

A COMPARATIVE CLINICAL STUDY OF SIRAVEDHA AND AGNIKARMA IN MANAGEMENT OF GRIDHRASI (SCIATICA)

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ABSTRACT

Background: The prevalence of low back pain is 50–70% throughout life, and 4–6% of people have clinically significant sciatica as a result of lumbar disc prolapse. Sciatica and low back pain are two of the leading causes of morbidity worldwide. The only options available are conservative measures that provide momentary pain relief or surgery that has adverse effects. Today's patients need to find fast pain treatment because pain has an impact on their physical, mental, and social well-being. Ayurveda offers a variety of treatments, but Agnikarma and Siravedha are meant to provide immediate pain relief.

Aim: The purpose of this study is to evaluate the effectiveness of Sirvedha and Agnikarma in treating Gridhrasi. **Materials and Methods:** This experiment is a parallel group, open-label randomization. Thirty patients in all were treated with Agnikarma in 19 cases and Siravedha in 11 cases. The patients were split randomly into two groups. Panchadhatu Shalaka performed Agnikarama on the lumbosacral spine and Achilles tendon area. Four Angulas below Janu

Sandhi (the knee joint) was where Siravedha was performed. Every patient received pills containing placebo starch. To compare the efficacy of two groups, use the Chi-square test and the paired t-test for efficacy within the group. **Results:** For each group separately, Gridhrasi's cardinal symptoms have been relieved. Following Agnikarma, 68.42% of patients had a noticeable improvement, while 21.05% had total alleviation. Of the patients in Siravedha, 27.27% showed significant improvement, while 72.73% showed moderate improvement. **Conclusion:** Agnikarma manages Gridhrasi more effectively than Siravedha.

KEYWORDS: Agnikarma, Gridhrasi, Raktamokshana, sciatica, Siravedha.

INTRODUCTION

For most patients, the main reason they contact a doctor is pain. It goes by the name Ruja, which is a synonym for illness. It alters a patient's state both mentally and physically. A common symptom among most Vata Vyadhis is pain. One such Ruja Pradhaana Vata Vyadhi is Gridhrasi. Intense shooting pain in Gridhrasi typically radiates from the gluteal region, or Sphika, to the foot, or Pada. Gridhrasi's symptoms are comparable to those of sciatica, according to contemporary science. It is characterised by sciatic nerve distribution pain and is brought on by irritation of the spinal nerve. Globally, the leading cause of morbidity is lumbar disc prolapse-related low back pain and radiating pain. Over a lifetime, 50–70% of people will experience low back pain, and over 40% will experience sciatica. Leg disc prolapse-related sciatica affects only 4–6% of people. Therefore, this poses a serious risk to the working population. The patients' daily routine and overall quality of life are disrupted due to the persistent and elongating discomfort.

When it comes to treating sciatica, medical science only offers symptomatic relief through analgesics such as non-steroidal anti-inflammatory medicines. In certain instances where nerve compression is severe, surgical procedures such as laminectomy and discectomy may be necessary; however, these operations come with costs and limits. In Ayurveda, Bheshaja, Snehana, Swedana, Siravedha, Agnikarma, and Basti are among the techniques used to cure Gridhrasi.

In the modern world, getting pain relief quickly is essential to getting back to your regular activities. Therefore Both Agnikarma (a therapeutic deliberate burn) and Siravedha (a therapeutic vein puncture) are thought to be instantaneous pain relievers. Ruja Pradhaana Vata Vyadhis have demonstrated the efficacy of Agnikarma and Siravedha.

Agnikarma and Siravedha are para-surgical practices that Sushruta has cited as being better than other healing treatments in Gridhrasi. Thus far, the function of Agnikarma and Siravedha in the treatment of Vata Vyadhis such as Gridhrasi has not been investigated.

Thermotherapy is frequently used to treat inflammatory diseases, pain, stiffness, and muscular spasms. These signs and symptoms can be seen in the individuals with sciatica. In light of the aforementioned information, this study has been designed with the purpose of

evaluating and comparing. the role of Siravedha and Agnikarma in controlling Gridhrasi (sciatica).

MATERIAL AND METHOD

In this open randomised parallel group trial, a total of 38 patients with gridhrasi who were attending the Shalya Tantra, IPGT and RA outpatient and inpatient departments at Gujarat Ayurved University, Jamnagar, were randomly registered, regardless of their age, sex, religion, caste, occupation, etc. The Institutional Ethics Committee accepted the study with wide letter no. PGT/9-A/Ethics/2021-12/2087 dated 5/03/2024 - S. No. 25.

This clinical trial is undergoing review and is registered with CTRI.

Qualifications for inclusion

- Cases of Gridhrasi with symptoms such as Spandana, Tandra, Gaurav, Arochaka, Ruja, and Stambha have been diagnosed.
- A sign similar to Sakthi nikshepa nigraha (positive test for straight leg raising, or SLR).
- Individuals in the age range of 25 to 65.

Criteria for exclusion

- Uncontrolled diabetes mellitus, high blood pressure, hip and spine TB, cancer of the spine or other organs
- Spinal fractures; • Heart conditions (myocardial infarction, ischemic heart disease, coronary artery disease, etc.)
- Anaemia (%Hb < 07.00 mg/dl)
- Being pregnant

Teaming

Two therapy groups were formed out of the patients.

Team A

Agnikarma was completed using Bindu-style Dahana and Panchdhatu Shakla in this group (n = 19). A total of five thirty Bindu Dahan were produced at the lumbro sacral area and five fifteen Bindu Dahan at the Achilles tendon's ankle region. Haridra powder was applied to wounds following Agnikarma, and patients were instructed to start using Madhu and Ghrita the following day. Four times, the identical protocol was implemented at intervals of seven days.

Pancha Dhatu Shalaka is composed of the elements Tamra (copper), Loha (iron), Yashada (zinc), Rajata (silver), and Vanga (tin).

Team S

With the aid of a disposable scalp vein number 20, the Siravedha type of Raktamokshana was performed in this group (n = 11) under all aseptic circumstances. A total of 30–60 ml of blood were drawn from 4 Angula below Janu Sandhi (the knee joint), depending on the state and severity of the ailment. After the surgery, the tight bandaging was applied. Four times, the same process was implemented at intervals of seven days.

evaluation standards

Based on the alleviation observed in the primary symptoms and indicators of the illness, a scoring system was established based on the severity of each sign and symptom. Using the visual analogue scale (VAS), pain was assessed [Table 1]. To determine the effectiveness of Agnikarma/Siravedha in Gridhrasi, assessments were conducted every seven days, fourteen days, twenty-one days, and twenty-eight days.

A. Stambha (stiffness)

Gradation: Grade

Description:

0 No stiffness

1 After a lengthy period of sitting, stiffness for a few minutes that is eased by light movement

2 Stiffness lasting longer than an hour or occurring more than once during the day, but not interfering with regular tasks

3 Stiffness that interferes slightly with regular activities and lasts longer than an hour or many times a day

Four bouts of stiffness lasting between two and six hours severely interfere with daily activities.

B. Suptata (numbness)

Gradation: Grade

Description:

0 No numbness

1 Rarely, once a day for a short while

2 Occasionally, once a day for a short while

3 Times a Day for Two or More Times/30 to 60 Minutes

4 Several times a day, or more than an hour.

C. Spandana Grading (pulsating/throbbing)

Grade Description:

0 No pulsation or throbbing at all

1 Occasionally for a few minutes, which is eased on its own;

2 Every day, once a day, for a few minutes

3 Often throughout the day, impacting everyday schedule

4 Every day for numerous times, seriously impairing everyday activities.

D. Gradation for Aruchi (anorexia)

Grade Description

0 Normal taste in food, feeling to eat food in time

1 Feeling to take food but not having taste

2 Anannabhilasha – not feeling to take food even if hungry

3 Bhktadvesha – irritability to touch, smell, seeing and listening about food

4 Abhaktachchanda- Aversion to food because of anger, stress etc.

E. Gradation for Tandra (drowsiness)

Grade Description

0 No drowsiness

1 Mild drowsiness occasionally but does not affect daily routine

2 Moderate drowsiness frequently many times in a day that hamper daily routine

3 Moderate drowsiness whole day and need to take rest so can't work

4 Severe drowsiness whole day also at mental level reduced alertness etc.

Table 1: Detail description of assessment of pain.

Types of pain	Description	Grade	Description
None		0	No pain
Mild	Does not interfere with most activities. Able to adapt to pain psychologically and with medications or devices such as cushions	1 2 3	Very light, barely noticeable pain. Most of the times patient never think about pain. Mild pain which is discomforting . Very noticeable pain, but patient got used to it
Moderate	Interfere with many activities, Requires lifestyle	4 5	Strong deep pain and distressing to patient. Patient notice the pain all

	changes, but patient remained independent, unable to adapt to pain	6	the time and cannot completely adapt Strong deep piercing pain. Very Distressing to patient. Patient notice the pain all the time and it affects normal lifestyle Very strong, deep piercing pain partially dominating the senses and causing trouble holding a job
Sever	Unable to engage in normal activities. Patient is disabled and unable to function independently	7 8 9	Very strong, deep piercing pain completely dominating the senses Patient effectively disabled and frequently cannot live alone Very strong, deep piercing pain with severe personality changes if the pain is present for long time Patient can't tolerate it and demand pain killers or surgery whatever be the side effects or risks 10 Unimaginable, unspeakable, unbearable pain

F. Gaurava Gradation (heaviness)

Grade Description

0 No sense of weight

1 Periodic sensation of heaviness that doesn't interfere with regular movement

2 Often experiencing a heavy feeling that interferes with regular movement

3 Having a persistent feeling of heaviness that significantly impairs regular movement

4 A constant feeling of heaviness that completely interferes with regular movement.

G. Power and Muscle Grading

Description of Grade

0 Full resistance and active movement against gravity (normal power)

1 Mild resistance and active movement against gravity

2 Active, resistance-free motion against gravity

3 Using gravity to eliminate active movement;

4 No contraction.

H. SLR Gradation:

Description of Grade

0 More than or equal to 90°

1 71° - less than 90°

3 310 -500 2 510 -700 Absence of contraction

4 <300

Assessment of overall effect

- Complete remission: 100% relief
- Marked improvement: 75-99% relief
- Moderate improvement: 50-74% relief
- Mild improvement: 25-49% relief
- Unchanged: Up to 25% relief in the complaints of the patients.

OBSERVATION

Thirty of the 38 patients who were initially registered for the work finished the course of treatment, while eight individuals withdrew. Thus, 38 patients had observations done of them, and 30 patients had assessments and conclusions made of them. Of the 38 patients, the majority were in the 41–50 year age range (36.84%), were female (60.53%), had reached the post-menopausal stage (39.13%), and were from the middle class (71.05%). In this study, the majority of patients had dominating Aharas, Katu Rasa (71.05%) and Ruksha Guna (52.63%), as well as habits of Vishama Cheshta (unpleasant posture: 50.00%) and Diwaswapna (day sleep: 68.42%). 50% of the patients reported hard stool and the majority had inconsistent bowel habits. In the majority of patients, the chronicity was 1–5 years (36.84%), although 78.95% had no history of injury.

38 patients from both groups had the following Gridhrasi symptoms: 100% of patients had Ruja (pain), 73.68% had Sambha (stiffness), 81.58% had Suptata (tingling sensation), 50% had Gaurava (heaviness in the legs), and 89.47% had positive SLR. For the majority of patients, bending forward (63.16%) made their pain worse, while reclining supine (71.05%) made their discomfort go away. Regarding Gridhrasi types, 50% of them had Vataja and Vata-Kaphaja types [Table 2].

RESULTS

Effect of Agnikarma

In patients of Group A, highly significant results were seen in Ruja (64.91%), Stambha (75.42%), Suptata (65.38%), Spandana (pulsatile feeling-42.85%), Tandra (drowsiness-50%), Gaurava (66.68%) and Sakthinikshepanigraha (restricted movement of thigh-66.09%). Agnikarma had provided highly significant results in increasing muscle power of hip flexion

(75.02%), ankle dorsiflexion (100%) and great toe extension (75.02%). Lab investigations showed insignificant changes after Agnikarma [Table 3].

Effect of Siravedha

Ruka (33.32%), Stambha (45.82%), Suptata (58.62%), Gaurava (57.15%), and Sakthinikshepanigraha (46.14%) in Group S showed extremely significant results, while Tandra and Spandana showed insignificant results.

Muscle power was not significantly affected by siravedha. Only the Hb% following Sirvedha (4.67%) showed a substantial decrease in lab studies [Table 4]. There were no notable alterations seen in either group's lumbosacral spine plain X-ray following treatment.

Agnikarma was found to be more successful than Siravedha in Ruka, Stambha, and SLR when the two groups were compared. Comparing the two groups revealed a statistically similar effect in symptoms such Suptata, Spandana, Tandra, Gaurava, and Arokaka [Table 5]. The two groups' respective effects on muscle power did not differ much.

Overall, 5.26% of patients in Group A experienced light improvement, 0.52% experienced moderate improvement, and 68.42% experienced substantial improvement. In 21.05% of the patients, the illness was completely remitted. Of the patients in Group S, 27.27% had a remarkable improvement and 72.73% had a moderate improvement. After the course of treatment, none of the patients had a slight improvement, a complete remission, or an unchanged category [Table 6].

After Agnikarma Vrana

The Agnikarma-caused wound healed fully and without difficulties in just one week, and the scar vanished within the post-Agnikarma period of 15 days.

DISCUSSION

In this study, maximum (36.84%) patients were in age group of 41-50 years. This age group is Parihani Kala of Madhyam Avastha in which gradual decline of Sharira Bala and Dhatus occur and provokes Vata Dosha. There is progressive decrease in degree of hydration of the inter-vertebral disc with advancement of age which is part of degeneration resulting in disc problems.

Table 2: General observations.

Observation maximum	Number of patients		Total	Percentage
	Group A	Group S		
Age (41-50 years)	9	5	14	36.84
Sex (female)	13	11	23	60.53
Economic status (middle class)	13	14	27	71.05
Aharaja Nidana (Katu Dravya Atisevana)	15	12	27	71.05
Aharaja Nidana (Ruksha Dravya Atisevana)	11	9	20	52.63
Viharaja Nidana (Diwaswapna)	14	12	26	68.42
Viharaja Nidana (Visama Cheshta)	13	6	19	50.00
Mansika Nidana (Chinta)	6	10	16	42.11
Bowel habit (constipated)	11	8	19	50.00
Chronicity (1-5 years)	5	9	14	36.84
History of injury (absent)	14	16	30	78.95
Aggravation factor (bending forward)	10	14	24	63.16
Relieving factor (lying supine)	12	15	27	71.05
Type of Gridhrasi (Vataja)	11	8	19	50.00
Type of Gridhrasi (Vata-Kaphaja)	9	10	19	50.00

Table 3: Effect of Agnikarma therapy on signs and symptoms.

Symptoms	N	Mean score		Percentage	SD	SE	t	p
		BT	AT					
Ruka	19	6.000	2.105	64.91	1.197	0.275	14.183	<0.001
Stambha	14	4.357	1.071	75.42	2.268	0.606	5.421	<0.001
Suptata	17	3.059	65.38	0.707	0.171	11.662	11.662	<0.001
Spandana	3	1.167	0.667	42.85	0.000	0.000	infinite	<0.001
Tandra	2	2.000	1.000	50.00	0.000	0.000	infinite	<0.001
Gaurav	11	2.182	0.727	66.68	0.820	0.247	5.882	<0.001
Arochaka	2	1.500	0.000	100	0.707	0.500	3.000	>0.05
Sakthi Nikshepa Nigraha (SLR)	18	3.111	1.056	66.09	0.873	0.206	9.994	<0.001

SE: Standard error, SD: Standard deviation, SLR: Straight leg rising

Table 4: Effect of Siravedha therapy on signs and symptoms.

Symptoms	N	Mean score		Percentage	SD	SE	t	p
		BT	AT					
Ruka	11	6.545	4.364	33.32	1.168	0.352	6.197	<0.001
Stambha	9	2.667	1.444	45.82	0.441	0.147	8.315	<0.001
Suptata	10	2.900	1.200	58.62	0.949	0.300	5.667	<0.001
Spandana	3	2.333	1.000	57.13	0.557	0.333	4.000	>0.05
Tandra	3	1.333	1.000	24.98	0.557	0.333	1.000	>0.05
Gaurav	8	2.000	0.857	57.15	0.690	0.261	4.382	<0.01
Arochaka	3	2.000	1.000	50	0.000	0.000	Infinite	<0.001
Sakthi Nikshepa Nigraha (SLR)	11	3.545	1.909	46.14	0.505	0.152	10.757	<0.001

SE: Standard error, SD: Standard deviation, SLR: Straight leg rising

Table 5: Comparison of effect of Siravedha and Agnikarma.

Symptom	Percentage improvement		Chi-square value	P
	Agnikarma	Siravedha		
Ruka	64.91	33.32	10.054	<0.01
Stambha	75.42	45.82	3.527	>0.05
Suptata	65.38	58.62	1.500	>0.05
Spandana	42.85	57.13	0.750	>0.05
SLR	66.09	46.14	9.413	<0.01
Arochaka	100.00	50.00	1.701	>0.05

Table 6: Overall effect of therapy in groups A and S.

Improvement	Group A		A Group S	
	N	Percentage	N	Percentage
Unchanged	0	0.00	0	0.00
Mild improvement	1	5.26	0	0.00
Moderate improvement	0	5.26	8.72	72.73
Marked improvement	13	68.42	3	27.27
Complete remission	4	21.05	0	0.00

The majority of patients (60.53%) were female, and it's possible that they regularly engaged in postural stressors such lifting, bending, and maintaining non-neutral postures while doing daily home tasks.

Sciatica may have additional reasons as well, such as osteoporosis, many pregnancies, etc. The majority of patients (71.05%) who belonged to the middle class indicated that their hardworking and stressful lifestyle may have contributed to their illness. The constipated and irregular bowel habits of 50% of the patients shed light on the significance of Apana Vata in the Samprapti of Gridhrasi. Because osteoporosis develops after menopause due to a clear correlation between low oestrogen levels and this condition, 39.13% of females were postmenopausal. Under this scenario, the breakdown of bone (resorption) occurs more quickly than the creation of new bone.

Overuse of Ruksha Ahara Dravya and Katu at maximum Patients with a Saman Guna to Vata have vitiated Vata Dosha in their bodies. The culprits were Vishamasana and Vishama Cheshta. for poor posture, but Diwasvapna (day sleep)-related characteristics indicate that the disease's obstructive aetiology, or Marga Avrodhajanya Samprapti, is vitiated. Since age-related degenerative processes and lesions in the intervertebral disc are the primary causes of sciatica, sciatica developed in 78.95% of patients without a history of injury. Pain was worsened in the majority of patients (63.16%) by forward body bending. Given that the

lumbar spine mostly functions in forward flexion, the explanation makes sense when considering the anatomy of the spine. Posterolateral and posterocentral disc prolapses are the most common types. A portion of the prolapsed disc comes into closer touch with the posterior longitudinal ligament, which has a rich nerve supply, as patients lean forward.

The majority of patients (71.05%) reported relief from discomfort when lying supine, which may have resulted from some pressure being released on the nerve roots. Since these are the hallmark symptoms of Gridhrasi, Ruka, Stambha, Suptata, Gaurava, and Sakthinikshepanigraha were found in the greatest number of patients.

In this work, a 20-number disposable scalp vein set—which was readily accessible and didn't require septic precaution—was used to modify the traditional Siravyadha method by Kutharika Shastra. When it comes to treating sciatica patients' primary complaint of pain, agnikarma is quite helpful.

According to Ayurveda, Vata is the main humour that causes Ruka, and pain is a primary symptom in the majority of Vatavyadhis.

The primary Guna of Vata Dosha is Sheeta Guna, which is the exact opposite of Agni's Ushna Guna.

Therefore, because of its Ushna Guna, Agni has the ability to relieve pain. According to Siravedha, pain can be relieved by expelling morbid humours (vitiating Doshas) that have accumulated as a result of an external inflammatory response. The primary causes of stambha are the Vata Dosha Gunas of Sheeta and Ruksha.

Agnikarma indirectly relieves the Tambha by acting as an opponent to the Vata qualities through Ushna Guna. Although the precise origin of muscle stiffness is yet unknown, decreased neuromuscular control is the most typical explanation. Agnikarma works by raising the temperature at the application site, which lessens nerve reflexes and causes muscles to relax. Following Agnikarma, Suptata may feel better. This could be because the sciatic nerve is no longer compressed, or it could be because the surrounding muscles and ligaments have relaxed. Twakagata Vata contains Suptata, and Sushruta mentions Raktamokshana in it.

Since sciatica nerve stretching pain is the primary cause of restricted SLR in most patients, pain was reduced and SLR improved following Agnikarma and Siravedha treatments. The

development of Gaurava is caused by Guru Guna, which is mostly present in Kapha Dosha. Agnikarma relieves Gaurava because Agni has Laghu Guna and its Ushna Guna pacifies the Sheeta Guna of Kapha as well.

Only a small number of patients had symptoms of Tandra, Spandana, and Arochaka. During the course of treatment, following the recommended eating plan may help to reduce these symptoms. Since pathological motor involvement is not a common feature of sciatica, very few individuals have experienced it.

Agnikarma's effect on the nerve roots of the implicated muscles may have improved their specific motor supply, which in turn may have improved muscle power.

The average Hb level in the Siravedha group decreased from 13.027 to 12.418 g%, although this had no negative effects. The direct letting out of RBCs, which has an impact on the amount of Hb, is responsible for the shift in Hb% following Siravedha.

Probable mode of action of Agnikarma

Ushna, Tikshna, Sukshma, and Aashukari Gunas are characteristics of Agni that are anti-Kapa and in opposition to Vata. By creating Samyak Dagdha Vrana, the therapeutic heat from red-hot Shalaka is transported to Twakdhatu. This healing heat emanates from Thakdhatu in three ways. First, it eliminates the Srotavarodha, calms the vitiated Vata and Kapha Doshas, and preserves their equilibrium because of Ushna, Tikshna, Sukshma, and Ashukari Guna. Second, it improves blood circulation, or Rasa Rakta Samvahana, to the impacted area. The patient experiences symptom relief as a result of the increased blood flow to the injured area, which flushes away the chemicals that cause pain.

Third, the application of therapeutic heat raises Dhatwagni, which facilitates normal Dhatu metabolism, breaks down Amadosha in the afflicted area, and encourages Purva Dhatu to provide healthy nourishment. Majja Dhatu and Asthi gain stability in this way. As a consequence, relief from all Gridhrasi symptoms is experienced. It can also be confirmed that the healing heat penetrates deeper tissues, such as Mamsa Dhatu, and neutralises the Sheeta Guna of the Vata and Kapha Doshas. This brings the vitiated Doshas back to equilibrium and relieves the patients' symptoms.

Thermotherapy

Through the acceleration of metabolic processes, topical heat therapy reduces the concentration of toxic metabolites that cause discomfort and severe muscle spasms. The main method used to achieve this is a rise in local circulation. The inflammatory response to resolution may be accelerated, which could lessen the time it takes for the inflammation to resolve but may also cause discomfort at first. In general, thermotherapy is calming and mentally relaxing, which positively affects how the body responds to pain and lessens excruciating muscle spasms. Joint synovial fluid viscosity is known to decrease as temperature rises. There has been speculation that higher synovial fluid viscosity may be connected to the stiffness of the joints. By lowering the viscosity of synovial fluid, thermotherapy can relieve stiffness in the joints.

Probable mode of action of Siravedha

When Pitta or Kapha is in Anubandha to Vata Dosha, or when Pitta and Kapha are in Rakta and Kaphaja Vyadhies, Siravedha is generally suggested. When Pitta and Kapha dosha cause Vata Prakopa, Siravedha can assist remove Pitta and Kapha dosha's Avarana, making room for vitiated vata's Anuloma Gati, which subsequently relieves both Kapha dosha's and Vatika's symptoms. Some patients experienced rapid symptom relief during the operation, but the symptoms returned three to four days later. It might be the result of pure Vataja Gridhrasi, devoid of Kapha's Anubandha. Thus, theoretically, it may be claimed that patients with Avarana Janya Samprapti of Gridhrasi in Vata Kaphaja Gridhrasi benefit from Siravedha.

CONCLUSION

Agnikarma and Siravedha are simple, cheap, safe and effective in the management of Gridhrasi but Agnikarma is more effective than Siravedha in relieving the main symptoms of the disease.

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