

An Ayurvedic treatment protocol on post fracture stiffness of knee joint after surgery in transverse Fracture of Patella: A Case Report

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ABSTRACT:

Post fracture stiffness following surgery is common complication that can significantly impact a patient's quality of life. Patients with post-patellar fracture stiffness often present with limited range of motion, pain, and swelling in knee joint. In Ayurveda post fracture stiffness can be correlated with *Bhagna upadrava vikara*. Here prolonged immobilization and surgery causes *Dusti* of *Vyana vayu* and *Sleshmaka kapha* which leads to post fracture stiffness and associated *pitha rakta kopa* due to *abhigatha*. The case study showed effective in reducing the symptoms and increased the range of motion in Post fracture stiffness of knee joint in patellar fracture followed by surgery.

KEY-WORDS: *Ayurvedic* treatment protocol, knee joint, patellar fracture, Post fracture stiffness.

Received: 24.01.2026

Accepted: 25.03.2026

Published: 05.04.2026



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INTRODUCTION:

The patella being a subcutaneous bone is vulnerable to injury. Fracture of patella may be caused by direct or indirect injury. ^[1] Fractures of the patella account for approximately 1% of all fractures. They occur more commonly in males ^[2]. Transverse fractures of patella is indirect fracture. Patellar fracture

management ranging from non operative immobilization for stable fractures to surgical fixation for displaced or un displaced fractures. Surgical management includes open reduction and internal fixation with tension band wiring. Patella fractures were among the first to be treated with open reduction and internal fixation to

maximize functional outcome^[3]. Potential complications of fracture management include nonunion, post fracture stiffness, infection, post traumatic arthritis and hardware related issues.

Rehabilitation focuses on improving range of motion, building up muscle strength and decreasing knee stiffness. In contemporary medicine physiotherapy is the main management in post fracture stiffness. In the conditions in which fracture associated with arthritis, osteoporosis, and decreased mobility due to aging, the physiotherapy alone gives delayed desired effect. It is also noted that after the course of physiotherapy stiffness shows recurrence. The application of Ayurvedic principles and treatments for the management of post-fracture stiffness has not been extensively studied or systematically explored. This case pertains to post-fracture stiffness following a patellar fracture, demonstrating significant improvement in range of motion, as well as a reduction in swelling and stiffness.

CASE REPORT:

Chief complaints:

Pain and restriction of movements of right knee joint since 7 months

History of present illness

A 58yr old male patient with no known h/o comorbidities had a h/o fall from height of about 7 feet during working as a mason. It caused sudden bending of knee and hit on to a hollow brick wall leads to sudden pain and swelling. He was taken to hospital. They

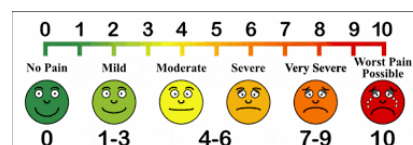
suggest surgery. After one week tension band wiring done to right knee. After that he was under complete bed rest with bandage for a period of 3 months. After the 3 months his restriction in movement of right knee and pain still persisted. He was advised to do physiotherapy after the removal of bandage. Initially he felt slight improvement after physiotherapy but later he didn't feel any further improvement in movement.

History of past illness

- No h/o DM, DLP, HTN and Thyroid dysfunction

ASSESSMENT CRITERIA

1.PAIN -VAS score



2.SWELLING

- Grade 0 : No visible swelling.
- Grade 1 : Mild swelling
- Grade 2 :Moderate swelling
- Grade 3 : Severe swelling
- Grade 4 : Very Severe swelling

3.TENDERNESS

- 0 = No tenderness
- I = Tenderness to palpation without grimace
- II = Tenderness with grimace
- III = Tenderness with withdrawal
- IV = Withdrawal to non-noxious stimuli

4. ROM – Through Goniometer

<p>Clinical Findings INSPECTION: Swelling -grade 2 Discoloration- absent longitudinal scar mark on right knee PALPATION : Tenderness- grade 2 over patella, fixed patella Temperature - normal</p>	<p>ROM : extension possible flexion restricted to 80° lateral and medial rotation restricted due to pain.</p> <p>DIAGNOSIS Post fracture stiffness of knee joint after surgery in transverse fracture of patella</p>
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Table 1: Therapeutic Interventions:

Treatment given	Date	Duration
<i>Murivenna pichu</i> on right knee	20/09/24 to 26/09/24	7 days
<i>Januvasthi</i> with <i>murivenna</i>	27/9/24 to 03/10/24	7 days
<i>Salvana upanaham</i> [4] with <i>ajamamsam</i>	04/10/24 to 10/10/24	7days
<i>Tailadhara adhakayam</i> with <i>murivenna</i>	11/10/24 to 17/10/24	7 days
<i>Ksheeravasti</i> with <i>Guggulutiktakam ghritam</i> [5], <i>Panchatiktakam</i> <i>ks, Dhanwantaram tailam mehukupakam</i>	18/10/24 to 24/10/24	7 days
<i>Adhakaya shastika pinda sweda</i> with <i>dhanwantaram tailam</i>	25/10/24 to 31/10/24	7days

Table 2: Internal medications

medicine	Dose
<i>Laksha guggulu</i>	1-0-1
<i>Dhanwantharam Kashayam</i>	90 ml BD B/F
<i>Gandha tailam</i> Soft Gel capsule	2-0-2 BD B/F

Table 3: Assessment of result:

Observation parameter	Before treatment	After treatment
Pain (according to VAS scale)	7/10	1/10
Swelling	Grade 2	Grade 0
Tenderness	Grade 2	Grade 2
ROM (In degrees)	Flexion-80 Extension-100	Flexion-110 Extension -130

Xray Right Knee Joint



Figure-1: Before surgery



Figure-2: After surgery

Outcome

After undergoing the treatment procedures, the pain was significantly decreased and swelling was absent. The range of movement of knee joint also got improved.

DISCUSSION:

Post fracture stiffness following surgery is common complication that can significantly impact a patient's quality of life. Patients with post-patellar fracture

stiffness often present with limited range of motion, pain, and swelling in knee joint. The stiffness can be severe enough to affect daily activities such as walking, climbing stairs etc.

In Ayurveda post fracture stiffness can be correlated with *Bhagna upadrava vikara*. Here prolonged immobilization and surgery causes Dusti of *Vyana vayu* and *Sleshmaka kapha* which leads to post fracture stiffness and associated *pitharakta kopa* due to *abhighatha*.

The topical application of **Murivenna pichu** is characterized by its initial anti-inflammatory action, which serves to mitigate inflammation and provides a lubricating, protective quality (*Snigdhta*) to the joints. Here initially for, pichu, januvasti, and dhara murivenna is used due to its effectiveness abhigataja in reducing inflammation.

There are eight ingredients in Murivenna Taila named Kumari (Aloe Vera Tourn ex Linn), Palandu (Allium Cepa Linn), Paribhadra (Erythrina Indica Lam), Karanja (Pongamia Pinnata (L)Pierre), Shatavari (Asparagus Racemosus Willd), Madangandhi (Borreria Articularis Linn.f), Tamboolapatra (Piper Betle Linn) and Shigru (Moringa Oleifera Lam) and the base is coconut oil. Among these eight drugs most of the drugs having Vata and Kaphahara properties and Nagavalli and Kumari having Pitta Shamaka properties. Thus pain and stiffness were reduced by Vata Kaphahara properties of drugs of Murivenna Taila and Pitta Rakta Shamaka properties of drugs helped to relieve inflammation, which in turn relieved the pain and tenderness. So the functional ability of the patient was improved and Taila is prepared in coconut oil which is *Sheeta veerya* so it reduced inflammation⁵.

Salvana upanaha a traditional Ayurvedic swedana therapy, has shown effectiveness in managing *vāta-kapha* predominant musculoskeletal disorders. The combined action of its ingredients provides analgesic and anti-inflammatory effects, reducing pain, stiffness, and swelling. Its mode of action

can be correlated with localized vasodilation and muscle relaxation, similar to modern heat therapies.

Gugguluthikthaka ghrita is used as Sneha Dravya for salvana upanaha which plays a major role in sandhi asthi gata vikaras.

Ksheera Vasthi (a medicated enema using milk infused with herbs) is an Ayurvedic Panchakarma therapy that is primarily used for Vata-related disorders and results bala and snigdhta. It particularly acts on asthi dhatu when used with thiktha ksheera and ghrita. It resulting in asthi poshana. It has potential effects on post fracture stiffness because of its lubricating, antiinflammatory, and nourishing properties. It is also specifically indicated in asthi and vatha rakta dusti.

Shashtika pinda sweda which is brimhana in action alleviates vata which is responsible for pain ,stiffness and degeneration. The warm and snigdha qualities of medicated milk and sashtiks Sali rice pacify vata and reduce the stiffness in joints. The application of moist heat improves local blood flow and thus by improve range of motion.

Thus by the treatment given to the patient found to be considerable relief in symptoms presented.

CONCLUSION:

Post fracture stiffness, a common complication after patellar fractures followed by surgery which is mainly caused by vata kapha dushti.

The drugs and procedures used in this study are found to be significantly effective in post fracture stiffness.

This treatment protocol can be applied in large samples to manage the condition in conservative line of treatment and to serve the mankind.

Declaration of patient consent:

Obtained patient consent form and patient has given consent for reporting the case along with the images and other clinical information in the journal. Patient understands that his name and initials will not be published.

Conflict of interest: The author declares that there is no conflict of interest.

Guarantor: The corresponding author is the guarantor of this article and its contents.

Source of support: None

How to cite this article:

Aiswarya K, Silpa SS, Deepa M S. An Ayurvedic Treatment Protocol on Post Fracture Stiffness of knee joint after Surgery in Transverse Fracture of Patella: A Case Report. Int. J. AYUSH Case Reports. 2026; 10(1-B): 1-6.

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