Case Report

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AVASCULAR NECROSIS OF THE FEMORAL HEAD MANAGED THROUGH AN AYURVEDIC FRAMEWORK OF ASTHI-MAJJAGATA VATA: A CASE REPORT

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ABSTRACT

Background: Avascular necrosis (AVN), also known as osteonecrosis of the femoral head, is a progressive condition resulting from compromised blood supply to the femoral head, leading to bone ischemia, structural weakening, subchondral fracture, and eventual collapse. Early identification is crucial, as joint-preserving interventions are most effective before femoral head collapse occurs. From an Ayurvedic perspective, conditions affecting the deeper tissues, particularly Asthi and Majja Dhatu, along with features indicative of Vata aggravation, may be understood within the conceptual framework of Asthi-Majjagata Vata. Case Presentation: A 30-year-old male presented with 7 years of pain in the bilateral hips, associated with difficulty in walking, restricted hip movements, and a limping gait. The patient had a documented diagnosis of avascular necrosis of the femoral head based on clinical and radiological evaluation. Radiological examination demonstrated bilateral hip FICAT stage IV. On Ayurvedic assessment, the clinical presentation was interpreted as Asthi-Majjagata Vata. The patient was managed with Shamana Chikitsa and Panchakarma procedures, along with appropriate dietary and lifestyle advice. Clinical outcomes were assessed using VAS score, Harris Hip Score, range of motion, and walking distance. Other tests were performed at baseline and during follow-up. At follow-up, there was significant improvement in pain and range of motion of the bilateral hip joints. Conclusion: This case highlights the potential role of an individualised Ayurvedic treatment approach in managing a patient with AVN, presenting with features interpreted within the Ayurvedic framework of Asthi-Majjagata Vata.

Keywords: Avascular necrosis, Asthi-Majjagata Vata, Ayurveda, Case report.

INTRODUCTION

Non-traumatic osteonecrosis of the femoral head is a progressive condition caused by compromised vascular supply, leading to structural and functional changes in the articular cartilage, subchondral bone, and local vasculature. Persistent ischemia may result in osteonecrosis of the subchondral bone, followed by structural collapse of the femoral head and subsequent impairment of the hip joint. Clinically, patients commonly experience hip pain and restricted joint mobility, which may progressively limit physical function and significantly affect their daily activities and overall quality of life. Femoral head necrosis is a multifactorial condition associated with various systemic and local risk factors. These include previous trauma or surgical intervention involving the hip, excessive endogenous or exogenous corticosteroid exposure, lipid metabolism abnormalities, hypertension, autoimmune disorders, endotoxin-related injury, cigarette smoking, excessive alcohol consumption, and hypercoagulable states. These factors may impair vascular integrity and microcirculation in the femoral head, leading to compromised blood flow, bone marrow ischemia or infarction, and ultimately avascular necrosis.[1]

The management of avascular necrosis (AVN) of the femoral head is primarily determined by the extent and stage of the disease, lesion size, presence of symptoms, and whether femoral-head collapse has occurred. In patients with asymptomatic or symptomatic small-to-medium lesions without radiological evidence of collapse, conservative measures and joint-preserving procedures such as core decompression may provide clinical benefit. Lesions of moderate to large size may require more advanced joint-preserving approaches, including vascularized or non-vascularized bone grafting and corrective osteotomy. Pharmacological approaches have also been explored, although evidence supporting their routine use remains limited. Researchers have investigated or used agents such as vasodilators, statins, bisphosphonates, and anticoagulants off-label to reduce disease progression, improve bone remodelling, or support vascular recovery.[2]

Avascular necrosis can be correlated to Asthi Majjagata Vata or Asthi Dhatu Kshaya manifesting symptoms like Bhedo Asthi Parvanam (breaking type of pain in bones and joints), Sandhi Shula (joint pain), Mamsakshaya (muscular wasting), Balakshaya (weakness), Aswapna Santataruk (disturbed sleep due to continuous pain) and Sandhi shaithilyam (afflicted joints) with Shiryanti Iva Cha Asthini Durbalani (destruction of bony tissue causing generalized weakness), Pratata Vata Rogini (other aggravated features of vata) etc. Wide range of treatment modalities have been mentioned in Ayurveda that are effective in such manifestations.[3]

CASE PRESENTATION

A 30-year-old male visited the Kayachikitsa OPD of CBPACS, with no history of diabetes mellitus, hypertension, or any other chronic illness, and presented with a 7-year history of pain in the bilateral gluteal regions radiating to the thighs and associated with stiffness. The pain was persistent throughout the day, with difficulty in cross-legged, sitting, and squatting positions and was not relieved by sitting or lying down, resulting in considerable discomfort and functional limitation. Despite receiving

conventional medical treatment for approximately 5 years, the patient continued to experience significant symptoms. Surgical intervention had been advised; however, the patient was reluctant to undergo surgery and subsequently sought conservative Ayurvedic management.

Clinical examination

On general examination, the patient was conscious, well oriented and cooperative. His pulse rate was 82 beats/min, blood pressure was 110/80 mmHg, and SpO_2 was 96%. There was no evidence of pallor, icterus, cyanosis, clubbing, lymphadenopathy, or pedal oedema. On musculoskeletal examination, a limping gait was noted. Bilateral hip-joint movements were painful and restricted, particularly during internal rotation, external rotation, flexion, and abduction. Tenderness was elicited over the bilateral gluteal regions. No local swelling, erythema, or rise in temperature was observed. There was no wasting of the gluteal and thigh muscles. Examination of the remaining systemic systems was unremarkable.

The FABER, FADIR, log-roll, and Stinchfield tests were performed at baseline. Limb length was assessed and showed no discrepancy. Neurological examination of both lower limbs revealed normal motor power, sensory function, and reflexes. Pain severity was assessed using the Visual Analogue Scale (VAS) and was recorded as 8/10 at baseline. Functional limitation was assessed using the Harris Hip Score (HHS), and results are presented in the table.

Ayurvedic assessment revealed Kapha-Vata Prakriti. The patient's Satva, Satmya, and Aharashakti were assessed as Madhyama, whereas Vyayamashakti was classified as Avara. Sara, Samhanana, and Pramana were found to be Madhyama. Based on the clinical assessment and Ayurvedic evaluation, Vata Dosha was considered predominantly vitiated, with Asthi and Majja Dhatu identified as the principal Dushya. The predominant Srotas involvement was considered to be Asthivaha and Majjavaha Srotodushti.

Timeline

Time	Clinical Event
Nov'2019	Onset of pain in the bilateral gluteal regions with radiation to the thighs. He visited to nearest hospital and suggest for X-ray, X-ray pelvis with bilateral hip joint (dated-09/11/2019) reveals partial collapse with sclerosis of head of both femur.
Following years (2019-2024)	Pain persisted throughout the day and was associated with progressive restriction of hip movements and functional difficulty. The patient sought conventional medical treatment for persistent symptoms; however, significant symptomatic relief was not achieved. MRI of the bilateral hip joints (dated-12 Jan'2020) demonstrated findings consistent with FICAT Stage III avascular necrosis of both hip joints. Surgical intervention was advised; however, the patient was reluctant to undergo surgery and opted for conservative management.
	On 30 Nov'2024, Patient again underwent X-ray, which reveals bilateral Avascular necrosis of femoral head with secondary degenerative changes (FICAT stage IV)
At presentation to Ayurveda OPD (May 2026)	Detailed clinical and Ayurvedic assessment was performed, and the condition was interpreted as Asthi-Majjagata Vata. Latest X-ray (dated 30-Apr-26) reveals cortical irregularity and flattening seen along bilateral head of femur with areas of ill-defined sclerosis - Features are suggestive of Avascular Necrosis. Few small subchondral lytic areas are seen in head of both femur. Cortical fragment with lucent inferior margin - subcortical fracture seen in left femoral head supero-medially. Secondary degenerative changes are seen bilaterally in form of mildly reduced bilateral hip joint space in the superior compartment, marginal osteophytes and acetabular margins showing subarticular sclerosis.
Treatment initiation (May 2026)	An individualized Ayurvedic treatment was initiated with the objectives of reducing pain, improving hip mobility, and enhancing functional capacity.
During follow-up (May'26-Aug'26)	Clinical response was assessed using pain intensity, range of motion, gait, and functional status.
Final follow-up (Aug 2026)	Overall clinical outcome was evaluated based on changes from baseline in pain, mobility, and functional performance, with radiological reassessment where available.

Diagnostic Assessment

A comprehensive clinical and radiological evaluation was performed to establish the diagnosis and assess the extent of femoral-head involvement. The patient presented with chronic bilateral gluteal pain radiating to the thighs, associated with painful and restricted movements of both hip joints and a limping gait.

MRI of the bilateral hip joints dated 12 Jan'2020 demonstrated findings consistent with FICAT Stage III avascular necrosis of both hip joints, and an X-ray dated 29 Nov'2024 revealed bilateral Avascular necrosis of the femoral head with secondary degenerative changes (FICAT stage IV)

From an Ayurvedic perspective, the clinical findings were suggestive of Vata Dosha predominance with involvement of Asthi and Majja Dhatu. Clinically, the condition was therefore correlated with Asthi-Majjagata Vata, while the modern diagnosis was bilateral femoral-head avascular necrosis based on MRI findings.

Therapeutic Intervention

An individualised Ayurvedic treatment protocol was planned based on the patient's clinical presentation, chronicity, Vata Dosha predominance, and involvement of Asthi and Majja Dhatu. The therapeutic objectives were to alleviate pain, reduce stiffness, improve hip-joint mobility, enhance functional capacity, and support Asthi-Majja Dhatu.

The patient was managed conservatively with a combination of Shamana Chikitsa (internal Ayurvedic medications) and Panchakarma procedures. The treatment protocol was tailored according to the patient's response and tolerance.

Treatment	**Intervention / Formulation**	**Dosage and Administration**	**Therapeutic Objective/ Mode of action**
Internal medication (Shamana chikitsa)	Panchtikta Ghrita Guggulu	2 tablets (250mg) twice daily with luke warm water.	Most ingredients of Panchatikta Ghrita Guggulu possess Tikta Rasa, Ushna Virya, and Madhura or Katu Vipaka. Tikta Rasa enhances Dhatvagni, thereby promoting tissue metabolism and nourishment, particularly of Asthi and Majja Dhatu, which may help retard degenerative changes. Its Jwaraghna and Daha-prashamana properties may further contribute to alleviating inflammation, pain, and swelling. Ghrita, owing to its Yogavahi property, may enhance the bioavailability of co-administered drugs. Its vitamin D content may additionally support calcium and phosphorus metabolism and bone health.[4]
	Singnada Guggulu	2 tablets (250mg) twice daily with luke warm water.	It possesses Katu and Tikta Rasa, Laghu and Ruksha Guna, Ushna Virya, and Katu Vipaka, along with Vedanasthapana, Deepana-Pachana, Rasayana, and Medhya actions. These properties collectively contribute to its Vata-Kapha Shamaka, Amapachaka, and Srotoshodhaka effects.[5]
	Br. Manjishtadi Kwatha	40ml twice daily.	Mahamanjishthadi Kwatha, a classical Ayurvedic formulation comprising 45 herbs, possesses antioxidant potential. Its ingredients include several Vata-Shamaka and antioxidant herbs, such as Rubia cordifolia, Cedrus deodara, Zingiber officinale, Tinospora cordifolia, Sida rhombifolia, Triphala, and Hemidesmus indicus. The antioxidant and Vata-Shamaka properties of these constituents may help counter oxidative stress and support tissue protection. In the context of AVN, these effects may be relevant in mitigating degenerative changes and supporting musculoskeletal function.[6]
	Ekangaveer Ras	1 (250mg) tablet twice daily.	Ekangaveera Rasa comprises several herbal and mineral ingredients, including Chitraka, Amalaki, Bhringaraja, Dhattura, Kushta, Maricha, Pippali, Shunthi, Trikatu, and Triphala, along with Vanga, Abhraka, and Lauha Bhasma, Shuddha Gandhaka, Rasasindura, Tamra Bhasma, and Naga Bhasma. The combined properties of these constituents may support Vata-Shamana, pain relief, and restoration of Gati (motor function) in musculoskeletal disorders. In the present case of AVN, its use as part of the therapeutic regimen may have contributed to reduction in hip pain, improvement in joint mobility, and enhanced functional status.[7]
	Ashwagandha churna (3gm) + Pravala Pishti (250mg)	Twice daily with luke warm milk.	Withania somnifera (Ashwagandha), containing bioactive constituents such as withaferin A, exhibits anti-inflammatory, immunomodulatory, and analgesic properties. These effects may help alleviate pain and inflammation and support functional recovery in musculoskeletal disorders.[8] Pravala Pishti, a calcium-rich preparation derived from coral, undergoes Ayurvedic processing that may enhance its assimilation. Its calcium content may support bone mineralization and skeletal health, making it potentially beneficial in disorders involving compromised bone integrity.[9]
Panchakarma (13/05/26-30/05/26) and (05/08/26-19/08/26)	Patra potli pinda swedana	For 30 minutes daily with Mahanarayana oil.	Nirgundi Patra Pinda Sweda utilizes Nirgundi (Vitex negundo) leaves and Tila Taila. Nirgundi possesses Vata-Kapha shamaka, Rasayana, analgesic, and anti-inflammatory properties, while Tila Taila provides Snehana, Sandhaniya, and Rasayana effects. Prior Abhyanga facilitates oleation and nourishment, followed by Swedana, which may alleviate Stambha and pain through enhanced local circulation, muscle relaxation, and tissue metabolism. These effects may help improve hip-joint mobility and functional status in AVN.[10]
	Vankshana Basti	For 30 minutes daily with Mahanarayana oil.	warmth pressure of the oil allows deeper absorption into the muscles, tendons and ligaments, relaxing spasms and reducing pain and stiffness of Vankshan.[11]
	Panchtikta ksheer Basti and Giggulu Tiktaka Ghrita Basti alternatively.	For 14 days cycle.	Panchatikta Kshira Basti predominantly possesses Tikta Rasa, which is considered relevant to Asthi Dhatu. Kshira, with Madhura and Snigdha properties, provides Brimhana and supports Vata-Pitta balance, while Saindhava facilitates penetration into subtle Srotas. These actions may promote Asthi Dhatu nourishment and tissue perfusion. Guggulu Tiktaka Ghrita Basti, with Tikta Rasa and Ushna Virya, may enhance Dhatvagni and Asthi Dhatu nourishment. Ghrita contributes Vata-Pitta shamaka, Balya, and Rasayana effects and may enhance drug bioavailability, collectively supporting Samprapti-vighatana in AVN.[12]

Outcome parameter	Baseline	Post-treatment
VAS pain score	8/10	3/10
Harris Hip Score	41.60%	88.85%
SLR	Rt-30° Lt-45°	Rt-70° Lt-80°
Faber's test	Rt- (+)ve Lt- (+)ve	Rt- (+)ve Lt- (-)ve
FADIR test, Log roll test, Stinchfield test, Trendelenburg test	Positive	Negative
Hip flexion	Rt-20° Lt-45°	Rt-90° Lt-110°
Hip extension	Rt-10° Lt-15°	Rt-20° Lt-20°
Hip abduction	Rt-10° Lt-15°	Rt-30° Lt-30°
Hip adduction	Rt-10° Lt-15°	Rt-20° Lt-30°
Internal rotation	Rt-20° Lt-25°	Rt-40° Lt-40°
External rotation	Rt-10° Lt-25°	Rt-40° Lt-45°
Limb measurement	Rt- 36 inches Lt- 36 inches	Rt- 36 inches Lt- 36 inches
Limping gait	Present	Absent

RESULTS

The patient was followed regularly during and after Ayurvedic treatment. At baseline, the patient reported persistent bilateral gluteal pain radiating to the thighs, associated with restricted hip movements and difficulty in walking. After completing the treatment protocol, pain intensity gradually decreased, along with improved hip-joint mobility and walking ability. Limping and functional limitations also improved.

The patient reported improvement in daily functional activities and overall mobility. The patient reported no significant adverse events related to the Ayurvedic intervention during treatment or follow-up.

DISCUSSION

Avascular necrosis (AVN) of the femoral head is a progressive disorder resulting from impaired vascular supply to the femoral head, leading to structural weakening and, in advanced stages, collapse of the femoral head. In the present case, a 30-year-old male with long-standing bilateral hip pain and already diagnosed with Grade IV AVN of the bilateral femoral heads sought conservative Ayurvedic management after inadequate symptomatic relief with conventional treatment and reluctance to undergo surgical intervention. Considering the advanced stage of disease, the therapeutic objective was primarily to reduce pain and stiffness, improve mobility and functional capacity, and provide supportive management rather than to claim reversal of established osteonecrosis.

From an Ayurvedic perspective, the clinical presentation was considered compatible with Asthimajjagata Vata, based on the chronicity, deep-seated pain, stiffness, restricted movement, and involvement of Asthi and Majja Dhatu. This represents an Ayurvedic clinical correlation rather than a direct equivalence between AVN and Asthimajjagata Vata. Treatment was therefore individualised, with an emphasis on Vata Shamana, Snehana, Swedana, Basti, and support of Asthi-Majja Dhatu. Internal treatment included Panchatikta Ghrita Guggulu, Singanada Guggulu, Brihat Manjishthadi Kwatha, Ekangaveera Rasa, and Ashwagandha Churna with Praval Pishti. The mode of action of these drugs was already discussed in the table above. The external and Panchakarma components of treatment included Patra Pinda Swedana, Vankshana Basti, and alternate Panchatikta Ksheera Basti and Guggulu Tiktaka Ghrita Basti. Patra Pinda Swedana may be interpreted within the framework of Swedana therapy for reducing stiffness and facilitating movement in Vata-dominant musculoskeletal conditions. Basti was an important component of the protocol because of its classical importance in Vata disorders. Vankshana Basti specifically provided a localised therapeutic approach to the affected pelvic/hip region, while alternating Panchatikta Ksheera Basti and Guggulu Tiktaka Ghrita Basti aimed to combine Vata-Shamana, Snigdha, and Asthi-Majja-oriented therapeutic principles. The rationale for incorporating Panchatikta preparations is also consistent with their traditional use in disorders involving Asthi and deeper Dhatus.

The clinical response may reflect the combined effect of multimodal treatment, with improved pain, stiffness, hip mobility, and functional performance. This case highlights the potential supportive role of an individualised Ayurvedic approach incorporating Shamana therapy, Patra Pinda Swedana, localised Basti, and Panchatikta-guggulu-based Basti procedures in a young patient with advanced bilateral AVN who opted for conservative care.

However, this single-patient case report limits the generalizability of the findings. The case provides a clinical perspective on using an individualised Ayurvedic approach in a patient with bilateral AVN who preferred conservative management.

CONCLUSION

This case highlights the potential role of an individualised Ayurvedic approach in the conservative management of Grade IV bilateral avascular necrosis of the femoral heads, clinically interpreted within the framework of Asthi-Majjagata Vata. The treatment was associated with improvement in pain, hip-joint mobility, and functional capacity. However, as AVN is a progressive structural disorder, clinical improvement alone cannot establish disease reversal. Objective radiological assessment and long-term follow-up are essential to determine disease stability and structural outcomes.

DECLARATION OF PATIENT CONSENT

The patient provided informed consent for publication of the case report, including relevant clinical information and investigations. The patient was adequately informed regarding the purpose of publication and assured that identifiable personal information would not be disclosed. Every reasonable effort was made to preserve the patient's confidentiality and anonymity.

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