

Effect of Yoga Basti in Sandhivata w.s.r. to Osteoarthritis of Knee joint

Research Article

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Abstract

Sandhivata (Osteoarthritis) is one of the *Vataja vyadhi* (disease due to *Vata Dosha*) and most common degenerative disease seen in old age people. The *Ayurvedic* approach to the management of *Sandhivata* is to provide the complete cure. Objective of the present study was to evaluate the effect of *Erandamooladi Niruha Basti* and *Dashamooladi Anuvasana Basti* as *Yoga Basti* in *Sandhivata* w.s.r to osteoarthritis of knee joint. **Method:** 30 patients fulfilling the inclusion criteria of *Sandhivata* were randomly selected in a single group and treated with *Yoga Basti* [*Dashmooladi Anuvasan Basti* and *Erandmooladi Niruha Basti*] daily in the morning for a period of 8 days. Clinical signs and symptoms were given suitable scores according to their severity and assessed based on pre and post data gathered through pre-designed research clinical proforma. The results having 'P' value less than 0.0001 was considered to be statistically significant in this study. **Result:** All the patients in the group showed highly significant improvement in all the symptoms. Pain relieved 80.77%, stiffness relieved 84.39%, fatigue relieved 100%, restricted movement reduced by 100 % and deformity reduced by 74.15%. **Conclusion:** *Yoga Basti* is found effective in the management of *Sandhivata* with reference to osteoarthritis of knee joint. All the patients responded to the given treatment without any adverse effects and complications. Mild to marked relief was found in all the symptoms of *Sandhivata*.

Keywords: Osteoarthritis, *Sandhivata*, *Vatavyadhi*, *Yoga basti*.

Introduction

According to *Ayurveda*, freedom from disease is not only health. To be healthy, a person should be happy mentally, physically, socially and also spiritually. Imbalance of *Dosha* is termed as *Roga*. Among *Tridosha*, *Vata* is responsible for almost all disease(1).

Sandhivata is described under *Vatavyadhi* in all the *Samhita* and *Sangraha Grantha*. In *Vridhdhavastha*, all *Dhatus* undergo *Kshya*, thus leading to *Vataprakopa* and making individual prone to many diseases. Among them *Sandhigata Vata* stands top in the list. *Acharya Charaka* was the first person who described the disease separately named "*Sandhigata Anila*", but has not included under 80 types of *Nanatmaja Vyadhi*(2). *Acharya charaka* has considered *Vata Vyadhi* as a *Maharoga*(3). Till to date *Sandhigata Vata* is a challenging disease and is the number one cause of disability in industrialized countries. According to world health organization osteoarthritis(*sandhivata*) is the second commonest musculoskeletal problem in the world populations coming to 30%(4).

The trouble of *Sandhis* by *Prakupita Vata* is the main phenomena in *Samprapti* of *Sandhigata Vata*. *Sandhis* come under the *Madhyama Roga Marga* and thus, involvement of *Madhyama Roga Marga*, *Vata Dosha* and *Dhatukshaya* figures disease *Kashtha Sadhya* (difficult to treat.)(5)

Osteoarthritis is the most common articular disorder begins asymptotically in the 2nd and 3rd decades and is extremely common by age 70. Almost all persons by age 40 have some pathologic change in weight bearing joint. 25% females and 16% males have symptomatic OA. Indians are said to have increased knee OA as compared to western population(6). The disease Osteoarthritis may be regarded as a reward of longevity. It seems man has paid price for standing on hind limbs in form of osteoarthritis of weight bearing joints of the body. The disease arthritis causes work disability. It limits everyday activities such as walking, dressing, bathing etc., thus making individual handicapped. No treatment is available which can prevent the disease process. In Western Medical science, mainly analgesics, anti-inflammatory drugs or surgery are the options for the treatment of Osteoarthritis, don't provide remarkable recovery, but causes great adverse effect. Researchers are trying their level best for making drugs which can prevent or slow down or reverse joint damage. A common treatment for *Vata Vyadhi* has been described by *Acharya Vagabhata*.e. repeated use of *Snehana* (*Oleation*

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therapy) and *Swedana* (Sudation therapy), *Basti* (Enema) and *Mrudu Virechana* (Mild Purgative)(7). *Acharya Sushruta* has mentioned the treatment for *Sandhigata Vata* clearly i.e. *Snehana*, *Upanaha*, *Agnikarma*, *Bandhana* and *Unmardana*(8). *Panchakarma* is a very unique therapeutic procedure, because of its preventive, promotive, prophylactic and rejuvenative properties as well as providing a radical cure.

Among *panchakarma basti karma* is considered as “*Ardha chikitsa*” and “*Sarvakari*”. *Basti* are of many types depending on numbers, ingredients and needs. *Yoga basti* is one among them. In *yoga basti*, 8 *basti* are given in total, in this procedure first *anuvasana basti* should be given followed by 3 *niruha* and *anuvasana basti* given alternatively and at the after that one *anuvasna basti* should be given. *Dashamoola taila* is indicated in *vata vyadhi* (9) and *Erandamooladi kwatha* (10) is useful for *niruha basti* in *vata vyadhi*.

A humble attempt to find a combination of palliative therapy, which is facile, uncomplicated and economical, is made in the present context. The entire study has two major ramifications as 1. Conceptual study of the literature of both *Sandhivata* and osteoarthritis of knee are reviewed, 2The clinical study observations, results, discussion, conclusion and bibliography are documented.

Aim:

An attempt has been made to study in detail about *sandhivata* w.s.r to osteoarthritis of knee joint to study *basti karma* in detail and to evaluate the effect of *Erandamooladi niruha basti* and *Dashamooladi anuvasana basti* as *yoga basti* in *sandhivata*.

Materials and Methods:

Drug:

Anuvasan basti with Dashmool tail - Dashmool tail which was readily prepared by Baidhnath pharmacy, was taken and was administered in form of anuvasan basti as per the schedule of yoga basti mentioned. Ingredients were given in details in table-1. 1)dashmool tail = 150 ml, 2)saindhav lavan= 1 pinch, 2)erandamuladi niruh basti erandmuladi niruh basti was prepared by mixing the drugs in following proportion and was administered in the form of niruh basti as per the schedule of yoga basti.1)honey-80 ml2)saindhav lavan-10 gm3)sneh[dashmool tail]-150 ml 4)kalka [erandmula kalka]-20 gm 5)erand muladi niruh basti kwath churn with water-350 ml, Total quantity= approximately 600 ml.

Table-1 Ingredients of Yoga basti

Bilva	Agnimantha	Syonaka
Patala	Gambhari	Shalaparani
Prishnaparni	Gokshura	Brihati
Kanthakari	Rasana	Nirgundi
Sarshapa	Erandamula	Palasha
Ashwagandha	Atibala	Guduchi
Punarnava	Aragvadha	Devadaru

<i>Madanaphala</i>	<i>Shatahva</i>	<i>Priyangu</i>
<i>Pippali</i>	<i>Maduka</i>	<i>Bala</i>
<i>Daruharidra</i>	<i>Kutaja</i>	<i>Mustaka</i>
<i>Shatapushpa</i>	<i>Hapusha</i>	<i>Til Taila</i>
<i>Madhu</i>	<i>Saindhva</i>	<i>Gomutra</i>
<i>Bilva</i>	<i>Agnimantha</i>	<i>Syonaka</i>
<i>Patala</i>	<i>Gambhari</i>	<i>Shalaparani</i>
<i>Prishnaparni</i>	<i>Gokshura</i>	<i>Brihati</i>
<i>Kanthakari</i>	<i>Rasana</i>	<i>Nirgundi</i>
<i>Sarshapa</i>	<i>Erandamula</i>	<i>Palasha</i>
<i>Ashwagandha</i>	<i>Atibala</i>	<i>Guduchi</i>
<i>Punarnava</i>	<i>Aragvadha</i>	<i>Devadaru</i>
<i>Madanaphala</i>	<i>Shatahva</i>	<i>Priyangu</i>
<i>Pippali</i>	<i>Maduka</i>	<i>Bala</i>
<i>Daruharidra</i>	<i>Kutaja</i>	<i>Mustaka</i>
<i>Shatapushpa</i>	<i>Hapusha</i>	<i>Til Taila</i>
<i>Madhu</i>	<i>Saindhva</i>	<i>Gomutra</i>

Sources of data.

Patients who attended the OPD and IPD of B.M.J Ayurvedic Medical College, Hospital, Gajendragad. Patients of either sex diagnosed as being suffering from *sandhivata* were selected for the study.

Sampling method.

Random sampling method was followed and sampling was done from the population. Patients with features satisfying the inclusion criteria were selected and registered with the help of special Performa for the study.

Inclusion criteria.

Patients between age group of 40-70 years, having classical signs and symptoms of *sandhivata*, positive to goniometer test and suitable for *Basti Karma* are included in study

Exclusion criteria.

Patients who are not fit for *basti karma*, having other systemic disorders and below 40 years and above 70 years were excluded from the study.

Study Design

It was a single group clinical study in which 30 patients of *Sandhivata* who were diagnose based on signs and symptoms were allocated for *Yoga Basti*.

Intervention:

Table-2:Diagnosed patient were administered *anuvasan (A.B)* and *niruh basti (N.B)* as per *Yoga Basti* schedule.

Days	1	2	3	4	5	6	7	8
<i>Basti</i>	AB	NB	AB	NB	AB	NB	AB	AB

After administering *basti* patient was asked to follow *pathya – apthya (diet restriction)* as per the rule of *Basti*. For the change in the condition of patient was examine before treatment on the first day and after treatment on the 24 day based on the subjective and objective parameters.

CRITERIA FOR ASSESMENT-

Table-3: Subjective and Objective parameters

Grade	Pain	Stiffness	Tenderness	Range of movement flexion at knee joint	Oedema	Knee flexion by Goniometer
Grade-0	No pain	No stiffness	No tenderness	101-120 degree flexion	Absent	Up to 130 Flexion and above (Normal)
Grade-1	Pain observed on excessive work with joint involvements, normal routine activities will not being get hampered	Mild stiffness	Patient says it is paining	81-100 degree flexion	Swelling slightly covering only the bony prominence.	Up to 120 Flexion (Mild)
Grade-2	Pain increased on little work-involving joint movement, but gets relieved by rest. Normal routine activities being slightly hampered.	Moderate stiffness	Grade 1 + patient winces and with draws the affected	61-80 degree flexion	Completely covering all the body prominence	Up to 100 Flexion (Moderate)
Grade-3	Severe and persistent pain with sleep disturbance and inability to carry on the normal activities.	Severe stiffness	Does not allow the effected joint to be touched.	0-60 degree flexion	Completely covering the joint	No improvement on Knee flexion and above. (Severe)

All the clinical symptoms of *sandhivata* w.s.r. to osteoarthritis of knee joint. *Vatapurnadhritisparsh, sandhi vedan, aatop and sandhi sethilyata.*

Objective parameters: Goniometer Test Assessment of response to the treatment

The state of disease was assessed before treatment based on the assessment criteria. The changes in the scoring were noted during and after the intervention.

Criteria for overall assessment:

The sum points of all 5 parameters of assessment before, during and after treatment were taken into consideration to assess the total effect of the therapy. It was graded in percentage of relief in the signs and symptoms. 1. Poor 0 - 20%, 2. Average improvement 20 - 40%, 3. Moderate improvement 40 - 60%, 4. Good improvement 60 - 80%, 5. Excellent improvement 80-100%.

Statistical Analysis:

The effect of *Yogabasti* was assessed.

Descriptive data that included mean standard deviation (SD) standard error (SE); ‘T’ value and percentage were calculated for all the variables in each group. Post treatment changes were assessed by paired ‘T’ test and difference between groups was assessed by unpaired ‘T’ test. For all the tests, a ‘p’ value of 0.005 or less was considered for statistical significance.

Observations and Results:

TABLE-4 Age wise distribution of patients

Age (years)	SINGLE Group	
	No.	%
40-45	8	26.67
46-50	5	16.66
51-55	2	6.66
56-60	6	20
61-65	4	13.33
66-70	5	16.66

Table-5 Sex wise distribution of patients

Sex	Single Group	
	No.	%
Male	14	46.6
Female	16	53.3

Table No: 6 Distribution of patients based on Occupation

Nature of work	Group A	
	No	%
Mild strenuous	4	13
Moderate strenuous	18	60
Sedentary	8	27

Table no: 7 Distribution of patients according to duration of illness

Duration of illness	Group A	
	No	%
< 1 year	8	27
1-3 years	17	57
3-5 years	3	10
> 5 years	2	6

In the current study observations were made on various grounds to have evidence on various factors. In total 30 patients were registered, who were suffering from sandhivata [OA of knee joint] for this single group study. Maximum incidence of sandhivata was found in the age group of 40-45 years.(table-4) Incidence of sandhivata was found to be a maximum of 53.3% in females.(table-5). Maximum numbers of patients registered for the study having moderate strenuous work with a percentage of 60% followed by mild strenuous work with a percentage of 13% and sedentary work with a percentage of 27%.(Table-6). Among 30 patients of the study 66.67% patient were used to do Vyayama and the remaining did not. 60% of patients weighed between 61-70 kgs, 3% weighed between 71-80kgs, 17% between 51-60kgs, 10% between 81-90kgs and 10% had weight between 41-50 kgs. Maximum incidence of about 57% of patients had duration of illness between 1-3yrs followed by 27% of patients with duration of less than 1 year. 10% of patients gave history of illness between 3-5 yrs and 6% had the complaints for duration of more than 5 yrs (Table no-7).

Data related to Diseases:

Aggravating factors in sandhivata patients are walking, climbing stairs and squatting were counted as aggravating factors by all the patients where as standing aggravated the signs and symptoms in 83 % of patients. All the 30 patients, which means 100% had Vatapurna dhriti sparsha, Sandhi vedana, Sandhi Atopa, Sandhi saithilyata. Maximum incidence of about 57% of patients had duration of illness between 1-3yrs followed by 27% of patients with duration of less than 1 year. 10% of patients gave history of illness between 3-5 yrs and 6% had the complaints for duration of more than 5 yrs.

Discussion:

Sandhivata is a disorder dominated by pain affecting the Sandhi (joint). It is caused by morbid Vata Dosha. Kapha Dosha may also be involved in the clinical presentation. The vitiated Dosha or Doshas afflict the Mamsa, Asthi and Snayu. It is more evident in Asthi Dhatu with which Vayu has Ashraya-Ashrayee Bhava Sambhanda (11, 12, 13)

As far as Basti goes, it is thought to be an ultimate solution for eradication of Vata Dosha and Vata vitiation is the main cause of SANDHIVATA. Moreover, it also has action on the vitiated Pitta, Kapha and Rakta .According to Ayurveda the Virya of ingredients used in the Basti, gets absorbed and then through general circulation reaches at the site of lesion and relieves the disease(14). That’s why Acharya Sushruta has mentioned that by using the different ingredients, Basti can be cured Paittika, Kaphaja, Raktaja, Sansargaja and Sannipatika disorders also though, it is the best treatment for Vata Dosha (15).

In yoga basti, 8 basti are given in total, in this procedure first anuvasana basti should be given followed by 3 niruha and anuvasana basti are given alternatively and at the end again one anuvasna basti should be given. In the beginning, one Anuvasana Basti and at the end, 3 Anuvasana Basti were given for the purpose of oleation. Dashamoola taila is indicated in vata vyadhi and Erandamooladi kwatha is useful for niruha basti in vata vyadhi. Erandamooladiniruha basti has been classically indicated in vitiated Vata condition and specially in Vata vitiated in Janu pradesha and hence the same drug was chosen for present study. Ayurveda gives emphasis on various karmas in treating the foresaid ailment, amongst which Basti Chikitsa is considered to be the best for Vata dosha, which is the main culprit in sandhivata. All of symptoms including joint deformity are mainly due to Vata vitiation. Drugs used here for Basti Karma are mainly acting on Vata dosha and regulates Vata dosha activity all over the body. Seers mentioned qualities of Dashmoola like Shothahara (anti-immflamatory), Vatahara(nullifies vata dosha), ushna (hot), etc(16) . Studies also reported anti immflamatory, analgesic(17), and anti pyretic(18), effect of Dashamoola.

Eranda (Ricinus communis) is very well known Vatahara drug. Studies reported Antioxidant activity (19), Anti-Inflammatory and free radical scavenging activity(20), Central analgesic activity(21), Antitumour activity(22) of eranda. All these drugs are help to improve diseased condition and improves quality of life too.

As per age-wise distribution, maximum numbers of patients (26.67%) in this study were in the age group of 40-45 years. This is the age wherein Hani (deterioration) of Dhatus starts(23) In this study, maximum numbers of patients (53.3%) were females. Sex hormones have long been considered a possible factor in the systemic predisposition to OA, especially in women.(24, 24, 25) Nearly 27% of patients had chronicity below 1 year, whereas 67% of patients were between 1 to 5 years and remaining 6% of patients were more than 5 years.

Significant results ($P < 0.0001$) were found in all the cardinal symptoms – Sandhiruja (pain), Shotha (swelling), tenderness and crepitus. There was significant improvement in walking velocity. This proves that Yoga basti is effective treatment in the form of Dashmoola tail anuvasan basti and Erandmuladi niruha basti in Sandhivata. Pain and crepitus are mainly due to Vata Dosha and above data proves that Yoga basti controls Vata Dosha and relieves these symptoms.

Effect on Cardinal Symptom:

TABLE NO-8 Presentation of Statistical Data

Criteria		Pain	Stiffness	Swelling	Fatigue	Restricted movement	Deformity	Goniometer
Mean	BT	2.6	2.37	1.9	2.6	2.3	1.43	1.53
	AT	0.5	0.37	0.33	0.5	0.43	0.37	0.4
Mean Diff		2.1	2	1.57	1.2	1.87	1.06	1.13
%		80.77	84.39	100	87.6	100	74.15	73.86
SD	BT	0.5	0.49	0.66	0.61	0.79	0.57	0.63
	AT	0.51	0.49	0.48	0.38	0.5	0.49	0.5
SEM	BT	0.009	0.009	0.12	0.11	0.15	0.1	0.11
	AT	0.009	0.009	0.009	0.07	0.009	0.009	0.9
SED		0.13	0.127	0.149	0.132	0.172	0.137	0.146
t –Value		16.1555	15.8038	10.5005	9.0986	10.8678	7.7849	7.7372
N		30	30	30	30	30	30	30
Degrees of Freedom		58	58	58	58	58	58	58
CI	LL	1.84	1.75	1.27	0.94	1.52	0.79	0.84
	UL	2.36	2.25	1.87	1.46	2.21	1.34	1.43
P-Value		$P < 0.0001$	$P < 0.0001$	$P < 0.0001$	$P < 0.0001$	$P < 0.0001$	$P < 0.0001$	$P < 0.0001$
Significance		ESS	ESS	ESS	ESS	ESS	ESS	ESS

Table: 9 Overall Result of Treatment

S.No	CRITERIA	NUMBER	PERCENTAGE
1	Poor Improvement [0-25%]	0	-
2	Mild Improvement [26-50]	0	-
3	Moderate Improvement [51-75]	7	23.33
4	Marked Improvement [76-99]	17	56.67
5	Cured [100]	6	20

All the Patients showed highly significant relief, in the symptoms of pain percentage wise relief of 80.77 %. Thus, the best response is seen among the patients (Table no- 8). This is clear from the above discussion that all the therapies have reduced the pain in the patients of Sandhivata, Pain is produced mainly by Vata Prakopa and the Basti is the best treatment for Vata. So, this may be one of the reasons that the relief has been found. Stiffness was 84.39% relieved and it was statistically significant ($P < 0.0001$). Stiffness happens to be a subjective criterion and was graded based on its Gradings. There was improvement observed in this feature with treatment in the group. The result was statistically highly significant with P value being less than 0.0001. Swelling was 100% relieved and it was statistically significant ($P < 0.001$). Fatigue was 87.6% relieved and it was statistically significant ($P < 0.0001$). Effect on restricted movement was 100 % relieved and it was statistically significant ($P < 0.0001$). Effect on Deformity:- Deformity was 74.15% relieved and the result were statistically significant (table-8).

Conclusion:

The purpose of the present study was “To Evaluate the effect of Yoga basti in Sandhivata w.s.r. to osteoarthritis of knee joint” The conclusions were drawn after logical interpretation of the results obtained in the preceding clinical study. Sandhivata can be well equated with osteoarthritis in modern parlance. There is no explicit citation regarding nidana and samprapthi with respect to Sandhivata. It was apparent from the study of yoga basti in sandhivata w.s.r to osteoarthritis of knee joint showed invigorating result in alleviating the presentations of SV. It was also observed that yoga basti when given would yield best results. Hence it can be concluded that Yoga basti with dhasmool tail anuvasan basti and erandmuladi niruha basti which is economical and effective, give relief from the symptoms of sandhivata.

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