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"RAKTAMOKSHANA (BLOODLETTING) IN AYURVEDA WITH EMPHASIS ON JALAUKAVACHARANA (LEECH THERAPY): A NARRATIVE REVIEW OF CONCEPTS AND EVIDENCE"

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ABSTRACT:
Background: Raktamokshana, or therapeutic bloodletting, is described in classical Ayurveda as a purificatory procedure, with Jalaukavacharana (leech therapy) being among its principal methods. **Objective:** To review the classical concepts of Raktamokshana and appraise the contemporary evidence, mainly on leech therapy. **Methods:** Narrative review based on a PubMed search and classical texts. **Findings:** In a randomized controlled trial of 51 patients with knee osteoarthritis, a single leech application reduced pain at day 7 more than four weeks of topical diclofenac, with benefits for function and stiffness persisting to the end of the study. Reviews describe more than twenty bioactive substances in leech saliva with analgesic, anti-inflammatory and anticoagulant functions. Case reports describe Jalaukavacharana as part of multimodal management of scalp psoriasis, diabetic foot ulcer and a chronic viper bite ulcer. **Conclusion:** Leech therapy has some supporting randomized evidence in knee osteoarthritis and a plausible biological basis. Evidence for other forms of Raktamokshana and for other indications is sparse, and safety reporting is limited.

KEYWORDS: Raktamokshana, Jalaukavacharana, Leech therapy, Siravyadha, Hirudotherapy, Ayurveda

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INTRODUCTION:

Raktamokshana is the removal of vitiated blood and is described in the Sushruta Samhita as an important therapy, notably in the chapters on Jalaukavacharaniya and Shonitavarniya (Sutrasthana 13 and 14).[1] Methods include Siravyadha (venepuncture), Pracchanna (scarification), Jalaukavacharana (leech application) and the use of horn or gourd for suction.[1] In the Sushruta Samhita, Raktamokshana is described as an important purificatory procedure, and in clinical practice it is often counted as an additional procedure alongside the five Panchakarma therapies.[1]

Leech therapy has an ancient history across many cultures, and its use reached a peak in nineteenth-century Europe before declining and later experiencing a renaissance in reconstructive microsurgery.[2] This review summarises the classical concepts and current evidence for Raktamokshana, concentrating on leech therapy where data are most available.

MATERIALS AND METHODS:

This narrative review was prepared using a structured but non-systematic literature search. PubMed was searched on 6 November 2026 using combinations of the terms Raktamokshana, Jalaukavacharana, Siravedha, Siravyadha, Pracchanna, leech therapy and hirudotherapy. Records were screened by title and abstract, and articles were retained when they described the procedure, its classical rationale, its safety, or clinical outcomes. Classical Ayurvedic texts (Charaka Samhita, Sushruta Samhita and Ashtanga Hridaya) were consulted for conceptual and procedural descriptions. The included studies were heterogeneous (case reports, uncontrolled pilot studies, randomized trials and trial protocols), so no formal risk-of-bias assessment or meta-analysis was undertaken and the findings are synthesised narratively. The review does not claim exhaustive coverage of the literature.

OBSERVATION AND RESULTS:

1. Classical Concepts

The Sushruta Samhita describes the indications, preparation of the patient and technique for Raktamokshana, as well as the selection, handling and care of leeches in the chapter on Jalaukavacharaniya.[1] The Shonitavarniya chapter describes the properties of blood and conditions of vitiation.[1] Ashtanga Hridaya also covers venepuncture (Siravyadha) in Sutrasthana 27.[3] In the classical understanding, removal of vitiated blood is used in conditions with localised accumulation of Pitta and Rakta, such as inflammatory, ulcerative and some painful conditions.[1,3]

2. Biological Basis of Leech Therapy

Medicinal leech therapy, also called hirudotherapy, has been studied for effects in inflammatory conditions, osteoarthritis and postoperative contexts.[4] A review reports that leeches secrete more than twenty identified bioactive substances, including antistasin, eglins, guamerin, hirudin, saratin and bdellins, and that these substances have analgesic, anti-inflammatory, platelet-inhibitory, anticoagulant and antimicrobial effects, among others.[4] The review also notes that the composition varies by species and that this variation requires evaluation.[4] These observations provide a plausible mechanistic basis but are not themselves clinical evidence.

3. Clinical Evidence

Knee osteoarthritis: In a randomized controlled trial, 51 patients with knee osteoarthritis received either a single treatment with four to six leeches (n = 24) or a 28-day regimen of topical diclofenac (n = 27).[5] Pain at day 7 fell from a mean of 53.5 to 19.3 with leech therapy, compared with a fall from 51.5 to 42.4 with diclofenac, a group difference of -23.9 (95% CI -32.8 to -15.1; $P < 0.001$).[5] Although the difference in pain scores was no longer significant after day 7, differences in function, stiffness and total symptoms remained significant in favour of leech therapy until the end of the study, and quality-of-life differences persisted until day 28.[5] The study was open-label, and the control treatment differed in nature from the intervention.

Skin conditions: A case report of scalp psoriasis described the use of weekly leech therapy for one month after Vamana, together with oral and topical medicines, with relief of itching, scaling and erythema and no adverse effects.[6]

Wounds and ulcers: In a case report, a 50-year-old man with a diabetic foot ulcer was managed with Jalaukavacharana, wound cleansing by Parisheka, wound-healing measures and Shamana therapy for three months, and the authors described improved healing assessed with the DMIST tool.[7] In a case report of a chronic non-healing viper bite ulcer in a patient with alcoholic liver cirrhosis, treatment with Vardhamana Pippali, Virechana, wound care and Jalaukavacharana was followed by progressive ulcer healing, complete healing at ten months and improvement of the Child-Pugh grade from C to A.[8] In

both reports leech therapy was part of a multimodal programme.

DISCUSSION:

Evidence for leech therapy is strongest in knee osteoarthritis, where a randomized trial showed short-term pain relief and longer-lasting benefits for function and stiffness relative to topical diclofenac.[5] The other clinical reports are case-level and multimodal, and they cannot show an independent effect of Raktamokshana.[6-8] Evidence on Siravyadha, Pracchanna and other forms of Raktamokshana was not found in the studies retrieved for this review, which represents a clear gap. Safety deserves attention because the procedure involves breaching the skin. Among the sources retrieved, only the psoriasis case report explicitly stated in its abstract that no adverse effects occurred, and the abstracts of the other sources did not describe structured monitoring of infection, prolonged bleeding or allergy.[6] Standardised protocols for the species and number of leeches, application sites, sterility and the handling of used leeches should be reported in future studies. Limitations of this review include its narrative design and single-database search.

CONCLUSION:

Raktamokshana is a classical therapy with a plausible biological rationale in the case of leech therapy. Randomized evidence is limited to knee osteoarthritis, and other reported benefits rest on case reports. Controlled studies of leech therapy in other conditions and of other Raktamokshana techniques, with systematic safety reporting, are needed.

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