedic concepts into biomedical language[31].

3.8 Modern Integration

Potential modern applications include:

- Chronic inflammatory skin disorders[32]
- Venous congestion and varicose veins[33]
- Pain syndromes with compromised microcirculation
- Surgical contexts where leech therapy is already accepted in reconstructive surgery[34]

3.9 Integrated Mechanistic Model

A unified model suggests:

- Identification of pathological blood
- Removal of inflammatory or stagnant blood components
- Decreased systemic burden and viscosity
- Restored microvascular flow
- Reduced pain and edema via neuro-humoral effects[35]

DISCUSSION

Raktamokshana occupies a unique place in Ayurveda due to its surgical precision, detailed classical descriptions, and clear therapeutic goals. The anatomical and procedural accuracy

outlined in the Sushruta Samhita[36] indicates a sophisticated understanding of vascular structures. Ayurvedic explanations—removing dushta rakta, reducing Pitta-mediated heat, and opening obstructed srotas—resonate with modern observations related to hemodynamics, inflammatory physiology, and microcirculation[37].

Clinical observations demonstrate improvements in conditions characterized by inflammation, congestion, and stagnation[38]. However, the procedure carries inherent risks, requiring anatomical skill, asepsis, and proper technique[39]. Differences in practitioner methods and inadequate high-quality clinical trials remain significant barriers. Conceptual translation between Ayurveda and modern biomedicine also remains challenging[40].

Despite these challenges, Raktamokshana retains therapeutic value, especially in conditions involving microvascular congestion and inflammatory excess. Its low-resource nature and the established biomedical use of leeches strengthen its integrative relevance[41]. Future research must prioritize standard protocols, outcome measures, and robust clinical designs.

CONCLUSION

Raktamokshana is a mature and conceptually coherent Ayurvedic intervention supported by classical rationale and emerging biomedical evidence[42]. While promising across several clinical domains, higher-quality studies and procedural standardization are essential to enhance its acceptance in integrative medical practice.

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