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# A CLINICO – COMPARATIVE STUDY ON THE ROLE OF PRADEHA AND UPANĀHA IN THE MANAGEMENT OF JĀNU SANDHIGATA VĀTA (OSTEOARTHRITIS OF KNEE)

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## ABSTRACT

*Sandhigata vātā* is first described by *Ācārya Caraka* as *Sandhigata Anila* with symptoms of *Śotha* (Swelling) which on palpation feels like a bag filled with air and *Śūla* (pain) on *Prasarana* and *Ākuñcana* (Flexion and Extension of the joints). *Ācārya Suśruta* also mentioned *Śūla* and *Śotha* in this disease leading to the diminuition *(Hanti)* of the movement at joint involved. *Mādhavakara* adds *Ātopa* (Crepitus in joint) as an additional feature of it. When the aggravated *vātā* affects the knee, *Sandhigata vātā* is prefixed with the term *"Jānu"* and called as *"Jānu sandhigata vātā". Janu Sandhigata Vata,* which can be correlated with Osteoarthritis of the knee joint. **Methods:** For present study out of 40 selected patients total 40 patients, completed the treatment i.e. 20 in Group A & 20 in Group B completed the course of the therapy & were randomly divided into two groups viz; Group A in which Pradeha for a period of 14 days.; and second Group B in which Upanāha for a period of 14 days was given. **Results:** The overall effect of the treatments in Group A was statistically analysed using with a Paired t – test. The test showed highly significant results with a P value <0.01. The overall effect of the treatments in Group B was statistically analysed using with a Paired t – test. The test showed highly significant results with a P value <0.05. **Conclusion:** The Upanāha (Group B) has shown better effect compared with Pradeha (Group A) in the parameters of Pain, Crepitus, Stiffness, Tenderness, Range of Motion, Walking Time, WOMAC Scale. However, the Pradeha group (Group A) has shown better improvement than Upanāha (Group B) in the parameters of Swelling.

**KEYWORDS:** Sandhigata vātā, Pradeha, Upanāha.

## INTRODUCTION

Osteoarthritis can be defined as a chronic, degenerative, non-inflammatory joint disease which has a great impact on the quality of life of an individual and it is characterized by destruction of articular cartilage and formation of new bone at the joint surfaces and margins. It is the second most common rheumatologic problem in India and has a prevalence rate of 22‑39 %. It is characterized primarily by articular cartilage degeneration and a secondary periarticular bone response. World‑wide prevalence rateof Osteoarthritis is 20% for men, 41% for women and it causes pain or dysfunction in 20% of the elderly population.

Although Osteoarthritis itself is not a life‑threatening disease, Quality of life can significantly deteriorate with pain and loss of mobility causing dependence and disability. The disease usually affects the people in the fourth decade of life, and the occurrence increases linearly with age. Unilateral Osteoarthritis is more prevalent in male and bilateral Osteoarthritis in female. The disease has a propensity to affect the weight bearing joints such as the knee and hip most commonly and is hence a potent cause of disability.

Modern treatments for the management of osteoarthritis includes Analgesics, NSAIDS, Corticosteroid injections etc, the side effects of which can be quite significant, and ultimate treatment is knee joint replacement. Thus the adverse effects of the medication and high cost risky surgeries demands an appropriate alternate option for the patients of Osteoarthritis.

## AIM AND OBJECTIVES

### Aim

"A CLINICO - COMPARATIVE STUDY ON THE ROLE OF PRADEHA AND UPANĀHA IN THE MANAGEMENT OF JĀNU SANDHIGATA VĀTA (OSTEOARTHRITIS OF KNEE)".

### Objectives

a) To evaluate the efficacy of Pradeha in the management of Jānu Sandhigata vāta.
b) To evaluate the efficacy of Upanāha in the management of Jānu Sandhigata vāta.
c) To compare the efficacies of Pradeha and Upanāha in the management of Jānu Sandhigata vāta.

## MATERIALS AND METHODS

### Materials

### Group- A

### Pradeha (Ingredients)

**(Ref: Charaka Samhita Cikitsā Sthana 28/117)**

- Phalanam Taila yoninam (oil bearing seeds) - Each 5 grms
  - Tila - Sesamum indicus - Pedaliaceae
  - Atasī - Linum usitatissimus - Linaceae
  - Eraṇḍa - Ricinus communis - Euphorbiaceae
  - Kārañjā - Derris indicus - Fabaceae
- Amla (kāNji– sour ingredient) - Quantity sufficient

**Kānji preparation**

This is sour liquid prepared by the acetic fermentation of powdered paddy. This is produced by steaming powdered paddy in three to four times of water on moderate fire. Starchy supernatant liquid is decanted into a clean earthen pot and allowed to ferment. This is also known as Dhanyamla which literally means the acid produced out of paddy. It is a clear transparent fluid with acidic taste and vinous smell.

### Group - B

### Upanāha (Ingredients)

**(Ref: Charaka samhita Cikitsā Sthana 28/118)**

- Gandhā pradhana Vātahara dravyas
  - Agaru - Aquilaria agallocha -Thymeliaceae - 3grms
  - Kuṅkuma - Crocus sativus – Iridaceae - 10 styles
  - Karpūra - Cinnamomum camphora – Lauraceae - 1grm
- Pāyasa (Milk pudding) - Quantity sufficient
- Kṛśarā (Preparation of rice & pulses) - Quantity sufficient
- Sneha (Tila tailam) - 20 ml

- **Pāyasa preparation**

The synonyms of Pāyasa are Ksī̄rika and Paramānnam. When rice fried in ghee is boiled along with pure, half boiled milk, and sufficient ghee and sugar are added to it, that preparation is known as Pāyasa.

- **Krṣ́ arā preparation**

It is a kind of gruel prepared by boiling rice along with various kinds of pulses. It is commonly known as khichri or khichdi. It is prepared by cooking equal quantities of rice and pulses (predominantly consists of māśa) in 5 parts of water. After the rice and pulses are well cooked, they have to be mixed with Lavaṇa, Ārdraka, Hiṅgu.

**Methods**

**Phase – I**

❖ **Inclusion criteria**

- Patients of age between 40- 70yrs of all genders.
- Patients presenting with the signs and symptoms of Jānu Sandhigata Vāta.
- Patients presenting with the signs and symptoms of Osteoarthritis of Knee.
- Patients who are eligible either for Pradeha or Upanaha.
- ACR Revised criteria for early diagnosis of Knee Osteoarthritis-2016 and WOMAC index.

❖ **Exclusion criteria**

- Age below 40 yrs and above 70yrs.
- Patients suffering from either fracture or dislocation of knee joint.
- Patient who had been previously operated for knee joint.
- Patients with TB, HIV, Cancer and other major systemic diseases.
- Patients who are suffering from other kind of arthritic conditions like Rheumatoid arthritis, Gouty arthritis etc.
- Patient suffering from grade IV Osteoarthritis of knee (as per Kellgren- Lawrence classification)

**Phase – II**

For this study patients are categorized into two groups.

**Group A:** 20 patients will be administered with Pradeha for a period of 14 days.

**Group B:** 20 patients will be administered with Upanāha for a period of 14 days.

❖ **Duration of the treatment:** 14 Days

✓ **Clinical parameters**

- Vātapoorna dṛti sparśa (Which on palpation feels like bag filled with air)

- Śotha (Swelling)
- Śula (Pain) on prasārana and ākuṇcana (Flexion and Extension of joints)
- Ātopa (Crepitus)
- Sandhiṃhanti
- Limitation of movements
- Occasional effusion
- Tenderness

- ACR Revised criteria for early diagnosis of Knee Osteoarthritis - 2016

The intensity of Pain, Crepitus, Stiffness, Swelling, Tenderness, Range of motion, Gait, Walking time and scaling of the Knee OA is assessed as none (0), Mild (1), Moderate (2), Severe (3).

The intensity of Pain, Stiffness, Physical functions and Optional are WOMAC scale of knee OA is assessed as None (0), Mild (1), Moderate (2), Severe (3), Extreme (4).

Above parameters along with respective grading, ACR clinical/ Radiographic classification criteria and WOMAC scale are mentioned in Annexure in detail.

## OBSERVATIONS AND RESULTS

### General observations

**a. Age**

Among the 40 patients included in the study, maximum number of patients i.e. 40% (16 patients) belong to the age group 51 to 60 years. 35 % (14 patients) to the age group 61 to 70 years, and 25% (10 patients) to age group 40 to 50 years.

This data shows about 50 to 60 yrs age group of people are much more affected by OA about 40%. It can be said from the observations that usually symptoms of disease Janu sandhigata vata starts after $4^{th}$ decade of life.

**b. Gender**

Among the 40 patients, 62.5% (25 patients) were females and 37.5% (15 patients) were males. The percentage of females are more prone to affect than percentage of males, the ratio of female to male 2:1

**c. Religion**

Among the 40 patients, the majority are Hindus, i.e. 87.5% (35 patients), while 7.5% (3 patients) are Muslim and 5% (2 patients) are Christian.

Religion doesn't seem to have any significant relationship with the disease Janu Sandhigata Vata.

**d. Marital status**

Among the 40 patients, 95% (38 patients) are Married, 5% (2 patient) is Unmarried.
Though marriage is not a risk factor for Janu Sandhigata vata but most of the people got married by the fourth decade of life i.e., the starting age of OA.

**e. Occupation**

Among the 40 patients, 52.5% (21 patients) are housemaker, 17.5% (7 patients) are doing Field work with Physical labour. 17.5 % (7 patients) are doing desk work, and 12.5% (5 patients) doing field work with Intellect.

Housemakers are often at an increased risk of developing Janu Sandhigata vata, especially due to the physical demands of household tasks as well as doing them in incorrect postures, lack of physical exercise, or stress.

**f. Nature of work**

Among the 40 patients, a majority of 75% (30 patients) had a strenuous nature of work, 17.5% (7 patients) had a sedentary nature of work and 7.5% (3 patients) had a moderate nature of work.

The strenous nature of work can contribute to vata aggrevation, leading to joint pains.

**g. Socio – Economic status**

Among the 40 patients, the highest percentage 65.00% (26 patients) belonged to Middle class, 17.5% (7 patients) to Upper class and 17.5% (7 patients) belongs to Lower class.

Incidentally Middle class people are the major chunk of people who visited the hospital with the complaint of Janu Sandhigata vata.

**h. Educational status**

Among the 40 patients, 72.5% (29 patients) are literate, remaining 27.5% (11 patients)

are illiterate.

This indicates literacy is predominant in this geographical locality.

**i. Deśa**

Maximum patients i.e. 57.5% (23 patients) belongs to Jāṅgala Deśa followed by 22.5% (9 patients) belonging to Ānūpa Deśa and 20% (8 patients) were Sādhārana Deśa. People of Jāṅgala and Ānūpa Deśa basically have predominance of Vāta Pitta and Vāta Kapha Dośās respectively.

**j. BMI State**

Among 40 patients, 17 (42.5%) are Obese (BMI 30 – 34.5), overweight (BMI 25 – 29.9) 10 patients (25%), Under weight (BMI below 18.5) are 8 patients (20%) and Normal weight (BMI 18.5 – 24.9) 5 patients (12.5%) in nimber.

BMI plays a significant role in the development and progression of Jānu Sandhigata Vāta. Obese BMI are considered to be higher risk of developing Knee OA. Maintaining healthy BMI through a balanced lifestyle can help prevent and manage this condition.

**k. Diet habit**

Among the 40 patients, a majority of 82.5% (33 patients) had a Mixed and only 17.5 % (7 patients) had a vegetarian diet.

This indicates the mixed diet is the preferred food style in this geographical locality.

**l. Addictions**

Among the 40 patients, 52.5% (21 patients) are having no addictions, 17.5% (7 patients) are tobacco chewing, 15% (6 patients) are addiction of tea taking, 7.5% (3 patients) are smoking and 7.5% (3 patients) are addicted to alcohol.

Addiction to substances like tobacco and tea can disrupt the balance of the vata dosha, particularly Janu sandhigata vata, by promoting dryness, increasing ama and contributing to joint stiffness and discomfort.

**m. Deha prakṛti**

In the present study Vāta – Pitta prakṛti are 13 patients (32.5%), Vāta – Kapha prakṛti are 16 patients (40%) and Pitta – Kapha prakṛti are 11 patients (27.5%).

**n. Satva**

Among the 40 patients, 75% (30 patients) had Madhyama Satva, 15% (6 patients) had Avara Satva and 10% (4 patients) had Pravara Satva.

**o. Sara**

In the present study, maximum number of patients i.e., 13 (32.5%) patients are of Rakta sara, 10 (25%) patients are of Medo sara, 8 (20%) patients are of Māṃsa sara, 3 (7.5%) patients are of Tvak and Majja sara, 2 (5%) are of Asthi sara.

**p. Chronicity**

In the present study sample, 16 (40%) patients were found to have 1 – 3 years chronicity of disease, 14 patients (35%) were found to have Above 5 years chronicity of disease, 6 patients (15%) were found to have below 1 year chronicity of disease, 4 patients (10%) were found to have 3 – 5 years chronicity of disease.

**q. Category of menopause attained or not**

Among the 40 patients, 57.5% (23 patients) were attained Menopause and 42.5% (17 patients) didn't attained menopause yet.

Menopause is the important factor for the development of Osteoarthritis. It is a significant phase in a women's life that brings about various physical and emotional changes due to hormonal shifts, primarily the decline in estrogen. Estrogen plays a key role in maintaining bone and joint health, and its reduction during menopause can have notable implications for joint health, in terms of causing degenerative joint disorders like Janu Sandhigata Vata.

**r. Lakṣaṇa**

Among the 40 patients, Pain was seen in 100% of patients, Crepitus in 97.5% (39 patients), Stiffness was seen in 87.5% (35 patients), Swelling in 85% (34 patients), Occassional effusion in 80% (32 patients), Limitations of movement and Abnormal gait in 77.5% (31 patients), Deformity in 42.5% (17 patients), Tenderness in 27.5% (11 patients).

Pain, Joint Stiffness, Swelling, and Loss of mobility are the hallmark symptoms of Osteoarthritis and are observed in the majority of patients.

## ❖ OVERALL RESULTS

**Showing the overall results of Group A & Group B**

| Sl. No | Parameters | Group A | | | | Group B | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean score | | Overall Improve-ment (%) | P Value | Mean Score | | Overall Improvement (%) | P Value |
| | | BT | AF | | | BT | AF | | |
| 1. | Pain | 2.00 | 0.40 | 80% | <0.0001 | 1.95 | 0.25 | 87.1% | <0.0001 |
| 2. | Crepitus | 1.00 | 0.55 | 45% | =0.0009 | 1.00 | 0.40 | 60% | <0.0001 |
| 3. | Stiffness | 1.40 | 0.10 | 92.8% | <0.0001 | 1.55 | 0.00 | 100% | <0.0001 |
| 4. | Swelling | 1.70 | 0.00 | 100% | <0.0001 | 1.40 | 0.10 | 92.8% | <0.0001 |
| 5. | Tenderness | 0.45 | 0.05 | 96.5% | =0.0075 | 0.40 | 0.00 | 100% | =0.0165 |
| 6. | ROM | 1.65 | 1.05 | 36.3% | <0.0001 | 1.60 | 0.95 | 40.6% | <0.0001 |
| 7. | Walking Time | 1.25 | 0.80 | 36% | =0.0035 | 1.40 | 0.75 | 46% | =0.0004 |
| 8. | WOMAC scale | 82.9 | 20.15 | 75.5% | <0.0001 | 85.3 | 19.7 | 76.8% | <0.0001 |

## DISCUSSION

Svedana drugs by Usna and Tikshan guna are capable of penetrating the microcirculatory channels (Srotas) where they activate the sweat glands to produce more sweat. After dilatation of micro-channels, Laghu and Sara guna of these drugs enable them to move towards Koshta or excrete them through microspores of the skin in the form of sweat, resulting in Srotosodhana. The dosha brought in Koshta are expelled out of the body with the help of Śodana Cikitsa. Svedana is the byproduct of medo dhatu which is dominant with Jala Mahabhuta. Sveda produces Kleda in the body which is also Apa Mahabhuta pradhana. The Udaka dhatu is present in the body in various forms like faeces, urine, sweat, skin, lymph and blood etc. it performs important fuctions like Jivana, Tarpana, Malasodana etc. when Sveda vaha srotas vitiated, it leads to presentation of various symptoms like irregular sweating, roughness of the skin, burning sensation all over the body etc.

### Discussion on effect of therapies with the help of parameters

- ✓ **Pain:** By comparing both the therapies with means difference Group B seems to be effective.
- ✓ **Crepitus:** By comparing both the therapies with means difference Group B seems to be effective.
- ✓ **Stiffness:** By comparing both the therapies with means difference Group B seems to be effective.
- ✓ **Swelling:** By comparing both the therapies with means difference Group A seems to be effective.

- ✓ **Tenderness:** By comparing both the therapies with means difference Group B seems to be effective.
- ✓ **Range of motion:** By comparing both the therapies with means difference Group B seems to be effective.
- ✓ **Walking time:** By comparing both the therapies with means difference Group B seems to be effective.
- ✓ **WOMAC Scale:** By comparing both the therapies with means difference Group B seems to be effective.

## CONCLUSION

- In Āyurveda, Śodhana and Śamana are the two basic types of treatment.
- Dosa̤s which are pacified by Śamana therapy at times do recur, but Dosa̤s which have been eradicated out by appropriate Śodhana therapies will never resurrect.
- Bahirparimarjana cikitsa plays a crucial role in Janu Sandhigata vata.
- Depending on the disease condition and dosha involved, proper selection of the mode of application should be done and treated accordingly.
- Arunadatta, the commentator of Ashtanga Hridaya, has described the bhrajaka pitta and its functions like deepana and pacana.
- The drugs applied on the skin by abhyanga, lepana, pariseka are being absorbed and assimilated by the bhrajaka pitta.
- Thus abhyanga, pariseka etc., do their action properly only after being digested by Bhrajaka pitta, as no substance can act appropriately without digestion.
- Ayurveda has more description of topical applications in name of Lepa kalpana for treatment of Janu Sandhigata vata.
- Upanaha is effective topical application in the management of Janu Sandhigata vata.
- The clinical study was conducted among 40 patients divided into 2 groups. *Pradeha* for 14 days in Group-A, *Upanaha* for 14 days in Group-B. Assessment was done initially before the medical intervention (0th day), immediately after the completion of treatment ($14^{th}$ day) and follow up after 30 days of completion of treatment $44^{th}$ day.
- The majority of the drugs in the *Pradeha* and *Upanaha* are proven for their Anti-arthritic, Anti-oxidative, Anti-inflammatory, Analgesic, and Immunomodulatory activities.
- In parameters like Pain, Crepitations, Tenderness, Swelling, Stiffness, Limitation of movements, Occasional effusion, Abnormal gait, Deformity in both Group A and Group

B results have shown extremely significant p value ($p < 0.0001$) immediately after the completion of treatment ($14^{th}$ day) and follow up i.e., after 30 days of completion of treatment ($44^{th}$ day).

- The present study clearly concludes that Upanaha (Group B) has shown better results compared with Pradeha (Group A) in the management of Janu Sandhigata Vata.
- Comparative analysis of the overall effect of the treatments in both groups was done statistically with an Unpaired t – test. The test shows that there is no relevant statistical difference between two groups. But clinically Group A shows 70.26 % and Group B shows 75.4 % improvement. This indicates that the treatment is more effective in relative terms in Group B compared to Group A.
- Hence null hypothesis is rejected and alternate hypothesis is accepted.

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