

## ORA- Clinical Research



### Comparative study of *Nitya Virechana* and Modified *Vaitarana Basti* in *Vatakaphaja Gridhrasi (Vata-Kapha Sciatica)*: A Randomized Clinical Trial

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#### ABSTRACT:

**Background:** The presentation resembling *Gridhrasi* (Sciatica) may be observed under *Gudagatavata* (vitiating *Vata* in Rectum), *Pakwashayagatavata* (vitiating *Vata* in large intestine) explained by Charaka. *Gridhrasi* is *Krucchasyadya* (difficult to treat), *VataVyadhi* (Diseases of morbid *Vata*). *Shodhana* (Purificatory therapy)- *Mridu-Virechana* (mild purgation), *Basti* (therapeutic enema) is effective according to *Dosha-avastha* (according to dosha involvement), *Avarana* (pathological obstruction of *Vata Dosh*a by other *Dosha*, *Dhatu*, *Mala*). *Udavartaharakikitsa* (treatment of *Udavarta* (upward or backward or reverse movement of *Vata Dosh*a)): *Vaitarana-Basti* (therapeutic enema), *Snigdha-Virechana* (therapeutic purgation) are effective.

**Objectives:** Efficacy of *Nitya-Virechana* (NV) over Modified *Vaitarana-Basti* (MVB) in *Vata-Kaphaja Gridhrasi* w.r.t Sciatica. **Methods-** 40 subjects randomized into 2 groups A, B, 20 in each, received NV and MVB for 5 days respectively. **Results-** Based on statistical results, MVB was significant in-*Stambha*(stiffness), *Ruk*(pain), *Muhuspandana*(tingling), *Ekanga Gouravata* (localized heaviness), NV was significant in- Tenderness, Straight Leg Raise test (SLRT), Walking time test, *Toda* (pricking pain), *Gruhnate*(catching), *Tandra*(heaviness), *Aruchi*(anorexia), *Sarvanga Gouravata* ((full body heaviness). **Conclusion-** NV was effective in correcting the etiopathogenesis of *Vata-Kaphaja Gridhrasi* with respect to w. r.t Central Canal Stenosis. With respect to severity Assessment index of Sciatica, MVB was significant in correcting the etiopathogenesis of *Vatakaphaja Gridhrasi* w.r.t Sciatica due to Exit nerve foraminal stenosis.

**KEYWORDS:** *Vata-Kaphaja Gridhrasi*, Sciatica, Modified *Vaitarana-basti*, *Nitya-Virechana*, Exit nerve foraminal stenosis, Central canal stenosis.

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## 1. INTRODUCTION

Sciatica, characterized by pain radiating down the leg from back, referred to as sciatic neuritis, sciatic neuralgia, lumbar radiculopathy, affects 5%–10% of those suffering with low back pain and 2.2% of people annually. [1] Prevalence is 11.6 cases per 1,000 person/year, frequent in working population, men with age group of 25–64 years. [2] Starting from *Kati* (waist), *Sphik* (buttock), progressively spread to posterior aspect of *Uru* (thigh), *Janu* (knee), *Jangha* (calf), *Pada* (foot). According to Acharya Susruta, when two *Kandara* in the leg are affected by *Vata*, the limb's ability to extend is restricted, leading to *Gridhrasi* (Sciatica). *Ruk* (pain), *Toda* (pricking sensation), *Muhuspandan* (tingling), *Stambha* (stiffness) are the symptoms. *Tandra*, *Gaurava* (heaviness), *Arochaka* are elements of the *Vata-Kaphaja Gridhrasi*, [1] similar to *Gudasthitavata* (*Vata* residing in Rectum), *Pakwashayagatavata* (*Vata* residing in Lowerabdomen), as per Charaka. [3] As per the involvement of *Vata* or *Vata-Kapha*, treatment includes *Siravyadha* (bloodletting therapy), *Niruha-basti* (medicated decoction enema), *Anuvasana- basti* (medicated oil enema), *Virechana* (therapeutic purgation), *Agni-karma* (heat therapy), *Snigdhasweda* (oily fomentation). [4] “*Katishooleshu Sarveshu* (low back pain and all kind of pain) *TailamEranda* (medicated castor oil) *Sambhavam* (useful)”, *Snigdhavirechana* is effective in *Pakwashayagatavata*. [5]

**Objectives:** To compare the efficacy of *NV* and *MVB* on Parameters Pain, Tenderness, Paraesthesia, Autonomic

bladder, Schober’s test, SLRT, Walking time test, Weakness and Function disability scale.

## 2. METHODS

Study Design –Open-Label, Interventional, Comparative, Prospective Randomized Controlled Clinical Trial. It is a equivalence trial with Allocation ration 1:1(20 subjects in each group).

Source of Data:

Literary Source: All the information about the concerned topic collected from Ayurvedic literature, Modern books, Journals, websites about the disease and the Medicine was reviewed and documented for the planned study.

Drug Source: Raw drugs required were collected from the GMP approved pharmacy.

Drug deposition to MRC. CRF, all the study related documents were Submitted to MRC. The Clinical trial started with permission from MRC. Informed consent taken from each subject. Randomization done into 2 groups, 20 subjects in each. Group A: *NV*, Group B: *MVB* Assessment parameters of Sciatica and *Vata-Kaphaja Gridhrasi* enclosed in Table 1 and Table 2- Pain, [6,7] Tenderness, [8] Paraesthesia, [9] Autonomic bladder, [10] Schober’s test, [8,11] SLRT, [12,13] Walking-time test, [8] Power/Weakness, [14] Function disability. [15] *Stambha*, *Ruk*, *Gruhnate*, *Muhuspandana*, *Toda*, *Tandra*, *Aruchi*, *Sarvanga Gouravata*, *Ekanga Gouravata* [16] respectively.

Patients were selected from OPD and IPD of KLE Ayurveda Hospital, Shahpur, Belagavi, Karnataka, India.

**Table 1: Assessment Criteria of Sciatica based on Severity Index**

	Mild	Moderate	Severe
Pain-, VAS Scale/ Oxford Pain Scale	Intermittent / Occasional Pain type No/Mild Pain, Walking Without Limping Score-1	Occasionally, Pain on Exertion/Heavy Lifting/Sitting etc. Painful but Walks Without Support Score-2	Continuous Pain, Unable Perform Daily Activities, Painful and Can Only Walk with Support/Cannot Walk Due to Pain Score-3(VAS More Than 7) *
Tingling, Numbness Paraesthesia	No Tingling /Numbness No Paraesthesia	Occasionally Present/Unilateral Limb. Paraesthesia on Exertion, Climbing Stair Case	Continuous Tingling and Weakness / Bilateral Lower Limbs Paraesthesia in Resting Posture
Weakness in Lower Limbs/ Power	No Weakness Power-5	Mild Weakness/Unilateral Limb Weakness. Power-4	Severe Weakness in Both Limbs Power-3(2-0) *
Bladder, Bowel Uncontrol	No Loss of Bladder Control nor Bowel Control	Perineal Area Numbness And Tingling Sensation	Autonomic /Neurogenic Bladder /Bowel*
Disability/ Functional Disability	0-20% 0-3	21-40% 4-6	41-60% And 61-100%* 7-8
Tenderness Score	1	2	3 And 4*
SLRT (Active)	71-90 Degrees	51-70 Degrees	31-50 Degree (Less Than 30) *
Schober's Test	Grade 1	Grade 2	Grade 3
Walking Time Test	Assessment According Duration and Distance		

VAS- Visual Analogue Scale, SLRT- Straight Leg Raise test, \*- indicates the red flag sign

**Table 2: Assessment of Vata-Kaphaja Gridhrasi Lakshana**

Grading of Vataja Gridhrasi and Vata-Kaphaja Gridhrasi	
<p>1. <i>Stambha</i> (Rigidity)</p> <p>No rigidity -0</p> <p>Mild rigidity -1: mild stiffness over low back</p> <p>Moderate rigidity -2: stiffness over back, thigh, knee</p> <p>Severe rigidity -3: stiffness over back, thigh, knee, foot</p>	<p>5. <i>Gouravata</i> (Heaviness):</p> <p>a). <i>Ekanga Gouravata</i> (heaviness of affected limb) no heaviness-0</p> <p>intermittent heaviness yet provides regular duties, thigh heaviness (anterolateral aspect region)-1</p> <p>Persistent heaviness but continues routine work, heaviness in thigh (anterolateral and medial aspect)-2</p> <p>prolonged heaviness that interferes with daily tasks, heaviness of thigh and calf region-3</p> <p>unable to perform daily tasks because of heaviness, heaviness all over affected lower limb-4</p>

<p><b>2.Ruk (Pain) : No pain -0</b> Minimal pain -1: low back ache (L4-L5, paraspinal region) Moderate pain -2: pain in low back radiating till thigh (anterolateral aspect) Severe pain-3: low back ache that radiates to thigh, calf till foot.</p>	<p><b>5b) Gouravata (heaviness of entire body)</b> No heaviness-0 intermittent heaviness yet provides regular duties, 1 chronic heaviness yet endures routine work, -2 prolonged heaviness which hampers usual work routine work, -3 unable to perform daily tasks because of heaviness, -4</p>
<p><b>3.Toda (Pricking pain)</b> no piercing pain-0 mild-1: mild piercing pain in low back region, patient is able to do daily activities without discomfort. Moderate -2: pricking pain from low back to thigh region, patient can do daily activities with mild discomfort Severe -3: pricking pain from low back till foot, where patient is unable to do daily activities.</p>	<p><b>6.Muhuspandana (Twitching)</b> no twitching-0 Minimal twitching over low back region -1 Moderate twitching pain over low back, thigh -2 Severe twitching over low back, paraspinal region, thigh, calf region-3</p> <p><b>7.Tandra (Drowsiness)</b> No drowsiness-0 Mild drowsiness which doesn't disturb daily activities-1 Moderate drowsiness, patient may have discomfort with daily activities-2 Severe drowsiness, patient is unable to wake up from bed -3</p>
<p><b>4. Gruhnate (Catching pain): No catch-0</b> Mild 1: muscle catch over anterolateral aspect of thigh which doesn't disturb daily activities Moderate-2: muscle catch over thigh and calf region, patient can walk, may have disturbed activities Severe-3: muscle catch over thigh, calf region, where patient is not able walk / perform daily activities</p>	<p><b>8.Aruchi (Anorexia)</b> less craving towards food-3 Craving for food slight late than normal desire-2 Eating timely without much desire-1 Normal craving for food-0</p>

**Changes to this trial intervention-nil**

**Study Setting-** Study was carried at KLE Ayurveda Hospital, Shahpur, Belagavi, Karnataka, India. Study started in July 2022 and completed in September 2022.

**Eligibility/Inclusion-**

Diagnostic Criteria:

1. Signs and symptoms of Vatakaphaja Gridhrasi: severity index.

2. MRI lumbosacral reports (available with patient)

Inclusion:

1. Patients with signs and symptoms of Vata-Kaphaja Gridhrasi (w.r,t sciatica) -severity index.
2. Age group 20-60yrs.
3. SLR test positive at 30<sup>0</sup>-90<sup>0</sup>.
4. VAS scale 3-10

Exclusion:

1. History of spinal surgery and vertebral fracture.
2. Evidence of systemic diseases like uncontrolled diabetes, Hypertension, Ischemic heart disease etc.
3. Established tumours/malignancy.
4. Patients having back pain due to non-spinal causes will excluded e.g., Urinary tract infection, gastrointestinal disease and uterine diseases like Pelvic inflammatory disease.
5. Patients who have been contraindicated for NV and Basti.
6. Subjects with symptoms of red flag signs.

**Primary outcome measures:** Pain, Schober's test, SLRT.

**Secondary outcome measures:** Tenderness, Paraesthesia, Walking-time test, Power, Function disability, *Stambha, Ruk, Toda, Gruhnate, Tandra, Aruchi, Sarvanga Gouravata, Muhuspandana, Ekanga Gouravata.*

**Intervention and comparator:** Subjects recruited in this Study in 2 groups, for 5 days duration, no other treatments on going except study intervention. Group A NV with *Gandharvahastaditaila* (medicated Castor oil) (Kerala Ayurveda Limited, Batch No-KLAUKN) with milk on empty stomach for 5 days. Group B, *MVB* in *Yoga Basti* pattern for 5 days, Enclosed in Table 3 and study schedule enclosed in Table. 4.

**Table 3: Intervention**

Group A- NV	Group B- MVB															
<p>Drug -<i>Gandharvahastaditaila</i> [17]                      Dose-10-30ml (Dosage as per <i>Koshta</i> of the patient)  <i>Mridu-Koshta</i>-10ml  <i>Madhyama-Koshta</i> -15ml  <i>Kroora-Koshta</i> -20ml                      Duration -5 days  <i>Anupana</i> (Adjuvant) -Milk -50ml                      Route of administration-Oral route</p>	<p><i>Guda</i>(jaggery) [18,19] :80gms  <i>Saindava</i> (Rock Salt) (KLE Ayurveda Pharmacy, Batch no-1) [20] :5 grams  <i>Sneha (Oil): Murchitatilataila</i> (medicated sesame oil) (KLE Ayurveda Pharmacy, Batch no-4) [2,21] -60ml  <i>Kalka(paste): Shatapuspa churna (Anethum graveolens)</i> (KLE Ayurveda Pharmacy, Batch no-1) [22] -10gm+<i>Madanaphala churna (Randia dumetorum Lamk.)</i> (KLE Ayurveda Pharmacy, Batch no-1) [23]-10gm +<i>Indrayava churna (Holarrhena antidysenterica (Roth) Wall.)</i> (KLE Ayurveda Pharmacy, Batch no-1) -10gm [23]  <i>Kashaya(decoction)-Erandamoola(Ricinus communis Linn.)</i>( KLE Ayurveda Pharmacy, Batch no-2) [24] <i>Kashaya</i>-100ml  <i>Avapa(base) -Chinchajala</i>(Tamarind Water) [25] -100ml and  <i>Goarka</i> (Cow Urine) (KLE Ayurveda Pharmacy, Batch no-1) [26,27] -100ml                      Duration-5 days</p> <table border="1"> <thead> <tr> <th>Day1</th> <th>Day2</th> <th>Day3</th> <th>Day4</th> <th>Day5</th> </tr> </thead> <tbody> <tr> <td>-</td> <td>MVB</td> <td>MVB</td> <td>MVB</td> <td>-</td> </tr> <tr> <td>MB</td> <td>MB</td> <td>MB</td> <td>MB</td> <td>MB</td> </tr> </tbody> </table> <p><i>Matra Basti-Murchitatilataila</i>-30ml                      Route of administration-Rectal route</p>	Day1	Day2	Day3	Day4	Day5	-	MVB	MVB	MVB	-	MB	MB	MB	MB	MB
Day1	Day2	Day3	Day4	Day5												
-	MVB	MVB	MVB	-												
MB	MB	MB	MB	MB												

MVB: Modified Vaitarana Basti, MB-Matra basti

**Table 4: Study schedule:**

Sr no	Criteria	Baseline	D 1	D 2	D 3	D 4	D 5
1	Assessment criteria	✓	-	-	-	-	
2	Informed consent	✓	-	-	-	-	-
3	Demographic profile	✓	-	-	-	-	-
4	Intervention	✓	✓	✓	✓	✓	✓
5	Assessment	✓	✓	✓	✓	✓	✓

Sr No- Serial Number, D- day

**Follow-up and Follow-up period-** Follow up was done Day 1 to Day 5, every day morning throughout the intervention. It's a 5 days intervention study for acute pain management of severity Index with 2 different therapies. There was no follow up post intervention.

**Discontinuation:** Upon Principal Investigator's discretion, rescue medications were given in an emergency or directed to a higher centre, and recorded in the respective CRF.

**Outcomes:**

Group A, reported a substantial decrease in pain intensity from Day 2 of the intervention, with a significant reduction on the 4<sup>th</sup>, 5<sup>th</sup> days. Oxford Pain Score was used to evaluate this with Score 3 (VAS 7-10, Japanese Orthopaedic Association Back Pain Evaluation-16-25) on D0 to 1 (VAS 1-3/10, Japanese Orthopaedic Association Back Pain Evaluation-1-8/25) on D5. As a result, NV was able to manage acute pain from D2, whereas MVB on D4/D5 day.

**On day 5 of NV-** Walking-time test, Schober's test, Functional-Disability, SLRT improved from severe index to moderate/mild, also contributed in Pain management. Autonomic bladder/bowel control, Power was retained. While paraesthesia found to be effective

in MVB, Tenderness improved in both interventions. Severity of Pain, Paraesthesia, SLRT, Schober's Test, *Stambha, Ruk, Muhuspandana, Ekanga Gouravata* was significantly reduced in Group B. Group A includes *Toda, Gruhnate, Tandra, Aruchi, Sarvanga Gouravata*, walking time test, Functional disability. No effect on Power, Autonomous bladder in both interventions.

**Harms-** There were no any harms observed throughout the study intervention and during treatments.

**Sample size** -calculation using standard deviation

$$N = [2(SD)^2 \times (Z_{\alpha} + Z_{\beta})^2] / d^2$$

$Z_{\alpha}$ =1.96 for 95% confidence level

SD= 0.53

$Z_{\beta}$ = Power of the study = 0.84

d = 0.5

$$N = [2 \times (0.53)^2 \times (1.96 + 0.84)^2] / (0.5)^2 \Rightarrow [2 \times 0.28 \times 0.784 \times 7.84] / 0.25 \Rightarrow 17.61 = 18$$

The present study -sample size 18 in each group. Taking into account 10% dropout rate,  $N = n/(1-d)$ , or 20. Thus, sum equals 20. The current study has sample size 40, taking into account of Hospital incidence rate, time restrictions and financial limitations, 20 sample size in each group were taken.

**Recruitment:** 40 subjects, both male and female, with age group between 20-60 years, fulfilling the inclusion Criteria were screened from OPD and IPD of KLE Ayurveda Hospital, Shahpur, Belagavi. Patient baseline data was submitted to MRC for Randomization under Group-A and Group B. Random number generated from online software- "Random Number Generator" (stattrek.com) from MRC and subjects were enrolled.

**Allocation and concealment:** Subjects fulfilling inclusion criteria were screened from OPD and IPD of Panchakarma followed by data was submitted to MRC for Randomization into two Groups -A and B. Random number generated from online software- "Random Number Generator" (stattrek.com) from MRC and subjects were enrolled.

**Blinding-** Both group intervention groups were *Panchakarma* treatments. Hence, blinding was not done.

**Statistical methods:** Among 40 recruited subjects, 39 completed the study intervention with 1 Drop out. 19 in Group A and 20 in Group B. 1 drop out was on the day 1 of intervention, subject self-withdrawn from the intervention as subject wasn't willing to take intervention and follow the diet. Hence the data of 1 subject from Group A was not recorded and thus not analysed. Data of analysis 39 subjects/participants was done, recorded in the CRF, which were compiled in MS Excel spreadsheet for statistical analysis. Using IBM SPSS Version 26, data was tabulated, analysed. Analysis of assessment enclosed in Table1 and enclosed in Table 2, within group intervention and between group

intervention using non-parametrical tests - Wilcoxon paired test, Mann Whitney u test were applied.

*Koshta* (digestive tract), Group A, 42.11% determined *Madhyama-Koshta* (Balanced *Dosha* state), 57.89%-*Krura-Koshta* (*Vata dosha* Predominant). Group B, 5% *Mridu-Koshta* (*pitta dosha* Predominant), 85% *Madhyama Koshta*, 10% *Krura Koshta*.

Pain-Group A -mean difference that improved to 0.74 on 5<sup>th</sup> day (p value 0.0010), statistically significant, indicating improvement from day 3 -5, significant on day 5, infers *NV* accomplishes *Vata-Shamana* (pacifies *Vata*), *Shulahara* (reduces pain), thus effective in acute pain management. Group B- *MVB*, 5<sup>th</sup> day, p value-0.0002, statistically significant, infers pain severity improvement. After 2<sup>nd</sup> *basti*, pain reduced, due to *Kaphahara*, treating chronic pain.

Tenderness- Group A, significant, p value 0.0002\*, infers improved tenderness. Group B- significant, p value - 0.0002\*, improved tenderness. Both group interventions were significant in Tenderness.

Paresthesia-Group A, a mean difference-0.53, p value 0.0051\* on day 5, improvement. Group B-mean 1.8 mild grade, 0th day decreased to 1.2 on 5th day, p value 0.8004 (0.0001), non-significant, *MVB* was effective than *NV*.

Power- There was no change between Groups A and B, non-significant (p value 0.8004).

Autonomic Bladder/Bowel-mean 1.0 from day 0-5, p value 0.7787, non-significant.

Functional disability-mean of severity -4.3 on 1<sup>st</sup> day to 2.6 moderate on 5<sup>th</sup> day in group A, mean of 3.6 severe to 1.9 moderate in group B, p value 0.8551, non-

significant. Functional disability improved significantly between the groups from day 2 to day 5 3rd day of relevant group intervention, both groups showed statistical significance within groups.

SLRT-2nd-3rd day, statistically significant between groups. P value 0.9328, statistically non-significant after the intervention. Both group results within groups significant, infers SLRT improvement.

Schober's test- 5<sup>th</sup> day p-value 0.2920, non-significant between groups. Individual group intervention, statistically significant in stiffness, range of movements.

Walking time test- Statistically non-significant between groups, p-value 0.0815, infers non-significant on 5<sup>th</sup> day. From 4<sup>th</sup> day in group A, 5<sup>th</sup> day in group B, significant result.

*Stambha*-Statistically significant across the groups, p value 0.0190 on day 5, statistically significant within group from 3<sup>rd</sup> day, infers improvement of *Stambha* in corresponding treatment group. Non-significant between groups.

*Ruk*-Significant within group infers improvement in *Ruk* in each group after intervention, while non-significant results between groups indicate no comparable changes.

*Toda* -Significant within group from day 3, better in group A, but significant across groups on days 3, 4 and no-significant with p value 0.06 after intervention, infers no comparable change between groups.

*Gruhnate*-Significant within group, more significant in group A, but non-significant with p value 0.122 between groups on day 5 after intervention, infers no comparable changes between groups.

*Sarvanga Gouravata*-Non significant between groups, p value 0.4481, significant difference within group, indicating improvement in *Sarvanga Gouravata* with both interventions having significance, infers *Sarvanga-ama Lakshana* decreased significantly in each group, especially in group A.

*Ekanga Gouravata*-Non-significant between groups, p value 0.2324. Significant difference within group, infers *Gouravata* in the affected limb has improved with both interventions, effectively in Group B.

*Muhuspandana*- significant difference between the groups on day 2 and 3, but non-significant between the groups, p value of 0.1926, with significant difference within each group suggesting improvement in *Muhuspandana* with both interventions having significant results, *Muhuspandana* reduced in respective group significantly, highly in group B.

*Tandra*-Significant within groups better in group A, non-significant between groups with p value 0.8994. This means that there was little variation between the group interventions, yet each therapy was equally effective in reducing the complaint, both the *Shodhana* treatment assists in reducing *Ama Lakshana*, *Tandra*.

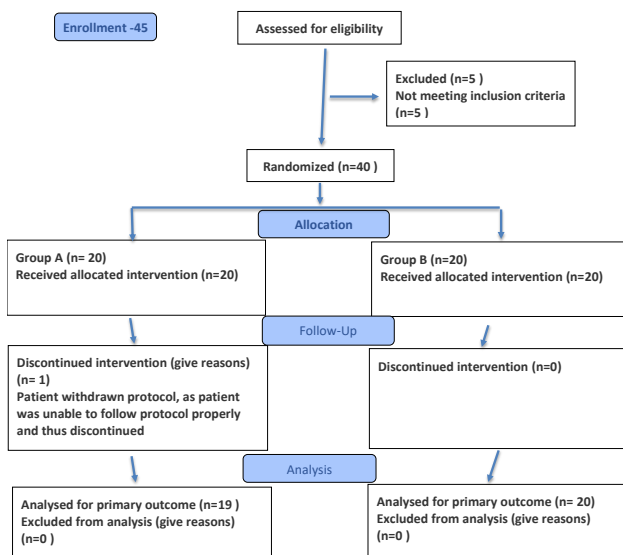
*Aruchi*- non-significant result between the groups. nevertheless, within the group, Group A had better result with statistical significance, infers effective improvement of *Aruchi* in Group A.

Comparing the Cochran Q test results for various treatment evaluations in Groups A and B. Average 3-4 *Vega*(frequency) of *NV*, *Antiki* (end of evacuation)-*Vata* on day 1, *Pitta* on 2 and 3, *Aushada* (medicine) on 4<sup>th</sup>, 5<sup>th</sup> day, 600–750ml evacuation, *Samyak-Shodhana*

(proper purification). After 3 MVB, Prashrishtasamiranatva (complete evacuation), Ruchi(appetite), Agnivridhi (increased appetite), Ashayalaghavata (lightness in body), Rogopashamana (alleviation of disease), Balavridi (increased strength), Viriktata(emptied), Average Retention of 7-8 minutes, frequency 1-2 and Samyak Shodhana.

### 3. RESULTS

**Figure 1: Participant flow, including flow diagram**



**Table 5: Baseline Data/ Characteristics**

Characteristic/Symptoms /Signs	Group A (n=20)	Group B (n=20)	Missing
Age, years	38 ± 12	42 ± 11	0
Female, n (%)	90%	75%	0
Male	10%	25%	0
BMI	24.23± 3.8	24.79 ± 3.5	0
MRI LS Spine findings	CCS-25, EFS-15, BOTH-60	CCS-10, EFS-20, BOTH-70	0
Koshta	Mridu-0%, Madhyama-40%, krura-60%	Mridu-5%, Madhyama-85%, krura-10%	0
Pain	2.25	2.05	0
Tingling/numbness	1.95	1.8	0
Bladder/bowel control	1.05	1.09	0
Power	5	4.95	0
Walking time	1	.85	0

**Recruitment-** Recruitment of 40 subjects, initiated from 18-07-2022 to 03-09-2022. Study started on 03-09-2022 and completed on 09-09-2022.

**Intervention and comparator delivery:** -This study is an Open Label, Interventional, clinical Trial. KLE's Institutional Ethics Committee for Research in Human Subjects provided ethical approval. CTRI registered. The primary investigator initiated the clinical trial after obtaining informed consent. The trial lasted 18 months, and the individuals fulfilling inclusion criteria randomly assigned to two groups: NV and MVB. Group A has completed 19, Group B has completed 20. Drop out 1. CRF was used for Data Collection, and parameters were used for evaluations. The gathered data, exported to Microsoft Excel and statistical results obtained. The researcher monitored participant enrolment, monitored data, tracked adverse effects, ensured the treatment regimen was followed.

Functional disability	4.3	3.6	0
SLRT	RSLRT-58.5, LSLRT-58.25	RSLRT-61.5, LSLRT- 66.5	0
Tenderness	1.7	1.4	0
Schober's test	1.95	1.85	0

n-subjects enrolled, BMI-Body mass index, MRI LS spine-Lumbo-sacral spine, CCS-Central Canal stenosis, EFS-Exit Foraminal Stenosis, RSLRT-Right SLRT. LSLRT- left SLRT

**Numbers Analysed, Outcomes and estimation-statistical analysis** in Group A -19, Group B 20. Based on statistical results efficacies of *MVB* over *NV* on Parameters- Pain (52%), Schober's test (70%), Paresthesia (67%), Function disability Scale (53%) and

*Vatakaphaja Lakshana- Stambha* (80%), *Ruk* (62.26), *Muhuspandana* (57.14%), *Ekanga Gouravata* (68.7%). In *NV* over *MVB* –Tenderness (79.1%), SLRT (83%), Walking time test (55%), *Toda* (65.52%), *Gruhnate* (60%), *Tandra* (80%) *Aruchi* (73%), *Sarvanga Gouravata* (58.82%).

**Table 6: Improvements in Assessment Parameters of Sciatica- Based on Severity Index**

Parameters	Group A			Group B			Between Groups
	BT	AT	D 0-D5	BT	AT	D 0-D5	Effect size/CI
Pain	2.2 moderate	1.5-mild	0.7-mild	2.1, moderate	1.1mild	1.0-mild	0.3
Tenderness	1.7-moderate	0.5-mild	1.2	1.4- moderate	0.4- mild	1.0	0.2
Paraesthesia	1.8-moderate	1.3moderate	0.5	1.8 moderate	1.3moderate	0.5	0
Power/ weakness	5-mild	5-mild	0.0	5- mild	5-mild	-0.1-mild	-0.1
Autonomic bladder	1.1(mild)	1.0(mild)	0.1	1.1mild	1.0mild	0.1-mild	0
Functional Disability	4.3-moderate	2.6-mild	1.7-mild	3.6- moderate	1.9-mild	1.7- mild	0
SLR	52-moderate	70-mild	-17.1	57 moderates	75mild	-17.3	0.2
Schober's test	1.9- moderate	1.5 moderate	0.4- mild	1.8 moderate	1.3-mild	0.6- mild	0.2
Walking time test	1.0- moderate	0.5- mild	0.6-mild	1.0- moderate	0.7- mild	0.3-mild	0.3

D0-D5 day 0(baseline) to Day 5, BT-Before Treatment, AT-after Treatment

**Table 7: Improvements in Assessment parameters- Vata-Kaphaja Gridhrasi Lakshana**

Parameter	Group A			Group B			Between groups
	BT	AT	D0-D5	BT	AT	D0-D5	Effect size/CI
<i>Stambha</i>	2- moderate	0.9- mild	1.1	1.5moderate	0.3mild	1.2	0.1
<i>Ruk</i>	2.8- severe	1.3moderate	1.5	2.7	0.9mild	1.7	0.2
<i>Toda</i>	1.5- mild	0.5- nil	1.0	1.1moderate	0.2mild	0.9	0.1
<i>Gruhnate</i>	1.8-mild	0.7-nil	1.1	1.4moderate	0.4mild	1.0	0.1
<i>Muhuspandana</i>	2.1-moderate	1.1- mild	1.0	1.8moderate	0.8mild	1.0	0
<i>Sarvanga Gouravata</i>	1.8- mild	0.7nil	1.1	1.4moderate	0.5mild	0.9	0.1

<i>Ekanga Gouravata</i>	2.1moderate	1.0, mild	1.1	1.8moderate	0.6mild	1.2	0.1
<i>Tandra</i>	1.6moderate	0.3mild	1.3	1.1moderate	0.3mild	0.9	0.4
<i>Aruchi</i>	1.2- mild	0.3- nil	0.9	0.7 mild	0.3mild	0.4	0.5

D0-D5 day 0(baseline) to Day 5, BT-Before Treatment, AT-after Treatment

**Harms-** No harms observed throughout the intervention.

**Ancillary analyses-** not done

#### 4. DISCUSSION

**Discussion on Disease** -According to Acharya Sushruta, *Gridhrasi* is caused by *Vridhdha*(aggravated)-*Vata* invading *Kandara*(Tendons) of *Parshni*(heel), *Anguli*(toe), resulting in *Kshepa* (pain and inability to stretch) in thighs.[28] As indicated by Acharya Charaka, the *Prakupita*(vitiated) *Vata* causes a sequence of diseases known as *Gridhrasi*, including *Sthambha*, *Ruk*, *Toda in Kati*(low back), *Sphik*(back), *Uru*(thigh), *Jaanu*(knee), *Jangha*(calf), *Paada*(foot). *Tandra*, *Gaurava*, *Aruchi* are produced along with the aforementioned symptoms if this *Gridhrasi* is caused by *Vata* and *Vata-Kapha*. [29] It is called '*Gridhrasi*', according to Acharya Vagbhata, when the *Kandara* of the leg, which runs from the *Parshni* to the *Anguli*, becomes inflamed by *Vat-dosha* and prevents the action of *Utkshepana-Apakshepana* (raising the leg).[30] Sciatica is a symptom, arises due to compression or inflammation of sciatic Nerve. [1] Causes- lumbar spondylosis, Disc Herniation, nerve claudication, cauda equina, stenosis of spine, prolapsed intervertebral disc. When the disc's fluid protrudes outward, it ruptures the outer ring of fibres, extends into spinal canal, compresses nerve root against lamina/pedicle of vertebra, resulting in sciatica. By inflaming and

enlarging surrounding tissue, the liquid out of the nucleus pulposus compresses nerve root in the spinal canal exacerbate spinal stenosis. The exiting nerve root may impinge at any level, depending on the location herniation. Cauda equina is due to degenerative lumbar stenosis. [31] Spinal stenosis causing Sciatica due to central canal stenosis and Exit Nerve Foraminal stenosis can be taken into consideration as *Dhatukshaya* (depletion of the body's fundamental tissues), *Avarana*(obstruction). In *Vata-Kaphaja Gridhrasi*, it is considered as *Medasavrita-Kapha-Vataproka*(by *Medo-dhatu* and *Kapha -dosha* resulting in *Vata* Vitiation).

**Discussion on Intervention** -*Trikasandhi* (Sacro-iliac region), *Sthana*(location) of *Avalambhaka-kapha*(one among 5 types of *Kaphadosha*). [32] Both the Therapies aid in lowering *Avalambhaka-kapha*. *Kapha-avarana* was removed through *NV* and *MVB*, due to *Kaphahara* (removing *kapha*), *Avaranaharakarma* (removing *Avarana*). Thus, preventing myelomalacia. *Basti* is prescribed primarily for lower back, waist, leg, and hip discomfort and stiffness caused due to *Vata-Kapha*. Since *Vata* is the cause of the disease and its primary symptom, pain, *Basti* is the greatest remedy for it. *Erand* (*Rcinus communis*) has anti-inflammatory, Central analgesic, antinociceptive, [1] acts as *Utkleshana*(provoking), also *Vichitrapratyaharadravya*(specific action of drug), however *MVB* is *Teekshna*(strong) *Shodhana* due to

*Gomutra*, *Chincha*(Tamarind). [33] *Gomutra* is *Ushna*(Hot) *Teekshna*, *Shodhana*, *Medasavrita-Kaphahara*. *Chincha* does *Malahara* (removing waste product of *dosha*). NSAIDs, corticosteroids, and epidural injections are conservative treatment of sciatica which may not have relief. Therefore, this study was aimed at the immediate effects of *Shodhana* as well as preventing progression, curing illness. Both groups' treatments were implemented as neuritis and the inflammatory process were suppressed. Prior to adopting *Snehana*(oleation), *Kapha* in *Vatakaphaja Gridhrasi* must be eliminated, then *Kevalavata* (only *Vata*) was considered. Hence, *Ishatsneha* (minimal oil) was incorporated. Due to *Sneha* and *Kapha* were involved, the symptoms worsened on 1<sup>st</sup> day of *NV* and *Matra Basti*. However, after 2-3days of *NV* – *Amahara*, after *MVB-Rukshana*(dryness), *Amapachana* (digestion of *Ama*) were achieved. *MB* was employed to fulfil *Yoga basti* protocol. *MB*, corrects the *Vataprakopa* (agitated *Vata*) by *MVB's Ksharaguna* (alkaline property), prior to *MVB*, *dosha Utkleshana* was achieved as a result of *MB* administration, which aids in *dosha* eradication.

Here, it was necessary to consider the mechanical nerve obstruction caused by *Medasavrita-Kapha* and hence *Teekshna-Shodhana* was effective. Through Gut brain theory action of *basti*, *Shulahara* was achieved by blocking neurotransmitters, which in turn lowers pain receptors.

**Discussion on parameters-** Improvement in assessment parameters before commencing treatment and after completion of treatment considering reduction in severity index of following-Pain, Tenderness,

Paraesthesia, Power, Autonomic Bladder, SLRT, Walking Time Test, Schober's Test, Functional Disability in Group A and Group B enclosed in Table 6 and *Stambha*, *Ruk*, *Toda*, *Gruhnate*, *Muhuspandana*, *Sarvanga Gouravata*, *Ekanga Gouravata*, *Tandra*, *Aruchi* (Table 7).

**Discussion on assessment parameters w.r.t**

**Intervention-** All 40 participants in this study had acquired spinal canal stenosis, none had a history of congenital conditions. 25% in the *NV* Group exhibited central canal stenosis, 15% with exit foraminal stenosis, 60% showed both bilateral exit foraminal stenosis and central canal stenosis, while one with cauda equina presentation, according to the MRI results. On the other hand, 20% out of the twenty cases in the *MVB* group with Exit nerve foraminal stenosis, 10% with central canal stenosis, 70% having both central and bilateral foraminal stenosis, and one of them had a cauda equina presentation.

Muscle inflammation due to impaired nerve supply causing neuritis w. r. t *Dhatugata* (at tissue level) *Ama*(undigested) and *Sarvanga* (full body) *Ama* results in Tenderness. To reduce inflammation, it requires long standing treatment. By lowering inflammation, *NV* treatment was successful in restoring *Apana-Vata* (one of the five forms of *Vata*) to normal, and *Amahara* was attained. Walking time test- between the group was not significant, *NV* was significant to *MVB*. *NV* was effective in Central Canal Stenosis, where spasm was reduced, resulting in muscle relaxation, improvement in claudication, due to *Stokastokadoshanirharanam* (gradual expulsion of morbid *dosha*) in consideration to *Gudagatavata*, [34] and also due to *Ushna*

*Snigdha*(unctuous) *guna*(feature) of *Eranda* having *Vatanulomana* (downward or normal direction) property without increasing *Kapha*. Paraesthesia with mild grade w.r.t *Suptata* (numbness), a *Sarvadaihika Kapha-Lakshana* due to the *Vata-Kapha* role in *Gridhrasi* and this *dosha* was corrected with *Kaphahara* in both groups, thus there was no aggravation of the symptom after the completion of intervention. Power- statistically unable to assess, but there was no aggravation of these complaints even after treatment intervention. With respect to pain severity, in group B, *Apana Vayu* and *Ama* was treated strongly with *basti* (*Sneha basti* in the form of *Matra Basti* followed by *MVB*), compared to *NV* group. Between the group, non-significant. Within the group it had significance in *NV* in consideration to acute management of pain, whereas, in *MVB*, it was achieved after administration of the 3 consecutive *basti*. In exit foraminal stenosis w. r.t *Margavarana*(obstruction), *MVB* was effective, as disc herniation and claudication cause *Avarana* and leading to stenosis. Here *MVB* does *Avaranahara*, thus relieves muscular spasm and relieves pain and improves functional disability. Schober's test- *MVB* was significant over *NV*, as it showed instant improvement after 1<sup>st</sup> *MVB* due to *Kaphahara* with *Teekshna* and *Vatanulomana* with *Matra Basti*. Functional disability showed significance in between the group. Improvement in SLRT statistically significant between groups, highly significant in *MVB*. Due to its *Snigdha-guna*, *Vatanulomana-karma*, and *Usna-veerya*, *NV* could play a beneficial role in managing inflammatory neuritis, with possible effects in reducing pain-related muscular spasms, supporting posture and

gait, and thereby improving outcomes in the walking time test in Central Canal Stenosis.

**Discussion on Vatakapahaja Lakshana w. r t intervention-**In *Stambha*, *MVB* exhibits considerable paraspinal muscle relaxation. In *NV*, *Koshtagatadosha* diminished immediately but *Dhatugatadosha* persisted. The eradication of *Shakhagatadosha* (dosha residing in extremities), *Dhatugatadoshanirharana*, was achieved after 2-3 days of *NV*, due to *Agnideepana*, *Amahara*, thus overcoming *Sarvanga Gouravata*. Owing to *Ruksha*, *Teekshna-guna* of *MVB*, *Sarvanga-Gouravata* reduced after 3 *MVB*. Whereas, *Ekanga Gouravata* had an immediate effect after 1<sup>st</sup> *basti*, significant reduction of *Gouravata* in the affected limb. *Tandra* worsened after 1<sup>st</sup> day of *NV*, but after 2-3 days of *NV*, there was significant reduction. *Aruchi*, significant in *NV*, due to *Agnideepana* and *Amapachana*.

**Discussion on Study Intervention:** In Group A- There was significant efficacy initially with Moderate index were Pain, Tenderness, Functional Disability, SLRT, Walking Time Test which reduced to mild index after treatment. Paraesthesia, Schober's' test remained with moderate index, unaffected. Power and Autonomous bladder with Mild indexed parameters remained unaffected. *Vatakapahaja Lakshana* with Moderate index *Stambha*, *Muhuspandana*, *Ekanga Gouravata*, *Tandra* were observed to have significant effect as the severity reduced to Mild index. The severity of Ruk decreased from severe to moderate, and mild complaints of *Aruchi*, *Sarvanga-Gaurava*, *Toda* were noted, showing a reduction in intensity.

In Group B- There was significant efficacy with Moderate index were Pain, Tenderness, Functional Disability, SLRT, Walking Time Test, Schober's test which reduced to mild index. Paraesthesia with moderate index remained unaffected with moderate index only. Power and Autonomous bladder with Mild indexed parameters remained unaffected. *Vata-Kaphaja Lakshana* with moderate index *Stambha, Toda, Gruhnate, Muhuspandana, Sarvanga Gouravata, Ekanga Gouravata, Tandra* were observed to have significant effect as the severity reduced to mild index. Severe condition of *Ruk* reduced to mild index after intervention. Mild complaints of *Aruchi* were observed with reduced (Table 6 and Table 7).

Subjective and objective measures improved, however a small number of symptoms in both group interventions remained unchanged because of a lower severity score at baseline. However, the study with a larger sample size and radiological evaluation would have produced more accurate results. The smaller sample size in this study probably had an impact on the findings. But both group therapies worked well for managing acute pain.

**5. CONCLUSION:** In the current study, 40 subjects randomized into 2 groups A, B, 20 in each, received *NV* and *MVB* for 5 days respectively. 39 subjects completed the study with 1 drop out. Both interventions were effective in symptomatic management of *Vata-Kaphaja Gridhrasi* w.r.t Sciatica in consideration of etiopathology. *MVB* was more significant in-*Stambha, Ruk, Muhuspandana, Ekanga Gouravata*. *NV* was more significant in- Tenderness, SLRT, Walking time test, *Toda, Gruhnate, Tandra, Aruchi, Sarvanga Gouravata*. Pain,

SLRT, Schober's test, walking time test, were significant in *NV* compared to *MVB*. Subjects demonstrated the best response in the remission of functional impairment, neurological deficits, and other symptom criteria, coupled with an increase in functional capacity. This demonstrates that *NV* was effective in correcting the etiopathogenesis of *Vata -Kaphaja Gridhrasi* w.r.t Sciatica caused due to Central canal stenosis through *Vata-Anulomana, Agnideepana, Avaranahara, Kaphahara Chikitsa*. The result in relation to *MVB* was comparable with statistical significance. *MVB* was effective in correcting the etiopathology of *Vatakaphaja Gridhrasi* w.r.t Sciatica due to Exit nerve foraminal stenosis, considering *Medasavritavatahara* and *Kaphavrutavatahara, Rukshana, Kaphaja Gridhrasi* w.r.t Sciatica according to the aetiology.

**Limitations-** Study does not include subjects presented with red flag signs, History of spinal surgery/ vertebral fracture, Systemic diseases -Diabetes, Hypertension, Ischemic heart disease etc, established tumours/malignancy, Back pain due to non-spinal causes and Subjects contraindicated for *NV, MVB*. Study had small sample size on consideration of financial status of Researcher. Only clinical assessment was done, no any investigations carried.

**Abbreviations with expansion:** *NV*- *Nitya-Virechana*, *MVB*- *Modified Vaitarana Basti*, CTRI-Central Trails for Research Investigations, MRC- Medical Research Centre, CRF- Case Report Form, SLRT- Straight leg Raise test, VAS-Visual Analogue Scale, *MB*- *Matra Basti*, D0-Day 0, D5-Day 1, Sr No.-Serial Number, BT- Before treatment, AT-After Treatment, IPD- In-Patient Department, OPD- Out-Patient Department, GMP-Good Manufacturing Practice, n-subjects enrolled, BMI-Body mass index, MRI LS spine-Lumbo-sacral spine,

CCS-Central Canal stenosis, EFS-Exit Foraminal Stenosis, RSLRT-Right SLRT. LSLRT- left SLRT.

**Trial registration:** CTRI/2021/10/037585) on 26-10-2021.  
<https://ctri.nic.in/Clinicaltrials/main1.php?EncHid=16854.67814>

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**REFERENCES:**

1. Upanishad N. Upadhye, Vasant Patil. Efficacy of *Agnikarma*(Cauterization therapy) in the management of *Gridhrasi* (Sciatica)- A Scoping review. J of Ayurveda and Hol Med (JAHM). 2024;12(10):44-55. Access this article online: <https://jahm.co.in/index.php/jahm/article/view/1508/900>
2. Nikhita Kalburgi, Madhuri Rodd, Vasant Patil. Systematic Review on efficacy of different *Niruha Basti's*(Medicated Enema therapy) in *Gridhrasi* (Sciatica). J of Ayurveda and Hol Med (JAHM). 2022;10(5):51-63. Access this article online: <https://jahm.co.in/index.php/jahm/article/view/572/567>
3. Rakesh Moolya, Suraksha. Synergistic effect of *Lashuna Rasayana*(Rejuvenation therapy) with *Basthi Chikitsa* (medicated Enema Therapy) in managing *Vata Kaphaja Gridhrasi* (Sciatica): A case report. J of Ayurveda and Hol Med (JAHM). 2025;13(4):137- 142. Available online: <https://jahm.co.in/index.php/jahm/article/view/1728/959>
4. Shivaprasad Sharma. AstangaSangraha of Vriddha Vagbhata, Uttaratantra, Chapter 49, Verse no.12, 2nd edition, Varanasi; Choukambha Sanskrit Series Office;2006:924.
5. Sanjay Gupta, Vasant Patil, Radheyshyam Sharma. Diagnosis and Management of *Katishoola* (Low Back Pain) In Ayurveda: A Critical Review. AYUSHDHARA, 2016;3(4):764-769. Available from: <https://ayushdhara.in/index.php/ayushdhara/article/view/143/159>
6. Visual Analogue Scale [Internet]. Physiopedia. 2019. Available from:[https://www.physiopeedia.com/Visual\\_Analogue\\_Scale](https://www.physiopeedia.com/Visual_Analogue_Scale)
7. Fukui M, Chiba K, Kawakami M, Kikuchi S, Konno S, Miyamoto

- M, et al. Japanese Orthopaedic Association Back Pain Evaluation Questionnaire. Part 2. Verification of Its Reliability. Journal of Orthopaedic Science. 2007 Nov;12(6):526–32. Available online: <https://pubmed.ncbi.nlm.nih.gov/articles/PMC2780682/>
8. Sampat PD. A Comparative Clinical Trial between *Dhanyamla Sahita* (with Dhanyamla) and *Rahita* (without *Erandamoola Basti* (Medicated Enema Therapy) in *Katigata Vaata* (Low Back Pain). International Ayurvedic Medical Journal [Internet]. 2015 May;3(5):14434. Available from: <file:///C:/Users/jpnee/Downloads/IAMJMay2015COMPARATIVECLINICALTRIALBETWEENDHANYAMLA SAHITA AND.pdf>
9. Piriformis Syndrome- Pain, Numbness [Internet]. Available from: <https://familydoctor.org/condition/piriformis-syndrome/>
10. Cauda Equina Syndrome - An Overview. ScienceDirect Topics [Internet]. Available from <https://www.sciencedirect.com/topics/medicine-and-dentistry/cauda-equina-syndrome>
11. Waxman SE, Tripp DA, Flamenbaum R. The Mediating Role of Depression and Negative Partner Responses in Chronic Low Back Pain and Relationship Satisfaction. The Journal of Pain. 2008 May;9(5):434–42. Available online: <https://www.sciencedirect.com/science/article/pii/S152659008000023>
12. FALCONER MA, BEGG AC, MCGEORGE, M. Observations on the Cause and Mechanism of symptom production in Sciatica and low-back Pain. J Neurol Neurosurg Psychiatry [Internet]. 1948 Feb;11(1):1326. Available from: <https://pubmed.ncbi.nlm.nih.gov/18907039/>
13. Goddard M, Reid J. Movements Induced by Straight Leg Raising in The Lumbo-Sacral Roots, Nerves and Plexus and in the Intrapelvic Section of The Sciatic Nerve. J Neurol Neurosurg Psychiatry [Internet]. 1965 Feb;28(1):128. Available from <https://pubmed.ncbi.nlm.nih.gov/14264293/>
14. Hislop HJ, Montgomery J. Daniels and Worthingham's Muscle Testing. Available from: [https://www.researchgate.net/publication/303175382\\_Daniels\\_and\\_Worthingham](https://www.researchgate.net/publication/303175382_Daniels_and_Worthingham)
15. Kim M, Guilfoyle MR, Seeley HM, Laing RJ. A modified Roland-Morris disability scale for the assessment of Sciatica. Acta Neurochir (Wien). 2010 Sep;152(9):1549-53. Available online: <https://pubmed.ncbi.nlm.nih.gov/20467761/>
16. Vijaya Agrawal, Manu R. Ayurvedic Management of *Gridhrasi* W.S.R. Sciatica-A Case Study. Journal of Advanced Zoology. 2023;44(S -07): 1288-1292. Available online at: <https://jazindia.com>
17. Athira.C, Ajay Bhat U. A Comparative Clinical Study on the Effectiveness of *Rasona Tail* (medicated oil of *Rasona*) and *Gandharvahastadi Eranda Taila* in *Gridhrasi* (Sciatica). International Journal of Ayurveda and Pharma Research. 2020;8(10):15-22. Available online at: [file:///C:/Users/jpnee/Downloads/A\\_COMPARATIVE\\_CLINICAL\\_STUDY\\_ON\\_THE\\_EFFECTIVENESS\\_%20\(2\).pdf](file:///C:/Users/jpnee/Downloads/A_COMPARATIVE_CLINICAL_STUDY_ON_THE_EFFECTIVENESS_%20(2).pdf)
18. Aiya AS. A REVIEW OF *KSHARABASTI*. International Ayurveda Publications [Internet]. 2022 Apr;7(2):2054–7. Available from: <https://www.ayurpub.com/wp-content/uploads/2022/04/2054-2057.pdf>
19. Nadkarni's KM. Indian Materia Medica [Internet]. Available from: <https://ia800601.us.archive.org/22/items/in.ernet.dli.2015.112096/2015.112096.Indian-Materia-Medica-Voli.pdf>
20. Apurbo Sarker, Arittra Ghosh, Kinsuk Sarker, Debojyoti Basu and Prof. Dr. Dhruvo Jyoti S. Halite; The Rock Salt: Enormous Health Benefits. World Journal of Pharmaceutical Research [Internet]. 2016 Nov;5(12):407–16. Available from: [https://www.wjpr.net/abstract\\_file/6177](https://www.wjpr.net/abstract_file/6177)
21. Upasana Sonker, Mahapatra Arun Kumar, Rajagopala S. The Effect of *Murcchita Tila Taila* Based *Panchakarma* Procedure and *Balapanchamrita Yoga* (Ayurvedic herbal or Rasayana formulation) in the Management of Cerebral Palsy in Children- A Single Arm Prospective Clinical Trial. AYUSHDHAR. 2020;7(6):3004-3008. Available from: <https://ayushdhara.in/index.php/ayushdhara/article/view/616/559>
22. Patil Shilparani. Study of *Shatapushpa Choorna* and *Sahacharadi Taila* in Oligomenorrhoea. AYUSHDHARA. 2020;7(2):2611-2614. Available online:

- <https://ayushdhara.in/index.php/ayushdhara/article/view/533/463>
23. JLN Shashtri. Illustrated *Dravyaguna Vijnana*(study of essential Medicinal Plants in Ayurveda). Vol. 2, 2nd ed, Varanasi; Chaukhamba Orientalia; 2005;369,431.
24. Halankar P. Evaluation of The Efficacy of Treatment Intervention as Per Classical Guidelines in *Gridhrasi* - A Comparative Clinical Trial. World Journal of Pharmaceutical Research. 2022Jul;11(9):1739–43. Available online: [https://wjpr.net/public/abstract\\_file/19909](https://wjpr.net/public/abstract_file/19909)
25. De Caluwé E, Halamová K, Van Damme P. Tamarind (*Tamarindus Indica* L.): A Review of Traditional Uses, Phytochemistry and Pharmacology. ACS Symposium Series. 2010Jan; 23:85–110. Available online: [file:///C:/Users/jpnee/Downloads/Tamarindus\\_indica\\_L\\_-\\_A\\_review\\_of\\_traditional\\_uses.pdf](file:///C:/Users/jpnee/Downloads/Tamarindus_indica_L_-_A_review_of_traditional_uses.pdf)
26. Monica Mulay, Sheetal Nikesh Jain. Role of *Lekhana basti*(Medicated enema) and *Udvaratana*(Therapeutic Powder massage) in the management of *Sthoulya* (obesity) – A Case study. J of Ayurveda and Hol Med (JAHM). 2023;11(12):227-232. Access this article online: <https://www.jahm.co.in/index.php/jahm/article/view/1131/776>
27. Randhawa GK, Sharma R. Chemotherapeutic potential of cow urine: A review. J Intercult Ethnopharmacol. 2015Apr-Jun;4(2):180-6. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4566776/>
28. K.R. Srikantha Murthy (Translator). Illustrated Sushruta Samhita, Vol. 1, Sutrasthana, Chapter 12, Verse no.74, 1<sup>st</sup> Edition (Reprint), Varanasi; Chaukhamba Orientalia; 2010;472.
29. Acharya Vidyadhar Shukla and Ravi Dutt Tripathi (Editor). Commentary: Charaka Samhita of Agnivesha; Revised by Charaka and Dridhabala; “Vaidyamanorama”, Vol. 2, Chikitsasthana, Chapter 28, Verse no. 56-57; Chaukhamba Sanskrit Prakashan; Delhi;2009;698.
30. Kaviraj Atridev Gupta, Vaidya Yadunandana Upadhyaya(Editor). Commentary: Shrimadvagbhata Virachita “Ashtanga Hridayam” “Vidyotini”, Sutrasthana, Chapter 16, Verse no. 54, Varanasi; Chaukhambha Surabharati; 2012;380.
31. F. Charles Brunicardi, Andersen DK, Billiar TR, Dunn DL, Hunter JG, Matthews JB, et al. Schwartz’s Principles of Surgery, Ninth Edition. McGraw Hill Professional; 2009.
32. Sushruta, Shastri AD (editor). Commentary: Susruta Samhita with Ayurveda Tattva Sandipika of Susruta, Sutra Sthana, Chapter 21, verse no. 10, Varanasi: Chaukhambha Sanskrit Sansthan; 2012; 92.
33. Amit Mukherjee, OP Dwivedi, Dr. Jain J, Khuje SMR. Efficacy of *Vaitarana Basti* with respect to Ayurveda. JOURNAL of Drug Delivery and Therapeutics. 2018; 8(6-s):246-250. Available online: <https://jddtonline.info/index.php/jddt/article/view/2122/1567>
34. Yadavji Trikamji(Editor). Commentary: Ayurveda Deepika of Chakrapani on Charaka Samhita of Charaka by Agnivesha, Chikitsasthana, Chapter 28, Verse no. 26, Varanasi; Chowkhambha Orientalia;617.