



Review Article

**APPLICATION OF AGNIKARMA WITH SHALAKA DAHANA UPAKARANAS IN THE
MANAGEMENT OF MUSCULOSKELETAL DISORDERS - A COMPREHENSIVE REVIEW**

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ABSTRACT

MSDs or the musculoskeletal disorders are considered as a new epidemic which needs to be solved by continuous research. These disorders demand an effective treatment to compensate the loss of working days. Both acute and chronic musculoskeletal disorders leads to the work absenteeism more commonly, but in addition chronic musculoskeletal disorders affect the quality of life of the patients. These disorders are currently managed with number of therapeutic modules and still the complete relief of the same is not possible. In this study, the endeavour was to focus on the intervention which is devoid of oral medications but very effective in relieving the pain of the patient. One such therapy was the *Agnikarma chikitsa* of ancient Ayurvedic science described by Acharya Sushrutha for the effective management of musculoskeletal disorders has been studied in detail. Though various studies have been carried out in different musculoskeletal disorders and even the *Agnikarma chikitsa*, this study evaluated only the *Shalaka dahanopakaranas* or rod type of burning material and its role in the management of musculoskeletal disorders. Among the various *Dahanopakaranas* or the materials used for *Agnikarma chikitsa*, *Shalaka's* are the most commonly used *Upakarana* due to its uniqueness and quick in providing the relief for the patients affected. Based on the Ayurvedic classics, various *Shalakas* have been innovated and been used in practice such as *Panchadhatu shalaka, Tamra shalaka, Suvarna shalaka, Rajata shalaka* etc. These *Shalakas* have also shown its unique effects in relieving different symptoms of different diseases. Being the most effective in pain reduction and in chronic disorders, it can be conducted as an outpatient procedure and is devoid of any adverse effects.

INTRODUCTION

The most increasing occupational health problems in the workplace are the musculoskeletal disorders that have the worldwide prevalence. This includes physical, ergonomic and psychosocial factors that are multifactorial as the causes of work-related MSDs.^[1]

According to World Health Organization and International Labour Organization, musculoskeletal disorders are considered as a new epidemic which needs to be solved by continuous research. As these MSDs are related to work disease and results in work-related absence, it demands an effective treatment to compensate the loss of work days. ^[2]

Injuries or the abnormalities of muscles, bones, nerves, tendons, ligaments, joints, cartilage, and spinal discs are understood as musculoskeletal disorders (MSDs). This includes pain, tears, soreness, sprains, strains, carpal tunnel syndrome, hernias and injuries of connective tissue too.^[3,4] With the increased burden of economic costs and healthcare needs of individuals with associated disability, the musculoskeletal

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disorders are treated as the second most common cause of disability in the world.^[5] Many clinical practice guidelines are available for the better management of MSDs.^[6]

These disorders are managed by multiple treatment modalities and by many specialists including clinicians, general practitioners, physiotherapists, chiropractors and osteopaths. These disorders are treated with exercise therapy, manual therapy, psychosocial interventions, self-management advice and education etc non-pharmacological treatments or therapies, complementary therapies such as acupuncture and pharmacological intervention with the combination of analgesics, NSAIDs and corticosteroid injections. Surgical interventions such as arthroscopic debridement, total knee replacements and laminectomies are considered in case of with refractory symptoms.^[7]

Shalyatantra is being considered as one of the prime branches of Ayurveda, as it involves the major treatment principles of Ayurvedic science such as *Bheshaja karma*, *Kshara Karma*, *Agni karma*, *Shastra karma* and *Raktamokshana* among which *Agni karma* is superior due to its special attributes. *Agnikarma* is administered in the diseases with local involvement of *Vata* and *Kapha doshas* and is indicated in many complicated diseases like *Bhagandara*, *Apachi*, *Antravidhi Arsha* and *Arbuda* etc.^[8] It has also shown its effectiveness in the musculoskeletal disorders like *Gridhrasi*, etc., and in many other disorders involving *Sira*, *Snayu*, *Asthi* etc.^[9]

Though the procedure of *Agnikarma* has specific indications and contraindications with respect to time and season, it can be performed in any season as per Acharya Dalhana in case of emergency with precautions such as consuming foods having *Sheeta* properties, covering the site with moist clothes, and smearing the body with cold applications etc. As the disease that are treated by *Agnikarma* do not have the recurrence *Agnikarma*, clinically is considered as the prime parasurgical procedure. This is very effective in the management of chronic disorders and in *Vata kaphaja* disorders due to its hot potency (*Ushna veerya*) and penetrating property (*Tikshna ushna guna*).^[10] In the present study, an attempt has been made to evaluate the effects of *Agnikarma* performed with *Shalaka dahana upkarana* and assess the effects of the same in musculoskeletal disorders.

Shalaka Dahanopakaranas

Rajata and Loha Dhatu Shalaka in Sandhigata Vata

In a randomized controlled study that included 28 patients of *Sandhigatavata* divided into 2 groups, Group A and Group B. Group A was administered *Agnikarma* with *Rajata Shalaka* and Group B with *Loha Shalaka* in four sittings. Compared to *Rajata shalaka* (76.31% relief in pain), (57.13% relief in crepitus),

Loha Shalaka (83.77% relief in pain), (57.92% relief in crepitus) showed more significant changes in the reduction of pain and crepitus with statistically significant results.^[11]

Pancha dhatu, Loha dhatu and Tamra dhatu shalaka in Gridhrasi

In a study of Bakashi et al, a comparative study on *Gridhrasi*, *Agni karma* was performed using *Loha dhatu shalaka*, *Tamra dhatu* and *Panchadhatu Shalaka* in *Gridhrasi* that included 3 groups with 22 patients. Group A included 8 patients and *Agni karma* was performed with *Panchadhatu Shalaka*, Group B had 7 patients and *Agnikarma* was administered with *Lauhadhatu Shalaka* and in Group C *Agnikarma* was done with *Tamradhatu Shalaka* and had 7 patients. All the patients included in the study were given six sittings of *Agni karma* with an interval of 7 days between two sittings. Among all the 3 *Shalaka-dahanopakaranas*, *Agnikarma* with *Panchadhatu Shalaka* showed reduction of *Ruka* and *Tandra*, *Lauhadhatu Shalaka* in *Spandana* and *Gaurava* and *Tamradhatu Shalaka* was effective in reduction of *Toda*, *Stambha* and *Aruchi*. The study showed that the *Agnikarma* with *Tamra Dhatu Shalaka* showed significant changes with the parameters and was effective in reducing the complaints of *Gridhrasi* compared to *Lauha* and *Panchadhatu Shalakas*.^[12]

Panchadhatu shalaka in Tennis Elbow

Tennis elbow, commonest disorder of elbow joints, is affecting the people who work on computers the most and because of which their job is greatly affected. In Ayurveda, tennis elbow can be correlated to *Snayugata vata* and Acharya Sushruta has advised *Agnikarma* for disorders of *Snayu* (ligaments and tendons), *Asthi* (bone), *Siddhi* (joints) etc. In a case study of 38-year-old female patient with tennis elbow, *Agnikarma* was performed with the red hot *Pancha dhatu shalaka* covering about 5cm length with gap of 0.5cm between the two dots until *Samyak twak dagdha lakshanas* (therapeutic superficial skin burn) were observed in the form of a *Vilekha dahana vishesa* (multiple dots in a three straight lines). The affected part was cauterized after the application of *Triphala Kasaya* and sterilized the part with gauze piece. The procedure was done for 3 sittings at the interval of 7 days. Along with the *Agnikarma*, patient was also administered powder of *Ashwagandha* and *Navajivana Rasa* orally, for a period of 3 weeks. This study showed that the combination therapy of *Agnikarma*, a parasurgical procedure and the oral administration of the medicines bestowed relief in pain and movement of the elbow joint.^[13]

Panchadhatu shalaka in Gridhrasi

In the study of Bali Yogitha et al, a randomized controlled study on *Gridhrasi*, that included 2 groups with 20 patients each. Group A was administered

Agnikarma with *Panchadhatu shalaka* and Group B, *Katibasti*. The study showed that the management of *Gridhrasi* by *Agnikarma* was more efficacious as compared with *Katibasti* in reducing pain. [14]

In one more study, an open randomized parallel group trial on *Gridhrasi*, 30 patients were randomly divided in two groups and were treated by *Agnikarma* in 19 patients and *Siravedha* in 11 patients of Group A and Group B respectively. *Agnikarma* was carried at lumbosacral spine and Achilles tendon areas by *Panchadhatu Shalaka* and *Siravedha* was applied four *Angulas* below *Janu Sandhi* (knee joint). With *Agnikarma chikitsa*, 68.42% patients showed marked improvement and 21.05% had complete relief. Whereas in *Siravedha*, 72.73% patients had moderate improvement and 27.27% patient had marked improvement. The study showed that *Agnikarma* showed significant changes in providing relief compared to *Siravedha* in the management of *Gridhrasi*. [15]

Janu sandhigata vata is one of the most common musculoskeletal problems affecting the elderly population. In this study, Thirty-three patients of *Janugata Sandhivata* were randomly divided into two groups. In Group A, *Agnikarma* was done with *Panchadhatu Shalaka* and in Group B, along with *Agnikarma*, *Panchatikta Guggulu* was administered orally for one month. In Group A, 86% relief in the *Sandhishula* was observed and in Group B 77.78%. *Sparshaasahyata* was reduced in Group A (69%) and Group B (87.78%). In *Sandhisphutana* 39% improvement in Group A and 46.67% in Group B was seen. In *Sandhigraha*, 63% relief in both the groups was observed. Patients of both the groups obtained relief from the pain after first sitting of *Agnikarma* and the relief was sustained for more than 3 months in most of the patients. This study concluded that *Agnikarma* was effective in the management of pain in the *Sandhivata*. [16]

Rajata shalaka in Janusandhigatavata

In the comparative study of Puri et al, 30 patients of *Janusandhigatavata* were included and divided into 2 groups, Group A was administered with Oral indigenous drugs and Group B, *Agnikarma* with *Rajata shalaka*. *Agnikarma chikitsa* with *Rajata shalaka* showed significant results in the management of *Janusandhigatavata* compared to oral indigenous drugs. [17]

Agnikarma with Suchi in Vatakantaka

In this comparative clinical study, 30 patients of *Vatakantaka* were randomized into two groups A and B. Group A was administered *Agnikarma* with *Suchi* and Group B was administered with *Upanaha sweda*. This study showed that *Agnikarma* was more significant compared to *Upanaha sweda* by reducing all the symptoms of *Vatakantaka* and by giving quick

relief, whereas *Upanaha sweda* was gradual in providing the relief. [18]

Suvarna Shalaka in Manya and Amsa Sandhi Shoola

Neck pain and shoulder pains are common in the people with sedentary lifestyle. In an open non comparative single blind clinical study, 30 patients with *Manya* and/ or *Ansa shoola* between the age group of 21 to 60 yrs were selected. *Agnikarma* with *Suvarna shalaka* showed significant relief in pain in *Manya* and *Ansa Sandhi shoola*. [19]

Asthapada Panchaloha Shalaka in Gridhrasi

In this comparative study, 40 patients with *Gridhrasi/Sciatica* were included and randomly divided into two groups of each 20 patients. Group A patients were treated with *Agnikarma* with *Asthapada Panchaloha Shalaka* whereas in Group B, *Agnikarma* was carried out with *Bindu Panchaloha Shalaka*. Total length of *Asthapada Panchaloha Shalaka* was 8cm, diameter of the tip was 5mm, Total length of the handle was 24.5cm and weight of the *Shalaka* was 200gm. This study showed that the *Asthapada Panchaloha Shalaka Agnikarma* was more significant compared to *Bindu Panchaloha Shalaka Agnikarma* with statistically significant results. [20]

Tamra Shalaka in Avabahuka

This was an open labeled single sample clinical trial carried out in 30 patients. Patients with the complaints of *Avabahuk* or the frozen shoulder were treated with *Agnikarma chikitsa* done by *Tamra Shalaka*. *Tamra Shalaka* was heated over the burning gas until it became red hot. *Agnikarma* was done at most painful areas by *Bindu Dahana* until the *Samyak dagdha vrana lakshanas* were observed i.e., *Mamsa dagdha*. Significant effects of *Agnikarma chikitsa* were observed and no adverse effects were noted. [21]

DISCUSSION

According to Acharya Sushruta, by *Agnikarma chikitsa*, the *Ushna gunatva* of *Agni* pacifies the *Sheeta guna* of the *Vata dosha* and helps in the reduction of the complaints in the musculoskeletal disorders. Acharya Charaka has also described about the *Agni* and advises *Agni* as the best treatment for reducing the *Shoola*. [22]

It is also said that the *Ushna Guna* of *Agni* helps to stabilize the movement of *Vata* and removes the *Avarana* effectively and thereby provides relief from the pain of the *Shoola*. Modern medicine also speaks about the therapeutic heat and according to them in case of musculoskeletal disorders, therapeutic heat increases the blood circulation of the affected part and leads to the proper nutrition of the tissue. This is also called as the induced circulation and this helps to flush away pain producing substances from affected site, reduces the local inflammation and thereby provides the relief for the patient. [23] Success of the

Agnikarma chikitsa depends on the optimum and constant temperature of the *Shalaka* and this is achieved by the thickness of *Shalaka*. To maintain this constant temperature, *Shalakas* bearing weight of 100 gm will be chosen with its tip being sufficiently pointed for enough to create *Bindu Dahana Vishesa* for administration of *Agnikarma*.^[12] *Panchadhatu* or *Panchaloha shalaka* though not explained in classics was innovated by Dr. P.D.Gupta based on his enormous experience on *Agnikarma chikitsa*. According to him, the *Panchadhatu shalaka*, helps in transferring of therapeutic heat to *Twak dhatu* (skin) and gradually to deeper structure and eventually pacifies the *Ama dosha* and *Srotovagunya* and finally renders relief in symptoms of *Shotha* and *Shoola* of the disease.^[13]

Though several theories can be adopted to explain the mechanisms of *Agnikarma*, the actual mechanism still remains as an enigma to the medical fraternity. According to the theory of thermodynamics, the thermostatic centre of the body immediately gets activated and distributes the localized rise of temperature throughout the body when the thermal energy is transferred from an instrument to the tissue. This results in vasodilatation, increased blood flow and induces relaxation of muscles. This leads to the reduction of muscle spasm with inflammation and pain.^[10]

In case of *Suvarna shalaka* or the *Shalaka* prepared with gold, it normalizes the equilibrium between *Doshas* by bringing the aggravated *Vata dosha* to normalcy. In case of *Vatavyadhi*, the *Vata dosha* gets normalized due to the effect of heat that is produced by *Agnikarma chikitsa* and also *Agni* helps in neutralizing the etiopathology of *Vatavyadhi* by digestion of *Ama* (auto toxins) and by removing the *Margavarodha* or the pathway obstruction. To improve *Dhatvagni*, the effect of *Agni* also reaches the deepest and smallest structures of the body system.^[19] *Tamra shalaka* or the *Shalaka* prepared from copper or the red hot metal probe viz. (copper probe) possess the *Ushna, Sukshma, Ashukari gunas* and this helps in reducing and pacifying the vitiation of *Vata dosha, Stambha* and *Margavarodha*.^[21]

This study evaluates the role of *Shalaka dahanopakaranas* in the management of musculoskeletal disorders. Among the various *Dahanopakaranas* or the materials used for *Agnikarma chikitsa*, *Shalaka's* are the most commonly used *Upakarana* due to its uniqueness and quick in providing the relief for the patients affected. Being the most effective in pain reduction and in chronic disorders, it can be conducted as an outpatient procedure and is devoid of any adverse effects.

CONCLUSION

Agnikarma is mainly indicated in *Vataja* and *Vatakaphaja* disorders as per Ayurveda Acharyas. *Vataja* and *Vatakaphaja* disorders include many musculoskeletal disorders that affect people at least once in their lifetime. Musculoskeletal disorders are the chronic disorders that make the patient suffer for longer duration and affect the quality of life of patients suffering from it. Although these disorders are treated with multiple treatment modules, *Agnikarma* therapy has a significant role in reducing the complaints. *Agnikarma* administered with different *Dahana Upakaranas* and mainly with *Shalakas* which are made up of various materials has shown significant changes in reduction of pain, stiffness and improvement in the movements of the affected joints. This includes *Panchadhatu shalaka, Tamra shalaka, Loha shalaka, Swarna shalaka, Rajata shalaka* etc among which *Panchadhatu shalaka* is considered the best.

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