



## Research Article

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### STUDY ON EFFECT OF STHANIKA SWEDA IN JANUSADHIGATA VATA WITH SPECIAL REFERENCE TO OSTEOARTHRITIS OF KNEE JOINT

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#### ABSTRACT

Mobility is the basic character of life which is dependent on the structural as well as functional character of the body. Though proper nourishment is available the body loses its qualitative capacity of structure and function in advance. Osteoarthritis of knee joint is one such common degenerative joint disorder. Sandhigatavata (osteoarthritis) is one such non-threatening disease affecting the mobility of multiple joint. In modern parlance it can be compared with Osteoarthritis of knee joint. Snehana and Swedana are prescribed as common line of treatment in vatavyadhi. Swedana plays an important role in treatment of Sandhigatavata. Pindasweda and Upanaha Sweda explained in classics serves the purpose of alleviation of vitiated vatadosha. This Study was conducted to evaluate the efficacy of Patrapinda sweda and Upanaha sweda. Patients suffering from Janusandhigatavata (osteoarthritis of knee joint) was selected and randomly distributed to Patrapinda sweda (PPS) and Upanaha group 15 patients in each group. PPS group showed marked improvement with 73.14% in all parameters of Sandhigatavata in comparison to the Upanaha group which showed marked improvement with 70.99% in all parameters. Patrapinda sweda showed an edge over Upanaha Sweda.

**Key words:** Janusandhigata Vata; Osteoarthritis; Patrapinda sweda; Upanaha Sweda

#### INTRODUCTION

Mobility is the important feature of life, which is dependent on the structural as well as functional character of the body. As the age advances though the proper nourishment is available, the body loses its qualitative capacity of structure and functions. Osteoarthritis of knee joint is commonly known as wear and tear arthritis. It is a condition in which natural cushioning between joints, cartilage wears away. When this happens the bones of knee joint rub more closely against one another with less of shock absorbing benefits of cartilage. The rubbing results in pain, swelling, stiffness, decreased ability to move and sometimes formation of bone spurs. It is the most frequent joint disease with prevalence of 22%-39 in India. Osteoarthritis is more common in women than men, but the prevalence increases dramatically with age. Nearly 45% of women over the age of 65 years have symptoms while radiological evidence is found in 70% of those over 65 years.

In Ayurveda Sandhigatavata is not mentioned as independent disease. Acharyas have mentioned it as one of the Vatavyadhi<sup>1</sup>. The symptoms<sup>2</sup> of sandhigatavata (osteoarthritis) mentioned are Vatapoonadruthivatsparsha (Feeling of touching air filled pocket) Sandhi shoola, (Joint pain), Atopa (Crepitus) Prasaranaakunchanavedanasapravrutti (Painful extension and flexion) etc. By observing these symptoms we can compare sandhigatavata to Osteoarthritis. Snehana (Oleation) and Swedana (Fomentation)<sup>3</sup> are the treatment modalities mentioned of vatavyadhi and as specific Upanaha (Medicated poultice) and bandhana (Bandaging) is the line of treatment in sandhigatavata<sup>4</sup> (osteoarthritis)

In this work efficacy of the Patrapinda Sweda<sup>5</sup> (Sudation with bolus of herbs) and Upanaha sweda<sup>6</sup> (poultice) was assessed and compared.

#### Objective

To evaluate the comparative efficacy of Patrapindasweda (Sudation with bolus of herbs) and Upanaha Sweda (poultice) in Janusandhigatavata (Osteoarthritis of knee joint)

#### Methodology

Sandhigatavata is one of the nonthreatening diseases affecting the mobility of multiple joints. Even though multiple joints are affected, knee joints are more prone for damage since they are the weight bearing joints. Drugs used in Patra Pinda Sweda viz, Nirgundi (*Vitex negundo*), Eranda (*Ricinus communis*), Dhatura (*Datura stramonium*), Agnimantha (*Premna Integrifolia*), Arka (*Calotropis procera*), Jambheera (*Citrus medica*), Coconut (*Cocos nucifera*) and that of Upanaha, above mentioned drugs in combination with Dhanyamla, Vacha (*Acorus calamus*) churna and Rasna (*Pluchea lanceolata*) churna, Saindhavalavana are having Vatahara, (Controlling vata) Shothahara (Anti-inflammatory) shoolaghna (Analgesic) action. To compare the efficacy of these two swedana (Sudation) procedures this study was designed.

Before starting the study, the detailed procedure of treatment explained to patient and only after fully conscious consent from the patient, treatment is adopted. Consent form as prescribed per CCRAS guidelines for Janusandhigatavata (Osteoarthritis of knee joint) was adopted in this study.

**Duration of treatment-** 7 days

**Follow up Period-** 15 days (8<sup>th</sup> day 15<sup>th</sup> day and 21<sup>st</sup> day)

**Total duration of study** - 21 days

**Sample size-** 30 Patients (15 patients each group)

Ethical clearance number SVMAMC/Dissertation/473/2019-20 DATED 12/2/2019 for this study was approved from Institutional ethical committee.

It was an open labelled comparative clinical study to assess the efficacy of Patrapinda sweda and Upanaha sweda in Janusandhigatavata (Osteoarthritis of Knee joints). In this study patient of either gender were included randomly. A minimum of 30 patients with 15 patients each in group of Patrapinda sweda (Bolus prepared from chopped herbs) and Upanaha sweda (Poultice), who were suffering from symptoms of Janusandhigatavata and who were fulfilling the inclusion criteria are randomly selected.

#### Inclusion criteria

Patients presenting with the signs and symptoms of Janu Sandhigata Vata as per diagnostic features, age group of 40-70 years and who were fit for Pinda sweda and Upahana Sweda, are included in the study.

#### Exclusion criteria

Patients with age less than 40 years and more than 70 years, with skin allergies/skin diseases on knee joint, with systemic

conditions such as Gouty arthritis, Rheumatoid arthritis, Psoriatic arthritis, and complicated arthritis, having fracture and dislocation of knee joint were excluded from the study.

#### Intervention

**Poorva karma** (Pre-operative procedures)

Sthanika Abhyngna (Localised oleation) with Moorchithaila taila was performed to affected knee joint.

**Pradhana karma** (Main procedure)

Patra Pinda Sweda (Bolus of chopped leaves) to affected knee joint – 30 minutes

Upanaha sweda (Poultice) to affected knee joint- advised to remove the upahana after 4 hours

**Paschat karma** (Post-operative procedures)

Rules and regulations to be followed after swedana karma (sudation therapy) was followed.<sup>7</sup>

#### Assessment criteria

Sandhivedana (Pain), Sparsha asahishnuta (Tenderness), Sandhi Atopa (Crepitus), Stabdhata (Stiffness), Range of Motion on the basis of Goniometric reading, X- Ray of affected knee joint Antero-Posterior view and lateral view taken for assessment for the study. Keller-Gren Lawrence Scale of radiological grading and KOOS' Questionnaire format are used for assessment.

## RESULTS

**Table 1: Statistical Analysis of all assessment criteria in Group A**

Criteria	Before treatment	After treatment	% Improvement	S.D	S.E	t value	p value	Interpretation
<b>Subjective</b>								
Sandhi shoola	2.73 ± 0.46	0.80 ± 0.41	70.70	0.46	0.12	16.36	< 0.001	H. Significant
Sandhi shotha	1.87 ± 0.64	0.33 ± 0.49	82.35	0.64	0.17	9.28	< 0.001	H. Significant
Sparshaasahishnutha	2.60 ± 0.99	0.47 ± 0.52	81.92	0.99	0.26	12.61	< 0.001	H. Significant
Sandhi atopa	1.67 ± 0.90	0.47 ± 0.52	71.86	0.77	0.20	6.00	< 0.001	H. Significant
<b>Objective</b>								
Range of movements	1.33 ± 0.49	0.27 ± 0.46	79.70	0.59	0.15	6.96	< 0.001	H. Significant
X ray changes	1.67 ± 1.11	1.07 ± 0.80	35.93	0.63	0.16	3.67	< 0.01	Significant

Statistical evaluation of all assessment criteria in group A shows that highly significant results were noticed in all subjective and objective parameters with 'p' value < 0.001 except the parameter of x ray changes wherein significant results were observed with 'p' value < 0.01

**Table 2: Statistical Analysis of all assessment criteria in Group B**

Criteria	Before treatment	After treatment	% Improvement	S.D	S.E.	t value	p value	Interpretation
<b>Subjective</b>								
Sandhi shoola	2.67 ± 0.49	0.67 ± 0.49	74.91	0.65	0.17	11.83	< 0.001	H. Significant
Sandhi shotha	2.07 ± 0.59	0.47 ± 0.52	77.29	0.51	0.13	12.22	< 0.001	H. Significant
Sparshaasahishnutha	2.93 ± 0.59	0.80 ± 0.41	72.70	0.74	0.19	11.12	< 0.001	H. Significant
Sandhi atopa	1.80 ± 0.68	0.80 ± 0.41	55.56	0.65	0.17	5.92	< 0.001	H. Significant
<b>Objective</b>								
Range of movements	1.40 ± 0.63	0.27 ± 0.46	80.71	0.52	0.13	8.50	< 0.001	H. Significant
X ray changes	1.80 ± 0.94	1.13 ± 0.83	37.22	0.82	0.21	3.16	< 0.01	Significant

Statistical evaluation of all assessment criteria in group A shows that highly significant results were noticed in all subjective and objective parameters with 'p' value < 0.001 except the parameter of x ray change wherein significant results were observed with 'p' value < 0.01

## Overall improvement in assessment parameters

Table 3: Overall Improvement in assessment parameters of SandhigataVata in both groups

Overall Improvement	Group-A		Group-B	
	f	%	f	%
Marked (> 75%)	04	50.00	04	50.00
Moderate (51-75%)	03	37.50	03	37.50
Mild (25-50%)	01	12.50	01	12.50
No Improvement (< 25%)	00	0.00	00	0.00

## DISCUSSION

The procedure where stimulating the body temperature by contact with the external heat source and thereby producing the Swedana for therapeutic reason is termed as Swedana (Sudation). Swedana karma (Sudation therapy) does not only mean perspiring with the thermal mode but also includes non-thermal methods which bring perspiration. When the literatures are compiled for the procedure of swedana (Sudation) we get many references for categorization of swedana. This classification is depending the medicines used, mode application, equipments used, such as- Saagni (With heat), Niragni (without heat), Ekanga (Localised), Savanga (Generalised/Full body), Snigdha-Rukha, Nadisweda, Holaka, Jentaka, kupi, Pidasweda etc. Swedana is one such treatment modality through which one can achieve the therapeutic benefits in the form of elimination of Sthambha (Stiffness), Gourava (heaviness), Sheeta (Coldness). When the literature is compiled for the usage of drugs for pinda sweda, we get wide range of drugs, as prescribed in classics. Those can be divided as follows-

**Liquid and semisolid media-** Payasa, Krishara, Odana (Different forms of preparations with millets and cereals) Etc.

**Solid media-** Sikata (Sand), Pamshu (Small stones), Loha (Metal), Vesavara (Processed meat), Lavana (salt) etc.

**Dry drugs-** Dried drugs such as Kakolyadigana, Goshakrut (Dry cow dung), Ajashakrit (Dry dung of goat) Erandabeeja (Seeds of *Ricinus communis*), Masha (*Vigna mungo*) Godhuma (*Triticum aestivum*) mudga (*Vigna radiata*)<sup>4</sup> etc.

**Wet Drugs-** Fresh leaves (Patrabhanga)<sup>5</sup>, Chopped lemon. Etc.

**Meat Origin-** Flesh of birds and animals<sup>6</sup>

Patrapinda contains finely chopped leaves, which are vatahara, shothahara (Anti-inflammatory) and shoolahara (Analgesic). These are cooked with moorchita taila, grated coconut and saindhavalavana. Then made into pottali (bolus) by wrapping in a cotton cloth; Upanaha sweda is one of the main types of sweda which is enumerated by all the acharyas. Acharya charka has mentioned Upanaha sweda in Anagneyasweda (Sudation without heat)<sup>7</sup>. Here in, the drugs are made into paste form and added with amladravya (sour drugs) like chukra, aranala, kanji (Different types of sour preparations), saindhavalavana (Rock salt), snigdhadravaya (Unctuous drugs) specifically, thaila (Medicated oil) made into warm paste and applied over the affected area.

All the textual references quoted Upanaha (Poultice) as the choice of treatment in Sandhigatavata (Osteoarthritis). This application of paste and bandaging probably helps in improving vasculature of affected joint. It aids in reduction of symptoms by restricting the excessive joint movement due to the limitation in knee joint movement followed by partial fixation of bandage. The drugs used are vatahara, shothahara (analgesic), ushnaverya (Drugs of hot potency) and helps in alleviating the symptoms. Prior to the procedure of swedana (Sudation) application of oil is preferred

which plays a role as-Prevention from the complication like burn and any dermal allergic reactions. This also enhances absorption through lipid media and sustenance of heat in that particular area will be prolonged. Upanaha (poultice) is a type of swedana (sudation) which induces hyperthermia and improves local blood circulation, thus leading to relaxation of local muscles by physical effect of heat and there by reduces pain, stiffness etc<sup>8</sup>.

As there is no specific time duration for the procedure of swedana mentioned in the classics, till the attainment of samyakswinna lakshana (Features of properly done sudation therapy). One can perform this procedure and study showed the average time taken for the completion of procedure is announced 35 minutes.

The probable mode of action of swedana karma (Sudation therapy) in comparison to modern parlance may be explained with transdermal drug delivery system.

In present day pharmaceuticals the common and most accepted drug delivery system is oral drug administration. This oral drug administration has its own drawback due to the first pass metabolism, which makes its poor bio availability. To increase the bio availability with rapid relief and to produce maximum benefit pertaining to relief of symptoms and absorption we need to choose alternative drug delivery system, such that it should produce with minimal dosing higher bio availability; which can be approached with trans-dermal drug delivery system. This means transport of therapeutic agents or medicines through the skin for the purpose of systemic result.

## Effect of heat

Diffusion through the skin is a temperature dependent process, so raising the skin temperature will enhance the Trans-dermal delivery of various drugs by increasing skin permeability, body fluid circulation, blood vessel wall permeability, drug solubility<sup>9</sup>.

Due to heat there will be vasodilatation and increase in circulation particularly in superficial tissues, where the heating is greatest. Stimulation of superficial nerve endings can also cause a reflex dilatation of arterioles. By this necessary O<sub>2</sub> and nutritive materials supplied to the particular area.

Heat has been applied as a counter irritant, which is the thermal stimulus, may affect the pain sensation. (Theory of Melzack and Wall)<sup>10</sup>. Heat is having indirect effect on muscle tissue. The increase in temperature in muscle tissue leads to muscle relaxation, this muscle relaxation brings increased muscle action efficiency increased muscle action. On the other hand application of heat over the skin or raise of temperature increases activity of sweat glands which intern results in reflex stimulation of sweat glands resulting from effect of heat on the sensory nerve ending.

Janusandhigata is grouped under the nanatmajavatavyadhis in charakasamhitha. Samprapthi (pathogenesis) further explains the disease in the form of Swanidanajanya, Avaranajanya, Dhatukshayajanya (degenerative) basis. Vata and asthi (bone)

have ashrayaashyai sambhandha, (interdependency). Which means vata is sheltered in asthi, when vata increases qualitatively and varies functionally, leads to depletion in snehaguna, increase in rukshaguna, (dryness) laghuguna (lightness) etc, by which khavaigunya occurs in asthi leading to pathogenesis of sandhigatavata. The procedures like Patrapinda sweda and Upanaha are vatahara, shothahara and shoolahara in nature. The drugs which are used in both Patrapinda sweda and upanaha sweda help in increasing the vascularity, releasing the spasm and reduce the inflammation.

## CONCLUSION

Sandhigatavata is one of vatavyadhi may be correlated with osteoarthritis. Swedana is an effective treatment modality for shoola, shotha and sthambha are predominant features of Vatavyadhi. Pindasweda and Upanaha Sweda are samshamaneeya (palliative type) type of Bahirparimarjanachikitsa (External therapy). Upanaha (Poultice) is an effective topical application and it can work as instant relief in painful and inflammatory conditions. More research can prove the mode of action of these swedana procedures more precisely

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