

EFFECT OF MODIFIED AGNIKARMA (VIDDHAGNIKARMA) AND TENS THERAPY IN THE MANAGEMENT OF GRIDHRASI W.S.R TO SCIATICA – A COMPARATIVE CLINICAL STUDY

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ABSTRACT

Among various musculoskeletal disorders associated with pain, Gridhrasi is one among the Vatavyadhi and characterised by symptoms such as Ruk, Toda, Stambha and Spandana which typically originate in the Sphik and radiate sequentially through the Kati, Uru, Janu, Jangha and extend up to the Pada. The clinical features of Gridhrasi can be correlated with that of Sciatica, which refers to pain along the distribution of the Sciatic nerve. Several treatment techniques are explained for Sciatica for reducing pain in this condition. TENS therapy is widely used method. In Ayurveda, Agnikarma is indicated for painful conditions. Modified Agnikarma (Viddhagnikarma) is taken for better pain relief, hence to compare the efficacy of Viddhagnikarma and TENS therapy in the management of Gridhrasi w.s.r to Sciatica, this study has taken.

KEYWORDS: Viddhagnikarma, Gridhrasi, Modified agnikarma, Sciatica, Agnikarma.

INTRODUCTION

Pain, one of the most common causes of human suffering and significantly impairs quality of life and functional capacity. Among various musculoskeletal disorders associated with pain, Gridhrasi holds a prominent place in Ayurvedic literature. It is classified under the eighty Vataja Nanatmaja Vyadhis and is predominantly a Vedanapradhana Vyadhi.^[1] The term

Gridhrasi is derived from the Sanskrit word “Gridhra” meaning vulture, indicating the characteristic gait of the patient, which resembles that of a vulture due to severe pain and stiffness. Clinically, it is characterized by symptoms such as Ruk, Toda, Stambha and Spandana, which typically originate in the Sphik and radiate sequentially through the Kati, Uru, Janu, Jangha and extend up to the Pada.^[2] According to classical Ayurvedic texts, Gridhrasi arises due to the vitiation of Vata Dosha, either independently (Vataja Gridhrasi) or in association with Kapha Dosha (Vatakaphaja Gridhrasi). In Vataja type, pain is the predominant feature, whereas in Vatakaphaja type, symptoms such as Gaurava, Aruchi and Tandra are more pronounced.^[3] Gridhrasi closely correlates with the modern clinical condition Sciatica, which refers to pain along the distribution of the sciatic nerve, the largest nerve in the human body originating from the lumbosacral nerve roots (L4–S3). The hallmark feature is radiating pain along the course of the sciatic nerve, often accompanied by stiffness, numbness, tingling and restricted mobility.^[4] In the contemporary era, factors such as sedentary lifestyle, improper posture and occupational strain have contributed to a significant increase in the incidence of this condition, making it a major public health concern. Sciatica is a highly prevalent condition worldwide. Epidemiological studies indicate that its lifetime incidence ranges from 13% to 40% in the general population, with an annual incidence of approximately 1% to 5%.^[5] It most commonly affects individuals between 30 and 50 years of age, although it can occur at any age. Beyond physical discomfort, the condition also leads to psychological distress, decreased work productivity, and an overall decline in quality of life. Conventional management of sciatica includes analgesics, non-steroidal anti-inflammatory drugs (NSAIDs), physiotherapy and surgical interventions in severe cases, such as epidural steroid injections, nerve root blocks, discectomy and laminectomy.^[6] However, these approaches often provide only symptomatic relief and may be associated with recurrence or potential adverse effects. Transcutaneous electrical nerve stimulation (TENS) is a widely used non-pharmacological modality for managing neurogenic pain. It alleviates pain through both peripheral and central mechanisms, including stimulation of peripheral nerves, activation gate control theory of pain and promotion of endogenous endorphin release.^[7] In Ayurveda, Gridhrasi is managed through various modalities such as Bhesaja, Siravyadhana, Bastikarma and Agnikarma.^[8] Among these, Agnikarma is the most effective therapy in the management of painful conditions, especially musculoskeletal disorders. It involves therapeutic application of heat using various instruments, indicated particularly in Vata-Kapha predominant disorders, where pain and stiffness are prominent. Provides instant pain relief, reduces stiffness and muscle spasm, improves local circulation, removes avarana of

Vata, prevents recurrence due to its deep-acting nature. The diseases which are situated over Twak, Mamsa, Snayu, Asthi etc, are treated with Agnikarma by using various Dahanopakaranas.^[9] Suchi is one such tool that allows precise and localized application of heat. Enables controlled and targeted cauterization, minimizes damage to surrounding tissues, suitable for deep-seated pain points, produces minimal scarring, can be used in sensitive anatomical areas. Thus, Suchi becomes an effective instrument in procedures like Viddhagnikarma, where precision is crucial. Here modified method of Agnikarma is designed and the most tender points are elicited and pierced with hollow needles. Heat is produced by means of touching needles with diathermic cautery. The treatment is having combined effect of Acupuncture and heat therapy. The properties of Agni include tikshna, ushna, sukshma gunas which helps in decreasing the doshas present and also it relaxes the muscle fibres. Suchi penetrates the tender points causing a stimulation over that area. Heat application causes rise in temperature which induces relaxation of muscles and hence muscle spasm with inflammation and pain gets reduced. That's why modified method of Agnikarma has been chosen. Cosmetic aspect of viddhagnikarma shows no scar marks, while usual agnikarma leaves burn marks over the area. Viddhagnikarma is simple and patient friendly treatment procedure. Vata kapha avarana is removed with this method. Pain and stiffness are relieved which improves the quality of life of patients. So, to provide pain relief for the suffering patients modified form of agnikarma is adapted and applied in Gridhrasi conditions. The modified technique, Viddhagnikarma, utilizing Suchi as a Dahana Upakarana, appears to be a promising, minimally invasive intervention with significant therapeutic potential. Comparing its efficacy with TENS therapy will help establish a scientific and clinical basis for its use in contemporary practice. Hence, the present study is undertaken to evaluate and compare the effectiveness of Modified Agnikarma (Viddhagnikarma) and TENS therapy in the management of Gridhrasi (Sciatica), aiming to provide better patient outcomes and improve overall wellness.

AIMS AND OBJECTIVES

- To evaluate the effect of Modified Agnikarma (Viddhagnikarma) in the management of Gridhrasi w.s.r to Sciatica.
- To evaluate the effect of TENS therapy in the management of Gridhrasi w.s.r to Sciatica.
- To compare the effect of Modified Agnikarma (Viddhagnikarma) and TENS therapy in the management of Gridhrasi w.s.r to Sciatica.

MATERIALS AND METHODS

A. Study design

A comparative clinical study containing 40 patients diagnosed as Gridhrasi w.s.r to Sciatica, were included for the study and was randomly allotted into 2 groups namely Group-A (Modified Agnikarma Viddhagnikarma) and Group-B (TENS therapy) with 20 patients each.

B. Source of patients

A total number of 40 patients diagnosed as Gridhrasi of either sex was selected from OPD and IPD of Taranath Government Ayurvedic medical college and hospital, Ballari.

DIAGNOSTIC CRITERIA**INCLUSION CRITERIA**

- Age group of 20 to 60 years irrespective of gender, religion and occupation.
- Patients with Pratyatma Lakshanas of Gridhrasi like Ruk (Pain), Stambha (Stiffness), Gourava (Heaviness), Suptatha (Numbness) and Positive SLR test (Sakthi Utksepa Nigrahana).

EXCLUSION CRITERIA

- Sciatica due to secondary causes such as Spine tumour and TB of spine.
- Spine fracture, Cauda equina syndrome, Spina bifida, Sacro-iliac joint dislocation and Sacroiliitis.
- Pregnancy and Lactating women.
- Those who are contraindicated for Agnikarma.
- Patients suffering from other systemic illness like uncontrolled DM, HTN and infection of spine by Herpes simplex virus.

INVESTIGATIONS

CBC, ESR, RBS, CT, BT, HBs Ag, HIV 1&2, X ray.

MATERIALS REQUIRED FOR STUDY



Fig. no. 1: Materials required for Modified Agnikarma (Viddhagnikarma).



Fig. no. 2: Materials required for TENS therapy.

Showing materials require for the study

Surgical gloves	Q.S
Sterile gauze pieces	Q.S
Drape	1
26-Gauge ½ inch needles	Q.S
Diathermy cautery	1
Ghrita or Madhu	Q.S
TENS machine	1
Plaster	Q.S

PROCEDURE

GROUP A - MODIFIED AGNIKARMA (VIDDHAGNIKARMA)

PURVA KARMA

Patient was advised to take pichhila anna before procedure.

PRADHANA KARMA

Patients were made to lie down in prone position and with gentle palpation along the course of sciatic nerve, most tender avascular areas are identified. The 26G*1/2 sterile needles were pricked at the depth of 1mm -3mm at marked tender points with uniform distance of 1cm length and width. Diathermy cautery (coagulation mode) was gently touched to the needles. Total 3 rounds of Agnikarma were done.

PASCHAT KARMA

After that the needles are removed followed by application of Madhu or Ghrita done. Likewise, 3 sittings were done with interval of 1 week.

GROUP B - TENS THERAPY

Patients were made to lie down in prone position. Electrodes are placed along the course of sciatic nerve, where the pain is located or trigger points after palpation. With frequency 50Hz, pulse width 150 μ s to 250 μ s and intensity adjusted according to patient's threshold. Stop the machine after 15 min and remove the electrodes. Same was continued daily for 21 days. Follow up assessment was carried out after 7days to evaluate therapeutic outcomes.

ASSESSMENT CRITERIA

Assessment is based on subjective and objective parameters, assessed before and after the treatment.

1. SUBJECTIVE PARAMETERS

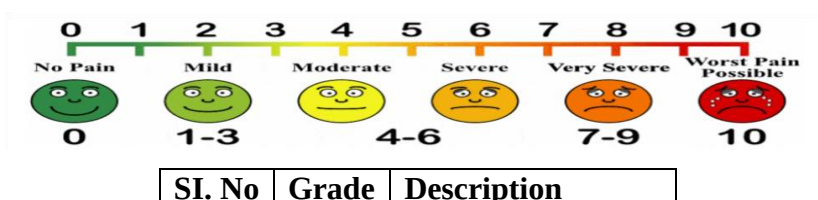
- a) Ruk (Pain)
- b) Stambha (Stiffness)
- c) Suptatha (Numbness)
- d) Gourava (Heaviness)

2. OBJECTIVE PARAMETERS

- a) Range of movement assessed by SLR (between 30° to 70°) (Sakthi utksepa nigrahana).

Subjective parameters

1. Pain – VAS



1	0	No pain
2	1	Mild pain (1-3)
3	2	Moderate pain (4-6)
4	3	Severe pain (7-9)
5	4	Worst pain (10)

2. Stiffness

SI. No	Grade	Description
1	0	No stiffness
2	1	Mild stiffness, particularly during movements, able to continue routine work (1-10 min)
3	2	Moderate stiffness, able to continue work with difficulty (20-30 min)
4	3	Severe stiffness, felt on movement and also at rest, interfering routine work (more than 30 mins).

3. Numbness

SI. No	Grade	Description
1	0	No numbness
2	1	Occasionally once in a day for few minutes
3	2	Daily once in a day for few minutes
4	3	Daily for 2 or more times or 30 to 60 minutes
5	4	Daily more than 1 hour

4. Heaviness

SI. No	Grade	Description
1	0	No Heaviness
2	1	Occasionally not affecting the normal movements
3	2	Frequently affecting the normal movements
4	3	Throughout the day severely affecting the normal movements
5	4	Throughout the day totally hampering normal movements

Objective parameters

1. Straight Leg Raising Test (SLR) Straight leg raising test (between 30° to 70°)

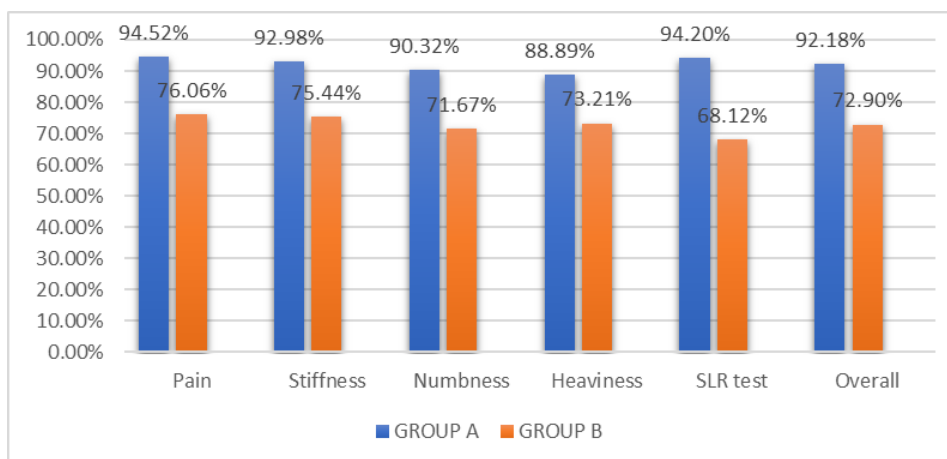
SI. No	Grade	Description
1	0	More than 70°
2	1	61° - 70°
3	2	51° - 60°
4	3	41° - 50°
5	4	30° - 40°

RESULTS

Showing the overall comparative results of Group A and Group B.

Parameters	Group A	Group B
Pain	94.52	76.06
Stiffness	92.98	75.44
Numbness	90.32	71.67
Heaviness	88.89	73.21
SLR test	94.20	68.12
Overall	92.18	72.90

The overall changes are higher in Group A as compared to Group B



MODIFIED AGNIKARMA (VIDDHAGNIKARMA) PROCEDURE



Marking tender points

Pricking 26G*1/2 needles

Conduction of heat
through electric cautery



Removal of needles

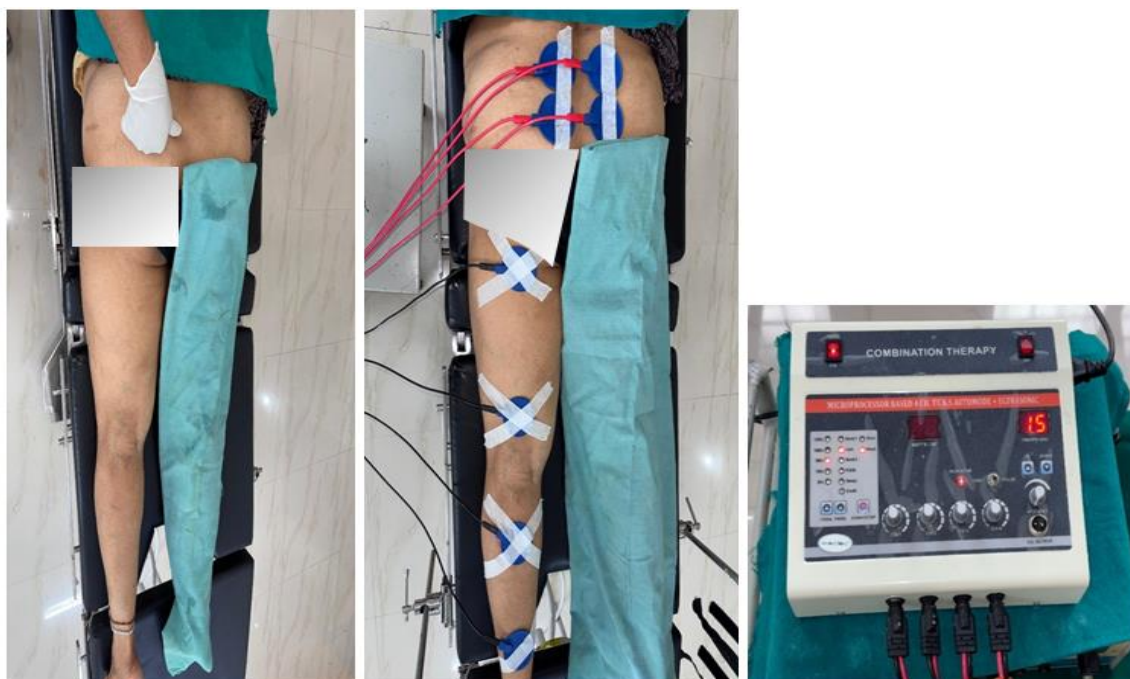
Application of Ghrita

TENS THERAPY PROCEDURE

Palpation of tender points

Placement of electrodes

On the machine & set measurements



Removal of the electrodes



After procedure



Off the machine



DISCUSSION

DISCUSSION ON VIDDHAGNIKARMA

Agnikarma is considered one of the superior para-surgical procedures in Ayurveda for the management of painful musculoskeletal disorders. Acharya Sushruta has given prime importance to Agnikarma and stated that diseases treated by Agnikarma do not recur easily. Gridhrasi being a Vatapradhana Vyadhi associated with severe pain and stiffness, Agnikarma has been advocated in classics as an effective line of treatment. Viddhagni is fusion procedure of Viddha (Vyadhana) and Agnikarma. It is effective in both acute and chronic pain. Viddhagnikarma is the modification of Agnikarma. It's a very simple procedure without much complications. Cosmetologically it is better than Agnikarma with shalaka. There will be no scar marks and it can be done in OPD level. While doing Viddhagnikarma some patients were afraid of needles for which they needed some counselling. There were no scar marks after Viddhagnikarma treatment.

Probable mode of action of Viddhagnikarma

- Diffuse Noxious Inhibitory Controls (DNIC) by acupuncture effect.
- A δ -fibers are activated under thermal or mechanical stimuli and result in a short-lasting-pricking type of pain sensation. The activation of C-fibers is stimulated by thermal,

mechanical or chemical stimuli, which often results in poor localization and dull pain sensation.

- Ushna Guna of Agnikarma causes Vataghna, removes Kapha avarana thereby reduces the stiffness
- Dhatwagni utklesha causes Amapachana and doshapachana which leads to removal of toxins from the body.
- Agnikarma increases the blood flow and lymphatic circulation at the affected site.
- Heat produces a direct effect on capillaries, arterioles etc causing them to dilate. It increases the metabolic rate at cellular level. Metabolic wastes and P-substances which are accumulated will be pumped back and thereby relief of pain.
- Heating of tissues in a therapeutic temperature (40 – 45⁰C) helps to reduce the muscle spasm. Thereby improves range of movements in Gridhrasi patients.
- Vant Hoff's law: Metabolic rate may increase by 13% for each 10⁰C rise in temperature. Increasing the tissue temperature helps in increasing of enzymatic activity to a peak value.
- Activates endogenous opioid system causes suppression of pain.

DISCUSSION ON TENS THERAPY

Transcutaneous Electrical Nerve Stimulation (TENS) is a non-invasive physiotherapeutic modality widely used for the management of painful musculoskeletal and neurological disorders including Sciatica. It involves application of low-voltage electrical impulses through surface electrodes placed over painful areas or along the course of nerves. The goal of TENS therapy is to alleviate pain and promote pain management without the need for medical or invasive procedures.

Probable mode of action of TENS therapy

- TENS works on the “Gate control theory” of pain. The electrical stimulation from the TENS unit is believed to activate the nerves in the treated area, which then interferes with the transmission of pain signals to the brain, essentially closing the gate where pain is received and reducing pain perception.
- TENS uses classical descending inhibitory pathways activating opioid, GABA, serotonin and muscarinic receptors to reduce dorsal horn neuron activity and the consequent pain.
- TENS also reduces central neuron sensitization and release of the excitatory neurotransmitters glutamate and substance P.

- The intention of TENS is to stimulate small diameter, high threshold peripheral afferents (A-delta) in order to activate extra segmental descending pain inhibitory pathways. Non-painful muscle twitches occur during stimulation causing activity in small diameter muscle afferents.

CONCLUSION

- Overall effect of treatment in Group A (Viddhagnikarma) is 92.18% and in Group B (TENS therapy) is 72.90%.
- The study showed marked response in the management of Gridhrasi patients.
- Based on the observations and results the following hypothesis was accepted **“Modified Agnikarma (Viddhagnikarma) is more effective than TENS therapy in the management of Gridhrasi w.s.r to Sciatica.”**

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