

UPASHAYATMAKA EFFECT OF RAKTAMOKSHANA (SIRAVYADHA) IN SHONITADUSHTI / ESSENTIAL HYPERTENSION: A CLINICAL STUDY

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ABSTRACT

Background: Essential hypertension affects an estimated 188.3 million adults in India and is a leading non-communicable disease with significant cardiovascular morbidity. In Ayurveda, its clinical manifestations — Shiroruk, Klama, Bhrama, Tamodarshana, Krodhaprachurata, Akshiraga and Atidaurbalya — correspond closely to Shonitadushti, a Vata–Pitta pradhana Tridoshaja vikara with Rakta as the primary Dushya. Conventional pharmacotherapy carries well-known limitations, including side effects, polypharmacy, resistant hypertension and the need for lifelong medication. Acharya Charaka enumerates Raktamokshana as a principal line of treatment in Shonitadushti, warranting clinical evaluation of its antihypertensive efficacy. **Aim and Hypothesis:** To evaluate the Upashayatmaka (therapeutic-relief) effect of Siravyadha (therapeutic venesection) in patients presenting with

Shonitadushti / Grade 1 essential hypertension. H₀: Raktamokshana has no statistically significant Upashayatmaka effect on blood pressure. H₁: Raktamokshana has a statistically significant Upashayatmaka effect on blood pressure. **Methods:** A single-arm observational

clinical study was conducted at Alva's Ayurveda Medical College, Moodubidire, and other referrals. Twenty patients aged 35–70 years fulfilling diagnostic criteria for Grade 1 essential hypertension (SBP 140–159 mmHg; DBP 90–99 mmHg), with a minimum of three Shonitadushti lakshanas, were enrolled by simple random sampling. Siravyadha was performed on Day 0, withdrawing approximately 300 ml of blood from the saphenous vein following standardised Purvakarma (Snehana and Sthanika Nadi Sweda), Pradhanakarma and Pashchatkarma. Blood pressure and subjective parameters were assessed at baseline (Day 0), Day 8 and Day 16. **Results:** Most patients were male (80%), aged 35–45 years (55%), of Vata–Pitta prakriti (75%) with Vishama Agni predominant. Disturbed sleep (85%), mixed diet (75%), positive family history (55%) and Akala Bhojana (55%) were the leading Nidāa factors. All seven subjective parameters improved significantly ($p < 0.05$); six of seven reached $p < 0.01$. Mean systolic blood pressure fell progressively from 144.30 ± 4.59 mmHg (Day 0) to 132.60 ± 5.70 mmHg (Day 8) and 130.30 ± 5.77 mmHg (Day 16) — a net reduction of 14.00 mmHg (9.7%; $p < 0.001$). Mean diastolic blood pressure fell from 93.00 ± 3.20 to 82.60 ± 3.44 mmHg, a net reduction of 10.40 mmHg (11.2%; $p < 0.001$), a proportionally greater fall suggestive of a preferential effect on peripheral vascular resistance. **Conclusion:** Siravyadha produced a clinically relevant and statistically significant ($p < 0.001$) progressive reduction in both systolic (14 mmHg) and diastolic (10.4 mmHg) blood pressure over 16 days, with complete or near-complete resolution of Shonitadushti lakshanas. H_0 is rejected and H_1 accepted. Siravyadha shows significant potential as a non-pharmacological Ayurvedic intervention for Grade 1 essential hypertension; randomised controlled trials with larger samples and longer follow-up are recommended.

KEYWORDS: *Shonitadushti; Raktamokshana; Siravyadha; essential hypertension; Upashaya; venesection; blood pressure.*

1. INTRODUCTION

Lifestyle disorders are a major global health concern, and health patterns worldwide have shifted over recent decades from infectious to non-communicable disease.^[12] Among non-communicable diseases, hypertension is a leading contributor to the global burden of disease, and its incidence is rising notably in the Indian population.^[3] Although the exact aetiology remains unclear, hypertension is understood to be multifactorial, involving ecological, biological and genetic factors; because diagnosis is largely instrumental rather than clinical, it is often missed until complications arise. An estimated 188.3 million Indian adults aged 30–

79 years live with hypertension, a prevalence slightly below the global average of 31%.^[4] About 90% of all hypertensive patients have essential (primary) hypertension.^[5]

Powerful antihypertensive drug classes — beta-blockers, calcium-channel blockers and ACE inhibitors — have made control of hypertension straightforward in modern medicine, but cure remains elusive; most patients require lifelong treatment, often complicated by distressing side effects and high cost.^[6] This has renewed interest in cost-effective, holistic interventions of herbal and non-pharmacological origin, although the real potential of Ayurvedic medicine in hypertension care remains under-documented and its efficacy and safety warrant systematic evaluation.

Viewed through the Dosha–Dhatu–Mala framework, essential hypertension appears centred on Shonita Dhatu and the Tridosha. A distinct cluster of clinical features — Shiroruk (headache), Klama (easy fatigability), Bhrama (giddiness), Tamodarshana (flashes before the eyes), Krodhaprachurata (irritability/anger), Akshiraga (redness of the eyes) and Atidaurbalya (debility) — is recognised as Shonitadushti-janya and closely mirrors the clinical manifestation of hypertension.^[7] Ayurvedic scholars have proposed numerous corresponding terms for essential hypertension — including Raktagata Vata, Shiragata Vata, Avrita Vata, Dhamani Prapurnata, Rakta Vriddhi and Rakta Chapa — though none is universally adopted.^[8]

Acharya Charaka enumerates Virechana, Upavasa and Raktamokshana as the principal treatment protocol for Shonitadushti.^[9] Raktamokshana (bloodletting) is indicated wherever Rakta Dhatu is vitiated and is held to pacify the vitiated Tridosha simultaneously. Upashaya — one of the Vyadhi Gyana Upaya (diagnostic aids) — refers to symptomatic relief obtained through judicious Aushadha, Anna and Vihara, and provides a rational framework for evaluating therapeutic effect.^[10] Conventional pharmacotherapy for hypertension continues to be limited by side effects, resistant hypertension, withdrawal phenomena, polypharmacy and the need for lifelong medication.^[11]

Among the Shodhana procedures described for Rakta-vitiated disease, Siravyadha (therapeutic venesection) is considered particularly important. By expelling vitiated Rakta, relieving Srotorodha (channel obstruction), normalising Vata movement and improving circulation, it may plausibly benefit Shonitadushti associated with essential hypertension. Given the rising prevalence of hypertension and the limitations of long-term antihypertensive

therapy, the present study was undertaken to evaluate the therapeutic efficacy of Siravyadha in the management of essential hypertension from both Ayurvedic and biomedical perspectives.

1.1 Aim

To evaluate the Upashayatmaka effect of Raktamokshana (Siravyadha) in patients suffering from Shonitadushti / essential hypertension.

1.2 Objective

To evaluate the Upashayatmaka effect of Siravyadha in patients suffering from Shonitadushti / essential hypertension.

1.3 Hypotheses

H₀: There is no statistically significant Upashayatmaka effect of Raktamokshana on blood pressure.

H₁: There is a statistically significant Upashayatmaka effect of Raktamokshana on blood pressure.

2. MATERIALS AND METHODS

2.1 Study Design and Setting

A single-arm, single-blind observational clinical study was conducted on patients of Shonitadushti drawn from the outpatient and inpatient departments of Alva's Ayurveda Medical College, Moodubidire, and other referrals, selected without bias of social, economic or religious status. All classical Ayurvedic and modern literature, journals and websites pertaining to the disease, drugs and treatment were reviewed to inform the study design.

2.2 Sample Size

Sample size was estimated using Cochran's formula for proportions ($n = Z^2PQ/e^2$), with $Z = 1.96$ (95% confidence), prevalence $P = 30\%$, $Q = 70\%$ and allowable error $e = 20.49\%$, yielding a required and enrolled sample of $n = 20$.

2.3 Diagnostic, Inclusion and Exclusion Criteria

Patients with Grade 1 essential hypertension (Table 1) together with a minimum of three of the following Shonitadushti lakshanas — Shiroruk, Atidaurbalya, Krodhaprachurata, Tamodarshana, Bhrama, Klama and Akshiraga — were eligible.

Table 1: Blood pressure grading used for diagnosis and exclusion.

Grade	Systolic BP (mmHg)	Diastolic BP (mmHg)	Study status
Grade 1 (eligible)	140–159	90–99	Included
Grade 2	160–179	100–109	Excluded
Grade 3	≥180	≥110	Excluded

Inclusion criteria: age 35–70 years (Madhyama Vaya); either sex; Raktamokshana Arha (fit for venesection); newly diagnosed Grade 1 hypertension.

Exclusion criteria: Grade 2/3 or secondary hypertension; hypertension co-existing with diabetes mellitus, anaemia, renal disease or other systemic disease; known coagulation disorders; Raktamokshana Anarha (unfit for venesection).

2.4 Intervention — Siravyadha Procedure

Materials: Needle No. 18, gauze, tourniquet, sterile gloves (size 6), sterile cotton, cotton pads, surgical spirit, sterile bandage, measuring jar, and Murchita Tila Taila for Snehana with Patra Sweda.

Purvakarma: the procedure was explained and written consent obtained; Yavagu Pana (120 ml) was administered; Abhyanga with Murchita Tila Taila was applied to the lower limb followed by Sthanika Nadi/Patra Sweda.

Pradhanakarma: with the patient standing comfortably and supported, the site was cleaned with surgical spirit; a tourniquet was applied to render the vein prominent; a sterile No. 18 needle was introduced into the saphenous vein and blood was collected in a measuring jar until approximately 300 ml had been withdrawn.

Pashchatkarma: the needle was withdrawn, a sterile cotton pad applied and bandaged, and the patient rested in the supine position. Blood pressure was recorded immediately before and immediately after the procedure on Day 0 to capture the acute haemodynamic effect, in addition to the Day 8 and Day 16 follow-up assessments.

Study duration, including observation and follow-up, was 16 days. Routine haematological and biochemical investigations — complete blood count, random blood sugar, clotting time and bleeding time — were performed for all patients to exclude systemic contraindications prior to the procedure.

2.5 Assessment Criteria

Subjective parameters (graded severity of Shiroruk, Atidaurbalya, Krodhaprachurata, Bhrama, Tamodarshana, Klama and Akshiraga) and objective parameters (systolic and diastolic blood pressure) were recorded at baseline (Day 0), Day 8 and Day 16 using a structured proforma.

2.6 Statistical Analysis

Descriptive statistics (frequency, percentage, mean $\pm$ SD) summarised demographic and clinical characteristics. The Wilcoxon signed-rank test compared ordinal subjective-symptom scores between Day 0 and Day 16. The paired-samples t-test compared blood pressure between Day 0 and Day 8, and Day 0 and Day 16. A p-value < 0.05 was considered statistically significant.

3. RESULTS

3.1 Baseline Sociodemographic and Clinical Profile

All 20 enrolled patients completed the study. Table 2 summarises the sociodemographic and clinical (nidana) profile of the study population.

Table 2: Sociodemographic and clinical profile of study participants (n = 20).

Variable	Category	n	%
Age group (years)	35–45 / 46–55 / 56–65	11 / 4 / 5	55 / 20 / 25
Gender	Male / Female	16 / 4	80 / 20
Diet	Mixed / Vegetarian	15 / 5	75 / 25
Economic status	Middle / Lower / Poor	15 / 3 / 2	75 / 15 / 10
Family history of hypertension	Positive (any parent) / Nil	11 / 9	55 / 45
Dominant Rasa in diet	Lavana / Katu / Madhura / Amla	7 / 6 / 4 / 3	35 / 30 / 20 / 15
Ahara Vidhana (diet habit)	Akala Bhojana / Adhyashana / Kala Bhojana / Vishamashana	11 / 4 / 3 / 2	55 / 20 / 15 / 10
Sleep pattern	Disturbed / Sound / Delayed	17 / 2 / 1	85 / 10 / 5
Emotional status	Depressed or anxious / Normal / Nil	10 / 9 / 1	50 / 45 / 5
Prakriti	Vata–Pitta / Pitta–Kapha	15 / 5	75 / 25

Vishama Agni (irregular digestive capacity) and Madhyama Vyayama Shakti (moderate exercise tolerance) were the predominant Agni and exercise-capacity categories observed across the sample, consistent with the study's clinical profile of Shonitadushti.

3.2 Effect on Subjective (Shonitadushti) Parameters

All seven subjective parameters showed a reduction in mean severity score from Day 0 to Day 16; six of seven reached $p < 0.01$ on the Wilcoxon signed-rank test (Table 3).

Table 3: Wilcoxon signed-rank test — subjective parameters, Day 0 vs Day 16 (n = 20).

Parameter	Mean Day 0	Mean Day 16	Z value	p value	Interpretation
Shiroruk (headache)	1.10 ± 0.79	0.00 ± 0.00	−3.508	<0.001	Highly significant
Atidaurbalya (debility)	0.20 ± 0.52	0.05 ± 0.22	−1.134	0.257	Not significant
Krodhaprachurata (anger)	0.20 ± 0.41	0.00 ± 0.00	−2.000	0.046	Significant
Tamodarshana (visual flashes)	0.45 ± 0.51	0.00 ± 0.00	−3.000	0.003	Highly significant
Bhrama (giddiness)	0.75 ± 0.64	0.00 ± 0.00	−3.419	0.001	Highly significant
Klama (easy fatigability)	0.80 ± 0.78	0.00 ± 0.00	−3.176	0.001	Highly significant
Akshiraga (ocular redness)	0.30 ± 0.57	0.00 ± 0.00	−2.121	0.034	Significant

Percentage improvement was 100% for Shiroruk, Bhrama, Klama, Tamodarshana, Krodhaprachurata and Akshiraga, and 75% for Atidaurbalya, which alone did not reach statistical significance.

3.3 Effect on Objective Parameters — Blood Pressure

All 20 patients (100%) showed a reduction in both systolic and diastolic blood pressure from Day 0 to Day 16 (Table 4).

Table 4: Blood pressure at baseline, Day 8 and Day 16 (mean ± SD, mmHg).

Parameter	Day 0	Day 8	Day 16	Net reduction
Systolic BP	144.30 ± 4.59	132.60 ± 5.70	130.30 ± 5.77	14.00 mmHg (9.7%)
Diastolic BP	93.00 ± 3.20	85.40 ± 4.08	82.60 ± 3.44	10.40 mmHg (11.2%)

A paired-samples t-test confirmed the reduction in both parameters was highly statistically significant at both interim (Day 8) and final (Day 16) assessments (Table 5).

Table 5: Paired-samples t-test — blood pressure (n = 20, df = 19)

Comparison	Mean diff.	SD	t value	p value
SBP, Day 0 – Day 8	11.70	5.37	9.759	<0.001
SBP, Day 0 – Day 16	14.00	5.39	11.616	<0.001
DBP, Day 0 – Day 8	7.60	5.46	6.234	<0.001
DBP, Day 0 – Day 16	10.40	4.84	9.613	<0.001

Both systolic and diastolic blood pressure fell progressively and significantly ($p < 0.001$) across the 16-day observation period; the null hypothesis (H_0) is rejected in favour of H_1 . The proportionally greater reduction in diastolic BP (11.2%) relative to systolic BP (9.7%) suggests a preferential effect of Siravyadha on peripheral vascular resistance.

4. DISCUSSION

Acharya Vagbhata states that when vitiated blood pervades the entire body, Siravyadha becomes the treatment of choice (Ashtanga Hridaya, Sutrasthana 26/53–55) — a classical proclamation reflected in the present study's findings. The present study evaluated Siravyadha as a non-pharmacological Upashayatmaka intervention for essential hypertension (Shonitadushti), assessing both subjective (Ayurvedic) and objective (biomedical) parameters. Phlebotomy, recognised in modern practice for reducing blood volume and peripheral resistance, offers a relevant conceptual parallel to Siravyadha, and the present findings support its role as a cost-effective, accessible option for hypertension management, particularly for economically diverse populations.

4.1 Sociodemographic Correlates

The predominance of the 35–45-year age group (55%) suggests essential hypertension is increasingly affecting younger and middle-aged adults, plausibly reflecting lifestyle change, mental stress and occupational strain. Male predominance (80%) is consistent with the general epidemiological observation that men have higher baseline renin and angiotensin II levels than pre-menopausal women. The high rate of positive family history (55%) is compatible with both the classical Ayurvedic concept of Beeja Dosha (hereditary predisposition) and the modern estimate that heritability accounts for 30–50% of essential hypertension risk. Predominant Lavana and Katu rasa in the diet, Akala Bhojana (irregular meal timing), disturbed sleep (85%) and psychological distress (50%) were prominent nidana, consistent with their classical roles in Agnimandya, Dosha Vaishmya and Rakta Dushti, and with the modern understanding of sympathetic overactivity as a driver of elevated blood pressure. The predominance of Vata–Pitta Prakriti (75%) among participants is consistent with the classical characterisation of Shonitadushti as a Vata–Pitta pradhana disorder.

4.2 Effect on Subjective Parameters

By draining stagnant vitiated Rakta, Siravyadha restores the Chala guna of Vata and corrects Vyana Vayu, relieving Shiroruk; it decompresses Pitta-vitiated peripheral vessels, directly lowering the venous and cerebral arteriolar congestion that manifests as headache and Bhrama. Reduced Rakta viscosity and relief of Srotoavarodha similarly explain the resolution of Tamodarshana, Klama (restoration of Vyana Vata's rhythmic circulation and reduced sympathetic overdrive), Krodhaprachurata and Akshiraga. Atidaurbalya showed the smallest and only non-significant change, consistent with fatigue being a multifactorial symptom less

directly tied to acute haemodynamic correction within the 16-day window.

4.3 Effect on Objective Parameters

Withdrawal of approximately 300 ml of blood reduces circulating blood volume and venous return, lowering ventricular preload and, via the Frank–Starling mechanism, stroke volume and cardiac output — a plausible explanation for the progressive fall in systolic blood pressure. In Ayurvedic terms, this corresponds to correction of the Shighra Gama and Askandi (fast-moving, non-static) qualities that Vata-Dushita Rakta imparts to the circulation. The reduction in diastolic blood pressure is attributable to decreased blood viscosity and vasodilatation lowering peripheral vascular resistance, corresponding to the pacification of Pitta-mediated functional vasoconstriction. That the percentage reduction in diastolic BP (11.2%) exceeded that in systolic BP (9.7%) suggests Siravyadha may act preferentially on peripheral Srotas obstruction, consistent with its classical description as Rakta Dushti Hara.

4.4 Integration of Findings

Essential hypertension, viewed through the Prasara Avastha of Vyana Vata, Prana Vata, Sadhaka Pitta and Avalambaka Kapha together with disturbed Rakta, is addressed by Siravyadha through four convergent actions: removal of Dushta Rakta (Rakta Gaurava Hara), relief of peripheral Srotas obstruction, pacification of aggravated Pitta and Vyana Vayu, and stimulation of Rakta Dhatu regeneration. The classical dictum ‘Siravyadham Ardha Chikitsa Shalyatantre Prakirtitah’ — that venesection constitutes half of all surgical treatment — is thus supported in the context of this Rakta–Pitta pradhana condition, with the sustained improvement through Day 16 pointing to a durable vasomotor recalibration rather than a transient haemodynamic effect alone.

4.5 Limitations

- Siravyadha was technically more difficult in some patients — for example, those who were obese or had poorly visible veins — which may have influenced procedural consistency.
- Diet, lifestyle and patient compliance could not be fully controlled throughout the 16-day study period.
- The single-arm, uncontrolled design and modest sample size ($n = 20$) limit causal inference and generalisability.

5. CONCLUSION

Shonitadushti is a Vata–Pitta pradhana Tridoshaja Vyadhi in which Rasa-Rakta is the principal Dushya, and its cardinal symptoms — Shiroruk, Klama, Bhrama, Krodhaprachurata, Tamodarshana, Atidaurbalya and Akshiraga — correspond closely to the clinical manifestations of essential hypertension. In this single-arm clinical study, Siravyadha produced a statistically significant ($p < 0.001$, paired t-test), progressive reduction in both systolic (14.0 mmHg, 9.7%) and diastolic (10.4 mmHg, 11.2%) blood pressure over 16 days, together with significant improvement in six of seven Shonitadushti lakshanas. The null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) — that Raktamokshana has a statistically significant Upashayatmaka effect on blood pressure — is accepted. These findings position Siravyadha as a promising non-pharmacological Ayurvedic intervention for Grade 1 essential hypertension. Randomised controlled trials with parallel control groups, larger sample sizes and follow-up extended to 3–6 months are recommended, along with comparative evaluation of Siravyadha alone versus Siravyadha combined with Shamana Chikitsa.

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