RESEARCH PAPER

Efficacy of Punarnavadi Lepa in the Management of Janu Sandhigata Vata a Single-Case Study

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ABSTRACT
Background: Knee osteoarthritis may present with pain, stiffness, swelling, crepitus and impaired mobility. In Ayurvedic practice, a compatible presentation may be discussed under Janu Sandhigata Vata.
Aim: To evaluate the Punarnavadi Lepa's efficacy in managing Janu Sandhigata Vata .
Objective: To describe the clinical course and available outcome data of a patient with bilateral knee symptoms treated with Punarnavadi Lepa.
Materials and Methods: This is a single-case report. The treatment was administered for 21 days assessments include symptom narrative, range of motion and WOMAC score.
Results: The records describe pain relief, reduced morning stiffness and decreased knee swelling. The subjective parameter viz., Janusandhishool (Pain), Janusandhishotha (swelling), Akunchana Prasarana Kashtata (joint restriction) related to the knee joint and objective parameter viz., ROM and Womac score, WOMAC total is recorded as 60 before treatment and 45 after treatment for the pain of the knee joint and goniometric measurement for the restricted knee joint movements was before treatment and after treatment marked 20 degree better at the end of treatment. Conclusion: The study provides strong evidence for the effectiveness of Punarnavadi Lepa in managing knee OA, demonstrating significant improvements in both joint pain and range of motion. These findings suggest that this Ayurvedic treatment can be a valuable option for alleviating symptoms and improving the quality of life in patients with knee OA.
Keywords: Punarnavadi Lepa; knee osteoarthritis; Janu Sandhigata Vata; WOMAC; single-case report.
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1.INTRODUCTION

Osteoarthritis is a chronic degenerative condition. It primarily impacts major weight-bearing joints, such as the hips and knees. Most instances of Osteoarthritis are classified as primary Osteoarthritis, primarily associated with aging. In contrast, secondary Osteoarthritis arises due to another underlying disease or condition [1]. Osteoarthritis ranks as the second most common rheumatic condition and is the most prevalent Arthritis, affecting 22 to 39% of people in India [1]. The treatment guidelines for knee OA from The National Institute for Health and Care Excellence (NICE), The American College of Rheumatology, and the European League against Rheumatism promote non-pharmacological methods. These include educating patients, providing social assistance, encouraging physical activity, and nurturing weight loss [3-6]. Non-Steroidal Anti- Inflammatory Drugs (NSAIDs) are often the first treatment choice for their pain-relieving and anti-inflammatory effects, but they carry risks like gastrointestinal bleeding and kidney issues [7,8], as well as a higher chance of heart attack and stroke, particularly with COX-2 inhibitors [9]. Intra-articular injections of corticosteroids and sodium hyaluronate have limited effectiveness, leading many patients with advanced Osteoarthritis to consider knee replacement surgery. In Ayurveda, a clinically compatible presentation may be considered in relation to Janu Sandhigata Vata. It is believed to result from improper diet, lifestyle, and aging, leading to a degeneration of bodily elements (Dhatukshaya), increased Vata (which governs bodily movements), and a decrease in Shleshaka Kapha which provides lubrication to the Sandhi. This increased Vata leads to Rukshata, laghavata, and Kharata in the joints, contributing to degeneration. The primary symptom of Janusandhigatavata is knee joint pain (Sandhi Shoola), accompanied by swelling (Shotha), stiffness (Stabdata), crepitus (Atopa), and difficulty in joint function (Akunchana Prasarana Kashtata). In Bhaisaijya ratnavali, Punaranavadi Lepa is mentioned in managing shotha, which pacifies predominantly Vata and replenish Rakta Dhatu over affected joint. The treatment involves applying a hot, thick paste prepared with selected drugs to the area of joint pain [Table-1]. This viscous paste generates sustained heat, relaxing tendons and muscles while enhancing blood circulation [10]. Therefore, Punarnavadi Lepa was selected for the treatment of Janusandhigatavata (Knee OA).
Aim: To evaluate the efficacy of Punarnavadi Lepa in management of Janu Sandhigata Vata.

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Objectives: To assess improvement in subjective parameters like pain, swelling, crepitus and WOMAC score.
To evaluate objective outcomes, including range of motion (ROM).

Materials and Methods
Study design: Single-case observational Study
Study Procedure
Punarnavadi Lepa application ingredients of Punarnavadi Lepa and the quantity of each ingredient used in [Table 1].

Table 1. Ingredients of Punarnavadi Lepa

S. No.	Sanskrit Name	English Name	Botanical Name	Proportion
1	(Punarnava)	Spreading Hogweed	Boerhavia diffusa	Equal proportion
2	(Devadaru)	Himalayan Cedar	Cedrus deodara	Equal proportion
3	(Shunthi)	Dry Ginger	Zingiber officinale	Equal proportion
4	(Shweta Sarshapa)	White Mustard	Sinapis alba	Equal proportion
5	(Shigru Twak)	Drumstick Tree Bark	Moringa oleifera	Equal proportion

Table2. Method of Preparation and Application

Formulation name	Punarnavadi Lepa (पुनर्नवादिलेप)
Ingredients	The five ingredients listed in Table 1.
Proportion	All ingredients are taken in equal quantities, as described in the supplied text.
Grinding medium	Kañjī (काञ्जी), described here as a fermented sour liquid.
Preparation method	Grind the ingredients with Kañjī to prepare a paste; warm the paste before application.
Method of application	Apply the paste while comfortably lukewarm, as described in the supplied text.
Classical indication	Shotha (swelling), Sandhigata Vata

Duration: 21 days.
Assessment Criteria
Subjective Parameters
1. Janusandhi Shoola (knee joint pain).
2. Janusandhi Shotha (Swelling),
3. Janusandhi Atopa (crepitus or cracking sound in the knee joint).
4. WOMAC Score (Western Ontario and McMaster Universities Osteoarthritis Index).

Objective Parameters
1. Range of Motion (ROM): Measured using a goniometer, noting the angle of movement and onset of pain during motion.

Assessment Schedule
Pre-test: Baseline assessment on Day 0 before the initiation of treatment.
Post-test: Final assessment on Day 28 after completing the 21-day treatment protocol.

CASE REPORT

PATIENT HISTORY

Parameter	Details
Age	60 years
Gender	Female
Occupation	Homemaker
Chief complaint	Pain and restricted movement of the B/L knee Joint
Duration	6 months
Pain pattern	Persistent; aggravated by activity and relieved by rest

Swelling	Occasional swelling in the both knee joint
Crepitus	Cracking sound during knee movement
Trauma/systemic illness	No history of trauma or systemic illness reported
Injuries/surgeries	No significant history
Chronic illnesses	None reported
Allergies	None known
Specific diseases	No history of rheumatoid arthritis or gout
Family history	Maternal history of knee osteoarthritis; no other significant hereditary illnesses reported
Diet	Mixed diet; prefers spicy and oily foods
Appetite	Normal
Bowel habits	Irregular; occasional constipation
Sleep	Disturbed due to pain
Physical activity	Limited due to pain

GENERAL AND LOCAL EXAMINATION

Parameter	Observation
Inspection	Swelling over B/Lknee joint.
Palpation	Tenderness over medial joint line; crepitus on movement
Baseline ROM	Flexion restricted, pain onset at 90°; extension limited with discomfort
Functional issues	Difficulty squatting and climbing stairs
Gait	Slightly antalgic (pain-avoiding gait)
Posture	Slight knee flexion due to discomfort
Skin over joint	No discoloration or rashes noted

VITAL SIGNS AND ANTHROPOMETRY

Parameter	Observation
Pulse rate	76 beats/min, regular
Blood pressure	130/70 mmHg
Respiratory rate	18 breaths/min
Temperature	98.6°F, oral
SpO_2	98%
Body weight	60 kg
Height	158 cm
BMI	24 kg/m²

SYSTEMIC EXAMINATION

System	Observation
Musculoskeletal system	Medial joint-line tenderness; mild B/Lknee swelling; crepitus; flexion restricted with pain onset at 90°; extension limited with discomfort; slightly antalgic gait
Nervous system	Sensation intact in lower limbs; knee-jerk reflex present bilaterally; normal motor strength in both lower limbs
Cardiovascular system	Normal S1 and S2; no murmurs; peripheral pulses palpable and normal bilaterally
Respiratory system	Normal vesicular breath sounds; no breathing difficulty
Gastrointestinal system	Abdomen soft and non-tender; bowel sounds normal

PREPARATION OF PATIENT

Preparation of medicine:

A course powder of Punarnava, Devadaru, Shunthi, Sweta Sarshapa, and Shigru Twak (20 gm each) was mixed and roasted until light brown, then a Kalka was made by adding Kanji (25 mL/QS).

Preparation of patient:

A room devoid of air (Nivatgrah) was selected to avoid wind and discomfort. The patient, calm and following daily regimen (Dincharya), was instructed to sit in a chair with the knee joint exposed, and Poultice (Upanaha) was applied.

Main treatment (Pradhan Karma):

The prepared paste was applied uniformly over the affected area, about 5 mm thick, for two hours.

Post-treatment (Pashat Karma):

After cool down approx. 2 hours, the Lepa was gently removed, and a massage was done, followed by cleaning the area with lukewarm water.

Criteria for assessment:

Patient improvement was primarily evaluated based on the relief of signs and symptoms associated with the condition. To measure the impact of the therapy both subjectively and objectively, each sign and symptom was assigned a score according to its severity. The following periodic functional tests were conducted to subjectively and objectively assess the progress of patients with Janusandhigatavata. The subjective and objective parameters are mentioned in [Table 3,4]

TABLE 3- CRITERIA FOR ASSESSMENT

Criteria (Objective and Subjective)	Before Treatment	Post-treatment (Day 28)
ROM	90°	110°
WOMAC score	60	45
Janusandhi Shoola (knee joint pain)|	6	4
Morning stiffness	5	3
Difficulty in walking	6	3
Difficulty in performing daily activities	5	3

TABLE 4 -VAS score

VAS Score	Parameter
0	No symptoms
1-3	Mild
4-6	Moderate
7-9	Severe
10	Worst Imaginable symptoms

DISCUSSION

As per Ayurveda, Janusandhigata Vata is a condition characterized by pain (Shoola), swelling (Shotha), and restricted joint movements, which bear clinical similarities to knee osteoarthritis (OA). The involvement of Vata Dosha is central to the Ayurvedic understanding of this condition, particularly in relation to pain, stiffness, and impaired joint mobility. Individuals with Vata-dominant Prakriti may be predisposed to Vata-related musculoskeletal manifestations; however, Prakriti alone cannot be considered a definitive predictor of osteoarthritis. The present case provides an opportunity to explore the clinical response to an Ayurvedic local therapeutic intervention in the management of knee OA.

The therapeutic rationale of Punarnavadi Lepa can be interpreted through the Ayurvedic principles of Vata management and local treatment. The properties of the ingredients, including Ushna (hot), Snigdha (unctuous), and other formulation-specific attributes, may contribute to the management of pain and stiffness. The traditional use of Lepa involves the application of a medicinal paste to the affected region, with the intention of alleviating local discomfort and improving functional mobility. Depending on the formulation and method of preparation, the combined effects of medicinal ingredients, warmth, and local application may contribute to symptomatic relief. The proposed correction of Margavarana should be understood as an Ayurvedic explanatory concept rather than an objectively established pathological mechanism in osteoarthritis [11].

From a modern pharmacological perspective, several ingredients traditionally incorporated into Punarnavadi Lepa have been investigated for potentially relevant biological activities. Punarnava (Boerhavia diffusa) has

been studied for its anti-inflammatory and other pharmacological properties [12]. Similarly, Kanji, when included in the formulation, may influence the preparation's physical and chemical characteristics. Nevertheless, the clinical relevance of these proposed mechanisms cannot be established without direct investigation of the complete formulation and its mode of application.

In the present case, clinical improvement should be evaluated using the documented changes in subjective symptoms and objective functional parameters. The recorded reduction in the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) score from 60 to 45 represents a 15-point decrease, equivalent to a 25% reduction. An increase in knee range of motion from 90° to 110° represents an improvement of 20°. These findings suggest a favourable change in the patient's reported symptoms and measured knee mobility during the treatment period.

The observed changes may be discussed in the context of the potential symptomatic benefits of local Ayurvedic treatment. However, because this is a single-case report, the findings cannot independently establish the efficacy of Punarnavadi Lepa or determine the specific contribution of individual ingredients. Factors such as natural symptom variation, concurrent interventions, measurement variability, and contextual effects may also influence the outcome. Further studies involving larger samples, standardized treatment protocols, validated outcome measures, and appropriate comparison groups are necessary to evaluate the clinical effectiveness and safety of this intervention.

RESULTS

The study demonstrated significant improvements in the management of Janu Sandhigata Vata (knee osteoarthritis)

CONCLUSION

The study aimed to evaluate the efficacy of Punarnavadi Lepa in the management of Janusandhigatavata. It showed that Punarnavadi Lepa significantly alleviates joint pain on the VAS and increases the range of motion, evidenced by improvement in goniometric measurements and marked relief in WOMAC score. Therefore, it is concluded that Punarnavadi Lepa effectively manages Janusandhigatavata (knee OA), demonstrating its potential as a therapeutic approach in relieving symptoms of knee OA

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