

Management of Post-traumatic Arthritis (Chronic Foot Pain) with Ayurvedic Intervention: A Case Report

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ABSTRACT

Post-traumatic arthritis accounts for 12% of osteoarthritis cases, with conventional management focusing primarily on symptomatic relief. The present case demonstrates significant effectiveness of integrated Ayurvedic management in chronic post-traumatic foot pain with the combination of internal medications and *Jalaukavacharana* (leech therapy) addressing both local and systemic aspects, offering a promising alternative for managing chronic post-traumatic arthritis. A 35-year-old male presented with chronic left foot pain, stiffness, and cold sensitivity persisting for 2.5 years following an accidental fall. Conventional treatments provided only temporary relief. Clinical examination revealed plantar tenderness, restricted foot movements, morning stiffness, and Visual Analogue Scale (VAS) pain rating of 8/10 with dorsiflexion limited to 10°. Based on Ayurvedic diagnosis of *vatarakta*, the patient received oral medications (*Kaishor Guggulu*, *Amrutadi Guggulu*, *Eranda Taila*, and *Guduchi* decoction) and *Jalaukavacharana* (leech therapy) on the ankle joint. After 1.5 months of treatment, complete symptom resolution was achieved with VAS decreasing to 0/10, elimination of morning stiffness, improved dorsiflexion to 20°, normal walking without pain, and no cold sensitivity. The successful outcomes highlight the potential of traditional Ayurvedic approaches in addressing complex musculoskeletal conditions.

CASE REPORT

A 35-year-old male presented to the Ayurveda Outpatient Department (OPD), with chronic left foot pain, stiffness, and symptoms aggravated by cold exposure following a stair fall 2.5 years prior resulting in a left foot sprain. Despite conventional treatments with topical medications including diclofenac ointment, oral Non Steroidal Anti-Inflammatory Drugs (NSAIDs), and 15-day ultrasound therapy under physiotherapist supervision, he experienced only temporary relief. The patient denied family history of arthritis or autoimmune conditions. Symptoms worsened in cold weather, mornings, and after prolonged walking, making his occupation as a supervisor in hospitality industry requiring moderate standing and walking increasingly difficult.

Clinical Findings

The patient presented with mild swelling in the left foot without visible deformity or colour changes on inspection. Palpation revealed tenderness in the plantar region with normal local temperature and pain on deep palpation. Range of motion assessment showed restricted foot movements with pain during dorsiflexion and plantarflexion, with dorsiflexion limited to 10°. The patient reported morning stiffness that gradually improved throughout the day. Pain was rated at 8/10 on the VAS. On laboratory investigations, complete blood count results were within normal limits, while Erythrocyte Sedimentation Rate (ESR) was slightly elevated at 28 mm/hr and serum uric acid levels were at 6.8 mg/dL. Rheumatoid factor tested negative. X-ray of the left foot revealed no significant abnormality.

Assessment and Diagnosis

The primary causative factor was an accidental fall from stairs, and aggravating factors included cold weather and physical exertion. Post-traumatic arthritis triggered by acute trauma. It evolves into chronic Post-Traumatic Osteoarthritis (PTOA) or Post Traumatic Arthritis (PTA) when initial symptoms persist beyond six months post-injury [1]. This denotes primary vitiation of *Vata* (*vyana vayu*) with secondary *Kapha* involvement, affecting the *rakta*, *mamsa* and

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kandara, while disrupting the *raktavaha* and *mamsavaha* srotas. Based on trauma history, chronic symptoms and elevated uric acid, the condition was diagnosed as *Vatarakta* with vitiated *Vata-Rakta*-according to *Charaka samhita* *Vatarakta* is a condition induced by *Vata* and *Rakta dushti*, where blocked *Vata* (*Avarana* by vitiated *Rakta*) results in *shoola* (pain), *daha* (burning), *shopha* (swelling), and *raga* (discoloration) in extremities and inflammatory symptoms [2]. According to *Sushruta Samhita*, *Abhighata* (trauma/injury) causes *Rakta dushti* and *Vata* aggravation, which results in inflammatory tissue destruction [3].

Therapeutic Intervention

The management was divided into two phases.

Phase 1: External Therapy: *Jalaukavacharana* (Leech Therapy) performed on the next day: Blood-letting therapy was performed on the left ankle [Table/Fig-1].

After disinfecting the area, two leeches were applied to the ankle joint surface and later removed using turmeric powder. Approximately, 70-80 mL of blackish blood was extracted, indicating *Vata* predominance in Ayurvedic diagnosis. Post-procedural care was done once the leech was removed it was stimulated to regurgitate the sucked blood by applying turmeric powder at its oral end. After that the leeches were cleansed by immersing them in turmeric water for disinfection. After this process, the leeches were placed in fresh water. Meanwhile, at the bite site, haemostasis was achieved, the wound was properly cleaned, and a sterile dressing was applied using a gauze impregnated with turmeric. The patient was advised to keep the limb elevated for some time and to avoid straining at the site.

Phase 2: Internal Medications [Table/Fig-2]: All the medications were started on the 2nd day the leech therapy was done.

The patient showed significant improvement with the prescribed treatment regimen [Table/Fig-3] [4].

The patient experienced improvement in the symptoms of pain, movement, stiffness, mobility was enhanced as mentioned in [Table/Fig-3] over a period of one and half month. After the course of



[Table/Fig-1]: Jalaukavacharana: application of medicinal leeches (*Hirudo medicinalis*) at the left ankle for *Raktamokshana* (therapeutic bloodletting) to alleviate vitiated Rakta.

Formulation	Dose	Time of administration	Duration	Anupana (Vehicle)
<i>Kaishor Guggulu</i> (250 mg) SKM pharmacy {Content- <i>Guggulu suddha</i> , <i>Haritaki</i> , <i>Bibhitaki</i> , <i>Amlaki</i> , <i>Chinnaruha</i> , <i>Sunthi</i> , <i>Pippali</i> , <i>Maricha</i> , <i>Krmirupa</i> , <i>Trivrit</i> , <i>Danti</i> , <i>Amrta</i> }	2-0-2 tablets	After food	1.5 months	Lukewarm water
<i>Amrutadi Guggulu</i> (250 mg) SKM pharmacy {content- <i>Guduchi</i> , <i>Guggulu</i> , <i>Haritaki</i> , <i>Bibhitaki</i> , <i>Amlaki</i> , <i>Dantimool</i> , <i>Sonthi</i> , <i>Kalimirch</i> , <i>Pippal</i> , <i>Viavidang</i> , <i>Dalchini</i> }	2-0-2 tablets	After food	1.5 months	Lukewarm water
<i>Eranda Taila</i> (Castor oil)	0-0-1 teaspoon	At bedtime	10 days	Lukewarm water
<i>Guduchi</i> powder for decoction	1-0-1 teaspoon	After food	1.5 months	NA

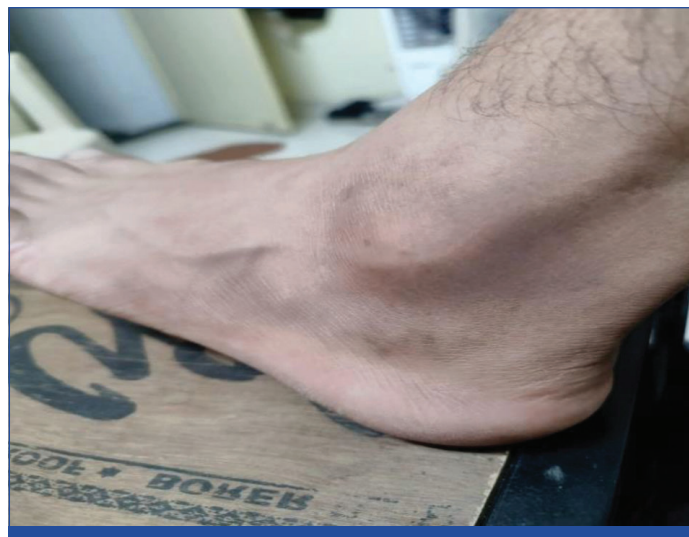
[Table/Fig-2]: Medications administered internally over a period of 1.5 months.

Symptoms	Before treatment	After treatment (follow-up after one and half months)
Pain	Persistent foot pain with periodic exacerbations	Complete resolution of pain symptoms
Stiffness	Significant morning stiffness	No morning stiffness
Mobility	Restricted foot movements, pain during dorsiflexion and plantarflexion	Improved mobility and function
Cold Sensitivity	Increased pain in cold weather	No cold sensitivity reported
Walking	Significant plantar region pain during ambulation	Normal walking without pain
VAS pain score [4]	8/10	0/10
ROM (Range of movement) (Dorsiflexion)	10 degrees	20 degrees

[Table/Fig-3]: Patient assessment before and after treatment indicating the level of improvement in the symptoms [4].

treatment [Table/Fig-4], there was a noticeable decrease in swelling over the lateral area of the ankle, indicating a significant clinical improvement. The soft-tissue prominence has clearly diminished, indicating that the affected area's oedema or inflammation has effectively resolved. This progress is a result of the ongoing healing process and the favourable therapeutic response.

Currently, the patient is having no complaint and no reoccurrence of the symptoms.



[Table/Fig-4]: Image demonstrating improvement in local swelling after one and a half month of treatment.

DISCUSSION

The present case demonstrates the successful management of chronic post-traumatic foot pain using an integrated Ayurvedic approach. The direct correlation of symptoms of post-traumatic arthritis with that of *Vatarakta* provided the basis for the treatment protocol.

Jalaukavacharana (leech therapy) played a pivotal role in managing this condition. Its therapeutic efficacy is attributed to bioactive salivary components such as hirudin, hyaluronidase, bdellins, and eglins, which exert analgesic, anti-inflammatory, anticoagulant, and vasodilatory effects through complementary mechanisms [5]. Hyaluronidase enhances tissue permeability and microcirculation, while hirudin inhibits thrombin and platelet aggregation [6]. Evidence from systematic reviews supports these mechanisms; a meta-analysis of randomised controlled trials demonstrated significant reductions in knee pain, improved physical function, and decreased joint stiffness in osteoarthritis patients by leech therapy [7]. Another meta-analysis confirmed meaningful pain relief and functional improvement following leech therapy [8].

The *Vatarakta* management principle given in *samhita* involves *Snehana*, *Virechana*, *Srotoshodhana* (channel purification), and *Raktaprasadana* (blood purification). The two important formulations from *Bhaishajya Ratnavali* that are recommended in *Vatarakta Chikitsa* are *Kaishor Guggulu* and *Amrutadi Guggulu*. *Guggulu* (*Commiphora mukul*), *Guduchi* (*Tinospora cordifolia*), and *Triphala* are the main ingredients in both preparations; *Guggulu* is the most effective medication for treating *Medavruta Anila* (Kapha-obstructed Vata) because of its *Anabhishtyandhi*, *Snigdha*, and *Sroto Shudhikaraka* [9].

Kaishor Guggulu, as referenced in *Bhaishajya Ratnavali* (*Vatarakta Rogadhikara*), additionally contains *Triphala*, *Guduchi*, *Vidanga* (*Embelia ribes*), *Trikatu* (*Shunthi*, *Pippali*, *Maricha*), and *Danti* (*Baliospermum montanum*) - a *Rookshana* and *Tikshna* combination that reduces pathological *Kapha* and *Meda* accumulation in the *srotas*, while the *Ushna* and *Tikshna* constituents of the formula act as potent *Srotoshodhaka*, restoring normal channel patency [9]. *Kaishor Guggulu* was selected for its anti-inflammatory, analgesic, and *Raktashodhaka* properties. Its key constituent, guggulsterone from *Commiphora mukul*, suppresses NF- κ B activation by inhibiting I κ B α phosphorylation, thereby reducing Cyclo-Oxygenase-2 (COX-2) and other pro-inflammatory mediators [10]. A 2022 review further confirmed NF- κ B pathway inhibition across multiple models [11]. *Amrutadi Guggulu* (*Bhaishajya Ratnavali*, *Vatarakta Adhikara*), wherein *Guduchi* constitutes the dominant ingredient, leverages the dual *Tridosha* and *Vataraktanashaka* property [12,13]. *Tinospora*

cordifolia in *Amrutadi Guggulu* tablet the formulation provides synergistic immunomodulatory effects by downregulating COX-2, Inducible Nitric Oxide Synthase (iNOS), and Janus Kinase/Signal Transducer and Activator of Transcription (JAK/STAT) signaling, along with pro-inflammatory cytokines such as Interleukin-6 (IL-6), Tumour Necrosis Factor Alpha (TNF- α), and Vascular Endothelial Growth Factor (VEGF) [14]. Clinical studies have shown significant improvement in pain, swelling, and function with *Kaishor Guggulu*, supporting its therapeutic utility [15].

Eranda Taila (castor oil) was included for its *Vatashamaka* and *Amapachana* properties it is classically indicated in Vatarakta and other diseases arising from Vata vitiation. Ricinoleic acid, its active component, activates EP3 prostanoid receptors, enhancing intestinal motility and facilitating toxin elimination [16]. Experimental studies also demonstrate its analgesic and anti-inflammatory effects, comparable to capsaicin, via modulation of neurogenic inflammation [17]. This dual systemic and local action supports its use in *Ama-related* and *Vata-Rakta* disorders.

Guduchi (*Tinospora cordifolia*) decoction was used as an adjuvant for its anti-inflammatory and immunomodulatory effects. Studies show suppression of IL-6, TNF- α , Prostaglandin E2 (PGE2), and Nitric Oxide (NO), along with downregulation of COX-2, iNOS, and JAK/STAT signaling [13]. It also reduces cytokines such as IL-1 β , TNF- α , IL-6, and IL-17, preventing joint and bone damage in arthritis models [18]. Transcriptomic evidence indicates modulation of Th17 cell responses, explaining its role in autoimmune inflammation [19].

A case study similar to the symptoms was found but the line of treatment differed by the internal medications and the external applications of oil massage and Poultice which also provided relief [20]. This single case study limits generalisability due to individual variations. Future research requires randomised controlled trials, large-scale diverse population studies, and evidence-based integrative approaches comparing Ayurvedic and conventional treatments.

CONCLUSION(S)

The present case report demonstrates the significant effectiveness of integrated Ayurvedic management in chronic post-traumatic foot pain diagnosed as *Vatarakta*, achieving complete symptom resolution within 1.5 months where conventional treatments had failed over 2.5 years. The combination of *Jalaukavacharana* (leech therapy) with specific herbal medications effectively addressed both local and systemic aspects of the condition, with marked improvements in pain, range of motion, and functional ability.

Ethical Consideration: Written informed consent was obtained from the patient for *Jalaukavacharana* (leech therapy) and for publication of the present case report.

Authors' contribution: SSB: Conceptualisation, writing, visualisation, editing; MMT: Conceptualisation, study design, resources, review; SUR: Supervision, Analysis.

REFERENCES

- [1] Brown TD, Johnston RC, Saltzman CL, Marsh JL, Buckwalter JA. Posttraumatic osteoarthritis: A first estimate of incidence, prevalence, and burden of disease. *Journal of Orthopaedic Trauma*. 2006;20(10):739-44.
- [2] Agnivesha, Charaka, Dridhabala. *Charaka Samhita*. Chakrapani commentary. Varanasi: Chaukhamba Orientalia; 2014. Chikitsa Sthana, Chapter 23 (Vatarakta Chikitsa).
- [3] Sushruta. *Sushruta Samhita*. Dalhana commentary. Varanasi: Chaukhamba Sanskrit Sansthan; 2015. Sutra Sthana Chapter 1 (Vedotpatti Adhayaya); Nidana Sthana Chapter 1 (Vatavyadhinidanam).
- [4] Delgado DA, Lambert BS, Boutris N, McCulloch PC, Robbins AB, Moreno MR, et al. Validation of digital visual analog scale pain scoring with a traditional paper-based visual analog scale in adults. *J Am Acad Orthop Surg Glob Res Rev*. 2018;2(3):e088. Available from: <https://pmc.ncbi.nlm.nih.gov/articles/PMC6132313/>.
- [5] Sig AK, Guney M, Uskudar Guclu A, Ozmen E. Medicinal leech therapy: An overall perspective. *Integr Med Res*. 2017;6(4):337-43.
- [6] Shakouri A, Wollina U. Time to change theory: Medical leech from a molecular medicine perspective: Leech salivary proteins playing a potential role in medicine. *Adv Pharm Bull*. 2021;11(2):261-66.
- [7] Lauche R, Cramer H, Langhorst J, Dobos G. A systematic review and meta-analysis of medical leech therapy for osteoarthritis of the knee. *Clin J Pain*. 2014;30(1):63-72.
- [8] Wang H, Zhang J, Chen L. The efficacy and safety of medical leech therapy for osteoarthritis of the knee: A meta-analysis of randomized controlled trials. *Int J Surg*. 2018;54(Pt A):53-61.
- [9] Sen GD. *Bhaishajya Ratnavali* with Siddhiprada Hindi Commentary. Mishra SN, editor. Vataraktadhikar. Reprint ed. Varanasi: Chaukhamba Surbharati Prakashan; 2021. p. 582.
- [10] Shishodia S, Aggarwal BB. Guggulsterone inhibits NF-kappaB and IkappaBalpha kinase activation, suppresses expression of anti-apoptotic gene products, and enhances apoptosis. *J Biol Chem*. 2004;279(45):47148-58.
- [11] Priya SS, Jha A, Satish Kumar RC, Sabarathinam S. The role of guggulsterone on the NF-kappaB pathway in inflammatory bowel disease: Preclinical evidence. *Future Sci OA*. 2022;8(6):FSO803.
- [12] Singh SS, Pandey SC, Srivastava S, Gupta VS, Patro B, Ghosh AC. Chemistry and medicinal properties of *Tinospora cordifolia* (Guduchi). *Ind J Pharmacol*. 2003;35(2):83-91.
- [13] Sinha K, Mishra NP, Singh J, Khanuja SPS. *Tinospora cordifolia* (Guduchi), a reservoir plant for therapeutic applications: A review. *Ind J Trad Knowl*. 2004;3(3):257-70.
- [14] George G, Shyni GL, Mohan S, Abraham B, Nisha P, Ranjith S, et al. In vitro and in vivo anti-inflammatory and anti-arthritis effect of *Tinospora cordifolia* via modulation of JAK/STAT pathway. *Inflammopharmacology*. 2023;31(2):1009-25.
- [15] Ramachandran AP, Prasad SM, Prasad UN, Jonah S. A comparative study of *Kaishora Guggulu* and *Amrita Guggulu* in the management of *Utthana Vatarakta*. *Ayu*. 2010;31(4):410-16.
- [16] Tunaru S, Althoff TF, Nusing RM, Diener M, Offermanns S. Castor oil induces laxation and uterus contraction via ricinoleic acid activating prostaglandin EP3 receptors. *Proc Natl Acad Sci U S A*. 2012;109(23):9179-84.
- [17] Vieira C, Evangelista S, Cirillo R, Lippi A, Maggi CA, Manzini S. Effect of ricinoleic acid in acute and subchronic experimental models of inflammation. *Mediators Inflamm*. 2000;9(5):223-28.
- [18] Sannegowda KM, Venkatesha SH, Moudgil KD. *Tinospora cordifolia* inhibits autoimmune arthritis by regulating key immune mediators of inflammation and bone damage. *Int J Immunopathol Pharmacol*. 2015;28(4):521-35.
- [19] Nandan A, Sharma V, Banerjee P, Kannan S, Venkatesan S, Prasher B. Deciphering the mechanism of *Tinospora cordifolia* extract on Th17 cells through in-depth transcriptomic profiling and in silico analysis. *Front Pharmacol*. 2023;13:1056677.
- [20] Nandagaon AB, Kadlimate S. Ayurvedic management of post traumatic osteoarthritis of knee joint-a case study. *World J Pharm Res*. 2024;13(10): 828-833. Available from: https://wjpr.s3.ap-south-1.amazonaws.com/article_issue/40b8e8be8fe448a03210c96f12d32d69.pdf.

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