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KATI BASTI WITH BALA TAILA VERSUS BALA MOOLA KASHAYA IN GRIDHRASI (SCIATICA): A RANDOMIZED COMPARATIVE CLINICAL STUDY

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ABSTRACT

In this randomized comparative study of 30 patients with Gridhrasi (sciatica), seven days of Kati Basti with either Bala Taila or Bala Moola Kashaya produced significant improvement on all ten outcome measures, with no adverse events. **Background:** Gridhrasi, described in Ayurveda as a Vatavyadhi with pain radiating from the lumbar and gluteal region down the leg, closely resembles sciatica. Analgesics and muscle relaxants give temporary relief, and recurrence is common. Kati Basti, in which warm medicated liquid is retained over the lumbosacral region, is widely used for such conditions, but the choice of medium has rarely been compared. **Objective:** To compare the effect of Kati Basti with Bala Taila (medicated oil) and with Bala Moola Kashaya (decoction of Sida cordifolia root) in Gridhrasi. **Methods:** Thirty patients aged 18 to 70 years were randomly allocated to two groups of 15 and treated with Kati Basti for 30 minutes daily for 7 days. Outcomes were seven Ayurvedic symptom scores (Stambha, Ruk, Toda, Spandana, Aruchi, Gaurava, Tandra), the Greenough and Fraser functional score, the PainDETECT score and a Numerical Rating Scale for pain. Results were analysed with paired and unpaired t-tests and the Wilcoxon and Mann-Whitney tests. **Results:** Both groups improved significantly on every measure ($p < 0.001$). PainDETECT scores fell by 47.75% with Kashaya and 50.70% with Taila, and the groups did not differ ($p = 0.174$). Functional scores rose from 29.9 to 57.2 with Kashaya and from 36.8 to 58.7 with Taila, with no difference after treatment ($p = 0.405$). Kashaya gave better stiffness and twitching scores;

Taila gave better scores for pain, appetite, heaviness and drowsiness, though the groups differed at baseline in Prakriti and Kapha-related symptoms. Taila was also easier to administer because it retained heat longer. **Conclusion:** Kati Basti with either Bala Taila or Bala Moola Kashaya is a safe and effective short-course option for Gridhrasi. Neither medium was clearly superior overall; the findings suggest matching the medium to the patient's Prakriti, which needs confirmation in larger, baseline-balanced trials.

KEYWORDS: Gridhrasi; sciatica; Kati Basti; Bala Taila; Bala Moola Kashaya; Vatavyadhi; Panchakarma.

1. INTRODUCTION

Long hours at a desk, repetitive industrial work, heavy lifting and daily commuting all put steady strain on the lumbar spine, and sciatica is one of the commonest results. Low back pain touches an estimated 80 to 90 percent of people at some point in life, and the subset with true radiating sciatic pain is smaller but more disabling. It most often appears between 30 and 50 years of age, tends to recur, and costs working adults both income and quality of life.[1] Standard care relies on non-steroidal anti-inflammatory drugs, analgesics and muscle relaxants. These often relieve symptoms for a time, but they rarely settle the problem for good, and long-term use carries its own risks.

Ayurveda describes a closely matching condition, Gridhrasi, one of the Nanatmaja Vatavyadhis, the disorders caused by Vata alone. Charaka lists stiffness (Stambha), pain (Ruk), pricking (Toda) and twitching (Spandana) that begin in the gluteal and lumbar region and travel down the back of the thigh, knee, calf and foot.[2] Sushruta explains it through the two Kandaras of the lower limb, whose involvement restricts movement and extension of the leg.[3] In some patients Kapha is also involved, adding heaviness (Gaurava), drowsiness (Tandra) and loss of appetite (Aruchi).[4]

Because the lumbar region (Kati Pradesha) is regarded as a principal seat of Vata, treatment aims to pacify Vata, and Snehana (oleation) with Swedana (sudation) forms the classical backbone of that approach.[5] Kati Basti is the local version of this idea. Warm medicated liquid is held over the lower back inside a ring of black gram dough, delivering oleation and heat to the same area. The classical Brihatrayi do not describe it, yet it became one of the most widely used Panchakarma procedures for lumbar and sciatic complaints during the twentieth century.

The liquid used matters in theory. Kati Basti with Bala Taila is a Snehayukta Sweda: oily, warm, nourishing and Vata-pacifying. With Bala Moola Kashaya it becomes a Drava Sweda that is drier (Rooksha) in quality and suited to Kapha-associated Vata disorders. Both preparations draw on Bala (Sida cordifolia), classically valued as Vatahara, Balya, Brimhana and Vedanasthapana.[6] Yet comparative clinical evidence on the two media is limited.

This study therefore compared Kati Basti with Bala Taila against Kati Basti with Bala Moola Kashaya in patients with Gridhrasi, using Ayurvedic symptom scores alongside validated pain and function scales.

2. MATERIALS AND METHODS

2.1 Study design and setting

This was a randomized, open-label, parallel-group comparative clinical study. Patients were recruited from the outpatient and inpatient departments of the SDM Ayurveda Hospital, Kuthpady, Udupi. The protocol was approved by the Institutional Ethics Committee, and every participant gave written informed consent. Sample size was calculated for a 5% significance level and 80% power, assuming a clinically meaningful difference of one point in mean pain-score change (standard deviation 1). That gave 15 patients per group, or 30 in total.

2.2 Participants

Patients aged 18 to 70 years with radiating pain to one or both lower limbs were eligible if they met the Ayurvedic criteria for Gridhrasi (Ruk, Toda, Stambha, Spandana, with or without Tandra, Gaurava and Aruchi) and the clinical features of sciatica, including a positive straight leg raising test. Sciatica associated with lumbar spondylosis or intervertebral disc prolapse was included. Patients were excluded for congenital, traumatic, infective, neoplastic or post-surgical conditions of the lumbar spine, pregnancy, severe systemic illness, or unfitness for Kati Basti.

2.3 Randomization and interventions

Participants were allocated by block randomization to two groups of 15. Both groups received Kati Basti for 30 minutes daily on seven consecutive days.

- **Taila group:** warm Bala Taila, prepared to Ayurvedic Formulary of India standards at the SDM Ayurveda Pharmacy.

- **Kashaya group:** warm Bala Moola Kashaya, freshly prepared in the Panchakarma unit by boiling Bala Moola Kwatha Choorna with 16 parts of water, reduced to one-eighth, and filtered.

The procedure followed the usual three stages. In Poorva Karma, the patient was assessed for fitness, advised light food, and positioned prone with the lumbosacral area exposed and examined for skin lesions or tenderness. In Pradhana Karma, a ring of black gram dough about 8 to 10 cm across and 5 to 6 cm high was fixed over the lumbosacral region, and the warm liquid was poured in and kept at a steady, tolerable temperature by intermittent reheating. In Paschat Karma, the liquid and ring were removed, the area was gently massaged, and the patient was advised to avoid cold exposure and strenuous activity. A seven-day follow-up period without treatment was planned after the course.

2.4 Outcome measures

Assessments were made before and after treatment.

Table 1: Outcome measures.

Measure	What it captures	Scoring
Stambha, Toda, Spandana, Gaurava, Tandra, Aruchi	Stiffness, pricking pain, twitching, heaviness, drowsiness, loss of appetite	0 (absent) to 3 (severe)
Ruk	Pain judged by walking ability	0 (no pain) to 4 (unable to walk)
Greenough and Fraser score	Function and daily activity in low back pain	Higher score = better function
PainDETECT score	Neuropathic quality of pain	Higher score = more neuropathic pain
Numerical Rating Scale (NRS)	Pain intensity	0 to 10

Straight leg raising, Lasègue's sign, the bowstring sign and Schober's test were used in the clinical examination, along with routine blood tests and lumbosacral X-ray (MRI where needed).

2.5 Statistical analysis

Within-group change was tested with the paired t-test and the Wilcoxon signed-rank test. Between-group differences were tested with the unpaired t-test and the Mann-Whitney U test. A p-value below 0.05 was taken as significant.

3. RESULTS

All 30 patients completed the seven-day course, and both groups improved significantly on all ten measures. The groups were similar in sex and chronicity but differed in age profile and Prakriti, so between-group results need to be read with that in mind.

3.1 Baseline profile

Men made up 80% of each group. The most common age band was 40 to 50 years in the Kashaya group and 50 to 60 years in the Taila group. Half of all patients had chronic disease, and about two-thirds had pain radiating to both legs. The clearest imbalance was constitutional: 14 of 15 Kashaya patients had a Vata-Kapha Prakriti, while all 15 Taila patients were of Vata Prakriti.

Table 2: Baseline characteristics.

Characteristic	Kashaya group (n = 15)	Taila group (n = 15)
Male	12 (80%)	12 (80%)
Most common age band	40–50 years (26.7%)	50–60 years (46.7%)
Chronic onset	8 (53.3%)	7 (46.7%)
Pain in both lower limbs	10 (66.7%)	9 (60.0%)
History of diabetes	0	4 (26.7%)
Prakriti	Vata-Kapha 14, Vata-Pitta 1	Vata 15
Vikrita Dosha	Vata-Kapha 9, Vata 6	Vata 15

3.2 Effect within each group

Every measure improved significantly from baseline in both groups (paired t-test and Wilcoxon test, $p < 0.001$ throughout). The Wilcoxon results indicate that no patient worsened on any measure. Values are group means, with percentage change in brackets.

Table 3: Within-group change (all $p < 0.001$).

Measure	Kashaya: before → after	Taila: before → after
Stambha	2.20 → 0.20 (90.9%)	3.00 → 0.67 (77.8%)
Ruk	3.20 → 1.20 (62.5%)	2.93 → 0.60 (79.6%)
Toda	2.20 → 0.20 (90.9%)	2.53 → 0.53 (79.0%)
Spandana	1.20 → 0.00 (100%)	2.00 → 0.47 (76.7%)
Aruchi	1.73 → 0.73 (57.7%)	1.07 → 0.07 (93.8%)
Gaurava	2.47 → 1.20 (51.4%)	1.00 → 0.00 (100%)
Tandra	1.67 → 0.27 (84.0%)	1.00 → 0.00 (100%)
Greenough and Fraser score (higher is better)	29.87 → 57.20 (+91.5%)	36.80 → 58.73 (+59.6%)
PainDETECT score	14.80 → 7.73 (47.8%)	14.33 → 7.07 (50.7%)
NRS pain (0–10)	7.47 → 3.80 (49.1%)	7.13 → 3.13 (56.1%)

3.3 Comparison between groups

After treatment, the two groups did not differ in neuropathic pain or in functional recovery. They did differ on several Ayurvedic symptom scores, and in most of those the group with the better final score had also started milder.

Table 4: Post-treatment comparison between groups.

Measure	After treatment: Kashaya vs Taila	p (unpaired t-test)	Baseline groups different?	Reading
PainDETECT	7.73 vs 7.07	0.174	No	Equivalent
Greenough and Fraser	57.20 vs 58.73	0.405	Yes, Kashaya worse	Equivalent outcome
Toda	0.20 vs 0.53	0.062	No	Equivalent
NRS pain	3.80 vs 3.13	< 0.05	No	Taila slightly lower (0.67 points)
Stambha	0.20 vs 0.67	< 0.01	Yes, Kashaya milder	Kashaya lower
Spandana	0.00 vs 0.47	< 0.01	Yes, Kashaya milder	Kashaya lower
Ruk	1.20 vs 0.60	< 0.01	Yes, Taila milder	Taila lower
Aruchi	0.73 vs 0.07	< 0.001	Yes, Kashaya higher	Taila lower
Gaurava	1.20 vs 0.00	< 0.001	Yes, Kashaya higher	Taila lower
Tandra	0.27 vs 0.00	< 0.05	Yes, Kashaya higher	Taila lower

The Mann-Whitney test agreed with the t-test on these comparisons.

3.4 Safety and practicality

No adverse events were reported in either group. Practically, Bala Taila held its heat for longer, so the therapist reheated less often and the session ran more smoothly. The Kashaya lost heat faster and needed frequent reheating to stay at a therapeutic temperature.

4. DISCUSSION

Kati Basti worked with either medium, and the more interesting question is how the two differ. Both groups improved on every symptom and scale after only seven sessions, which fits the classical view that Gridhrasi, a Vata disorder of the lumbosacral region, responds to Snehana and Swedana applied locally.

4.1 What the two media have in common

The neuropathic component of the pain responded equally well to both. PainDETECT scores,

which pick up burning, shooting and electric-shock qualities typical of nerve-root irritation, fell by about half in each group, with no difference between them. Toda, the pricking sensation, behaved the same way. This suggests that much of the benefit comes from the procedure itself, namely sustained warmth and oleation over the affected segment, and not from which preparation of Bala is used.

Functional recovery was also equivalent. The Kashaya group began with a clearly worse Greenough and Fraser score (about 30 against 37) and finished at the same level as the Taila group (about 57 against 59). Patients with greater disability at the outset therefore appeared to gain at least as much from the decoction, in line with Bala's classical Balya and Brimhana actions.

4.2 Where they differ, and why that is hard to read

Several post-treatment differences appeared, but most were tangled up with differences at baseline. The Kashaya group ended with lower stiffness and twitching scores, yet it had also started with milder scores on both. The Taila group ended with lower scores for Ruk, Aruchi, Gaurava and Tandra. The Kapha-related symptoms (Aruchi, Gaurava, Tandra) were markedly worse at baseline in the Kashaya group, which was predominantly Vata-Kapha in Prakriti. Seven days may simply be too short to clear heaviness and drowsiness in such patients, and a longer course or added Kapha-reducing measures may be needed.

The one pain comparison with matched baselines was the Numerical Rating Scale. Taila finished lower by 0.67 points on a 10-point scale, a small difference whose clinical importance is uncertain given that both groups improved by roughly half.

One reading, which this study can suggest but not prove, is that Bala Taila suits Vata-predominant, pain-dominant Gridhrasi because its warm, unctuous, penetrating qualities act directly against Vata. Bala Moola Kashaya, as a Drava Sweda with a drier quality, may be better matched to Vata-Kapha presentations with stiffness, twitching and greater functional loss. A trial that stratifies patients by Prakriti would be needed to test this.

4.3 Probable mode of action

Warmth increases local blood flow to the lumbosacral muscles, discs and nerve roots, which may help clear inflammatory mediators such as prostaglandins, bradykinin, cytokines and substance P that keep nociceptors sensitized. Heat also raises skin permeability, which would

favour absorption of the lipid-soluble constituents of Bala Taila; the Ayurvedic idea of Sneha as a carrier (Yogavahi) parallels the role of oil as a permeation enhancer. Bala Moola Kashaya adds water-soluble phytochemicals with possible anti-inflammatory effects. Warmth on the skin may also dampen pain signalling through the gate-control mechanism and descending inhibitory pathways. These mechanisms are proposed rather than measured here.

4.4 Practical considerations

The oil held its temperature longer, so Kati Basti with Bala Taila needed less reheating and less handling. For busy clinics, that makes it the easier option to deliver.

5. Limitations and Future Directions

The findings are encouraging but come from a small trial, and the comparison between media is the weakest part of the evidence.

- **Sample and design.** Thirty patients at one centre, open-label, with no no-treatment or placebo arm. Some improvement may reflect natural recovery, expectation or concurrent rest.
- **Baseline imbalance.** Despite randomization, the groups differed in Prakriti, age profile, history of diabetes and several symptom scores. Post-treatment scores were compared directly; an analysis of change from baseline, or one adjusted for baseline, would be more reliable.
- **Many outcomes, many tests.** Ten outcomes and four tests were used without correction for multiple comparisons, and the Ayurvedic symptom scores are ordinal scales on a small sample.
- **Short horizon.** Outcomes are reported at the end of the seven-day course. Whether relief lasts, and whether recurrence is reduced, remains unknown.
- **Objective signs not reported.** Straight leg raising and related clinical tests were part of the examination but are not analysed here.

Larger multicentre trials with blinded assessment, stratification by Prakriti, a longer course for Kapha-predominant patients, and follow-up of several months would show whether the pattern seen here holds.

6. CONCLUSION

Seven days of Kati Basti with either Bala Taila or Bala Moola Kashaya significantly reduced pain, stiffness, heaviness and disability in 30 patients with Gridhrasi, and no adverse events

occurred. Neuropathic pain relief and functional recovery were equivalent in the two groups. The remaining differences were small and largely tied to baseline differences in Prakriti and Kapha-related symptoms, so neither medium can be called superior overall. Bala Taila was easier to administer because it retained heat longer. The data support offering Kati Basti as a safe, low-cost, short-course option for sciatica, and they justify a larger, Prakriti-stratified trial to test whether the choice of medium should follow the patient's constitution.

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