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REVIEW ARTICLE

AYURVEDIC MANAGEMENT OF BILATERAL FEMORAL HEAD AVASCULAR NECROSIS (*ASTHIMAJJAGATA VATA*): A CASE STUDY

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ABSTRACT

Background: Avascular Necrosis (AVN) is a degenerative bone disorder caused by compromised blood supply, leading to structural collapse. In *Ayurveda*, it correlates with *Asthimajjagata Vata*, where aggravated *Vata* localized in bone and marrow causes debilitating pain and restricted mobility. **Case Report:** A 26-year-old male diagnosed with Grade 2 Bilateral AVN presented with chronic hip pain, limping gait, and restricted joint movements. He sought a non-surgical alternative to the recommended total hip arthroplasty. **Intervention:** The primary intervention consisted of *Panchatikta Ksheera Basti*, administered in three 21-day cycles. This was supported by oral medications including *GandhaTailam* capsules (600mg BD) *and Panchatikta Ghrita Guggulu* to facilitate deep tissue rejuvenation and channel clearance. Additionally, *ChitrakadiVati* was prescribed for *Deepana-Pachana* to ensure proper metabolic correction and enhance the efficacy of the overall treatment. **Results:** Post-treatment, the Visual Analogue Scale (VAS) for pain dropped from 3 to 0 (Right) and 3 to 1 (Left). Gait improved significantly, and sleeplessness was completely resolved. Objective improvements were noted in Range of Motion (ROM), with right hip flexion increasing from 90° to 110° and extension from 10° to 30°. **Conclusion:** The combination of *Basti* and nourishing *Vata*-pacifying drugs effectively reduced *Srotorodha* (obstruction), improved microcirculation, and restored joint function. This integrative approach offers a viable conservative strategy for early-stage AVN.

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INTRODUCTION

Avascular necrosis (AVN) is a progressive degenerative disorder of bone characterized by the death of osteocytes due to compromised vascular supply.[1] The condition is also described in the literature by synonymous terms such as osteonecrosis, ischemic bone necrosis, and osseous ischemia.[2]Although AVN can affect multiple skeletal regions—including the knee, shoulder, and ankle—the femoral head is the most commonly involved site. Involvement of the femoral head often leads to a cascade of pathological changes culminating in structural collapse and subsequent development of secondary osteoarthritis.[3]The femoral head is particularly vulnerable to AVN because it has a terminal (end-arterial) blood supply with poor collateral circulation and is subjected to high mechanical stress, making it prone to collapse even with minimal vascular compromise. Epidemiologically, AVN predominantly affects males between the ages of 20 and 50 years and demonstrates bilateral involvement in a significant proportion of cases. In 2023, a study was conducted on 30 patients at PTKLS Government *Ayurveda* College, Bhopal, and the results are as follows.In this study, a total of 30 patients with Avascular Necrosis (AVN) were analysed with respect to age, gender, addiction, and causative factors. Age-wise distribution showed that the majority of patients belonged to the 20–30 years age group (53.33%), followed by 31–40 years (36.66%) and 41–50 years (10%), indicating that AVN is more prevalent in the younger population. Gender-wise distribution revealed a clear male predominance (83.33%) compared to females (16.66%). Regarding addiction patterns, tea/coffee consumption was most common (46.66%), followed by tobacco use (26.66%), alcohol intake (23.33%), and cold drinks (10%), while 13.33% of patients had no addiction. Among causative factors, prior steroid use was the most significant (36.66%), followed by alcohol consumption (23.33%) and protein powder intake (20%), with no contribution observed from other medications. Overall, the study suggests that AVN predominantly affects young males, with steroid use, alcohol, and lifestyle-related factors playing a major role in its development.[4] AVN may be classified as either primary (idiopathic) or secondary to various underlying conditions, including Direct cellular toxicity caused by chemotherapy, radiotherapy, and smoking can damage bone cells. Extraosseous arterial causes such as hip dislocation and femoral neck fracture may disrupt blood supply. Venous abnormalities outside the bone can also impair circulation. Intraosseous intravascular occlusion, including coagulation

disorders and sickle cell disease, leads to blockage of blood vessels within the bone. Additionally, intraosseous extravascular compression due to haemorrhage, steroid use, bone marrow oedema, or fractures increases internal pressure and compromises blood flow. Cellular hypertrophy and marrow infiltration further contribute by compressing vascular structures, ultimately leading to bone ischemia and necrosis. Patho physiologically, AVN involves an imbalance between osteoclastic bone resorption and osteoblastic bone formation during the repair process. This imbalance leads to the formation of structurally weak and mechanically insufficient bone, which is prone to collapse under normal physiological loading. Once collapse occurs, joint integrity is severely compromised, often necessitating surgical intervention such as total hip arthroplasty. However, given the relatively young age of affected individuals, the long-term durability of prosthetic replacement remains a concern.[5,6,7]In *Ayurvedic* understanding, *Asthi-Majjagata Vata* denotes a pathological condition in which aggravated *Vata dosha* localizes in the bone (*asthi*) and bone marrow (*majja*). Classical descriptions from *Charaka Chikitsa Sthana*(28/33) indicate clinical features such as deep, penetrating pain in bones and joints, joint discomfort, reduction in muscular strength, disturbed sleep, and persistent pain. Management of disorders affecting bone and marrow, as outlined in *Charaka Sutra Sthana* (28/27), primarily involves *Panchakarma* procedures, with special emphasis on *Basti chikitsa*, supported by the administration of medicated milk, ghee, and bitter herbal formulations that aid in tissue nourishment and regeneration. Additionally, *Charaka Chikitsa Sthana* (28/93) highlights the importance of both internal and external oleation therapies in such conditions. Overall, the therapeutic approach aims at alleviating aggravated *Vata*, replenishing depleted tissues, and promoting structural and functional restoration through a combination of cleansing and rejuvenative measures. Therefore, early-stage interventions aimed at preserving the femoral head—particularly through conservative and traditional therapeutic approaches—are of significant clinical importance.[8,9]

Patient Information

The patient is a 26-year-old male presenting with a two-year history of chronic lower back pain and bilateral hip joint pain radiating toward the knees. The condition is characterized by significant stiffness and restricted mobility, with symptoms remaining constant throughout the day and aggravating during the night. Associated complaints include constipation and excessive sleepiness. Based on MRI findings, the patient has been diagnosed with Grade 2 Avascular Necrosis (AVN) of the bilateral femoral head. Despite undergoing allopathic treatment for 1.5 years, the patient remains symptomatic and is currently reluctant to proceed with the recommended surgical intervention, seeking conservative management instead.

Clinical Examination Findings: Based on the physical examination parameters provided, here is the structured clinical finding report, incorporating Bilateral Avascular Necrosis (AVN) of the Femoral Head:

General Examination

- **Gait:** Limping gait present (Antalgic gait), likely due to pain and mechanical instability in the hip joints.

Special Tests (Lower Limb)

Straight Leg Raise (SLR):

- **Right Leg:** Restricted to 50°
- **Left Leg:** Restricted to 60°
- *Note: Significant restriction indicates possible nerve root irritation or severe muscle guarding secondary to hip pathology.*

FABER'S Test (Flexion, Abduction, External Rotation)

- Positive bilaterally (Right and Left).
- *Clinical Significance: High specificity for hip joint involvement or sacroiliac joint dysfunction.*

FNST (Femoral Nerve Stretch Test)

- Positive bilaterally (Right and Left).
- *Clinical Significance: Indicates tension in the femoral nerve or L2-L4 nerve roots.*

Spine & Joint Mobility

- **Lumbar Spine:** Flexion and Extension are significantly restricted.
- **Hip Joints:** Findings are highly suggestive of Bilateral Avascular Necrosis (AVN) of the Femoral Head, Grade 2 characterized by reduced range of motion, painful weight-bearing, and positive provocative tests.

On *AshtavidhaPariksha*, the patient exhibited a *Vata-PittajaNadi* with a pulse rate of 78/min. *Mutra* was found to be normal in quantity and frequency, with urination occurring 4–5 times during the day and once at night. *Mala* was irregular, passed. The *Jihwa* was *Lipta*, indicating presence of *Ama*. *Shabda* was clear and normal, while *Sparsha* revealed normal temperature (*Samasheetoshna*). *Drik* was physiological (*Prakrita*), and *Aakriti* was assessed as *Madhyama* (moderate body build).

On *DashavidhaPariksha*, the patient's *Prakriti* was *Vata-Pittaja*, and the *Vikriti* was of moderate severity (*Madhyama*). Parameters such as *Sara, Samhanana, Satmya,* and*Satva* were all assessed as *Madhyama*, indicating average tissue quality, structural integrity, adaptability, and mentalstrength. *Pramana* was *Pravara*, suggesting well-proportioned body measurements. The patient belonged to the *Yuvaavastha* (young adult age group). *AharaShakti* was *Pravara*, with the patient consuming meals three times daily with good digestive capacity, whereas *VyayamaShakti* was *Avara*, indicating reduced tolerance to physical exertion.

Assessment Criteria[4]

SUBJECTIVE CRITERIA

Bhedoasthiparvanam (Breaking pain of joints)
Mamskshaya (Muscular wasting of affected joint)
Balakshaya (weakness of affected joint)
Aswapnasantataruk (Insomnia due to pain)

VAS (visual analogue scale) for pain, Table 1

Parameter	Criteria	Grading
Pain	(0)No pain	0
	(1-3) mild	1
	(4-6) Moderate	2
	(7-10) severe	3

Parameter	Criteria	Grading
Gait	Normal Gait	0
	Pain Occasionally	1
	Walk with support, Mild Pain	2
	Walk with Support, Severe Pain	3
	Unable to walk	4

Parameter	Criteria	Grading
Sleeplessness	Normal sound sleep	0
	Sleep disturbed 1-2 times in night	1
	Sleep disturbed 3-4 times in night	2
	Difficulty in falling asleep due to pain	3
	Difficulty in staying asleep due to continuous pain	4

MRC Muscle scale	0	No power
	1	Flicker of contraction only
	2	Movement with gravity eliminated
	3	Movement against gravity
	4	Movement against gravity & some resistance
	5	Normal power

OBJECTIVE CRITERIA

Range of movement of hip joint i.e., abduction, adduction, extension, flexion, medial rotation and lateral rotation.

Table 2

s.no.	Sign & symptoms	Normal range
1.	Flexion of hip joint	110^0-120^0
2.	Extension of hip joint	10^0–15^0
3.	Abduction of hip joint	30^0-50^0
4.	Adduction	20^0-30^0
5.	Medial rotation	30^0–40^0
6.	Lateral rotation	40^0–60^0

Interventions

Table 3.

S.No.	Treatment	Drug Used	Dose	Duration	Anupana
01.	*Bastikarma*	*Panchatikta ksheer Basti*	300-350 ml empty stomach	For 21days Consecutive for 3 cycles in a period of 30-day intervals up to 7months	-
02.	*Shaman* Medicines	Capsule *Gandhatailam* 600mg	2 BD	120 days	Luke warm water
03		*Panchatikta GhrithaGuggul*	1BD	In interval Period between *bastikarma*	Luke Warm Water
04	*Deepanapachana*	*ChitrakadiVati*			

RESULTS

Subjective Criteria

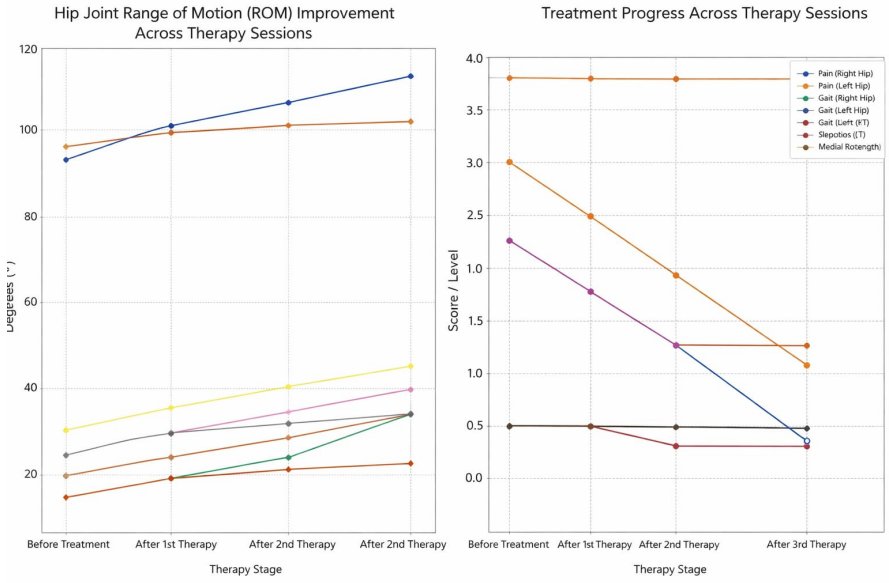
Table 4

Parameter	Before Treatment	After 1st Therapy session	After 2nd Therapy session	After 3rd Therapy session
Pain (Right Hip)	3	2	1	0
Pain (Left Hip)	3	2	1	1
Gait (Right Hip)	2	1	0	0
Gait (Left Hip)	2	1	1	1
Sleeplessness	2	1	0	0
Muscle Strength	4	4	4	4

OBJECTIVE CRITERIA

Table 5

S.No.	Movement	Before Treatment	After 1st Therapy Session	After 2nd Therapy Session	After 3rd Therapy Session
1.	Flexion (RT)	90^	100^	105^	110^
	Flexion (LT)	95^	98^	100^	100^
2.	Extension (RT)	10^	15^	20^	30^
	Extension (LT)	10^	15^	18^	20^
3.	Abduction (RT)	15^	20^	25^	30^
	Abduction (LT)	15^	20^	25^	30^
4.	Adduction (RT)	20^	25^	30^	35^
	Adduction (LT)	20^	25^	28^	30^
5.	Medial Rotation (RT)	25^	30^	35^	40^



Pre and Post Assessment, Table 6

Parameter	Pre-Treatment	Post-Treatment	Result
Pain (VAS 0-3)	3 (Severe)	0 (No Pain)	100% Relief
Gait (0-4)	2 (Support/Mild Pain)	0 (Normal)	Complete Recovery
Hip Flexion	90°	110°	+20° Improvement
Hip Extension	10°	30°	+20° Improvement
Sleeplessness	2 (Disturbed)	0	100% Relief

The subjective assessment demonstrates a clear pattern of clinical improvement following staged therapy. Pain showed marked reduction, with complete relief observed in the right hip, while the left hip exhibited mild residual symptoms. Gait improved significantly on the right side, whereas the left side retained slight difficulty, suggesting asymmetrical functional recovery. Sleeplessness was completely resolved over the course of treatment, indicating effective symptomatic relief and improved patient comfort. Muscle strength remained stable throughout, suggesting that while functional and symptomatic improvements occurred, the underlying structural integrity was preserved without significant change. The objective criteria further support these findings, showing progressive enhancement in the range of motion of the hip joint. Flexion and rotational movements improved gradually and consistently, approaching near-normal values, particularly in the right hip. Extension and abduction displayed marked recovery, especially after the second and third therapies, highlighting the cumulative effect of treatment. The left hip demonstrated slower yet steady improvement,

reflecting bilateral involvement with comparatively delayed recovery. Overall, these findings indicate a progressive restoration of joint mobility and function, thereby supporting the effectiveness of the staged therapeutic approach.

DISCUSSION

Probable Mode of Action of *Panchatikta Ksheera Basti:* In avascular necrosis (AVN), obstruction of microchannels (*Margavarodha*) leads to compromised *RaktaDhatu* perfusion to the femoral head, resulting in ischemia, degeneration, and predominant aggravation of *VataDosha*[10]. With disease progression, associated vitiation of *Pitta* and *Kapha* further accelerates tissue damage. As per Ayurvedic principles, Basti is considered the most effective therapy for *Vata* disorders and is specifically indicated in *AsthipradoshajaVikara*[11]. *TiktaKsheera Basti*, prepared with bitter drugs and milk, provides both cleansing and nourishing effects, particularly in *Asthi* and *Majja Dhatu Kshaya*.[12] The therapeutic action depends on *Rasa, Guna, Virya,* and*Vipaka*. Predominance of *TiktaRasa* with *UshnaVirya* enhances *Dhatvagni* and supports tissue nourishment. Its *Lekhana* property helps relieve microvascular obstruction and improves circulation. Herbal components such as *Guduchi*, *Kantakari*, *Patola*, and *Vasa* exhibit anti-inflammatory, antioxidant, and immunomodulatory properties, contributing to tissue repair [13]. According to the commentator *Arunadatta*, substances possessing both unctuous (*Snigdha*) and drying (*Shoshana*) qualities, which contribute to *Kharatwa* (roughness), are beneficial for the nourishment and *vriddhi*of *AsthiDhatu*, as bone tissue naturally exhibits a rough constitution. *Ksheera* and *Ghrita* provide *SnigdhaGuna*, which counteract *Vata* and promote bone regeneration. Milk supplies calcium and phosphorus necessary for bone formation, while Ghrita enhances drug bioavailability (*SamskarasyaAnuvartana*) and acts as a *Rasayana*. As *Basti* acts on *Pakwashaya*—the principal seat of *Vata*—it facilitates systemic *Vata Shamana* and indirectly nourishes *Asthi Dhatu*. Thus, *Panchatikta Ksheera Basti* aids in *Samprapti Vighatana*, delays degeneration, and supports structural and functional restoration in AVN.

Gandha Taila is a classical Ayurvedic formulation with a specific therapeutic affinity for *Asthi Dhatu*, making it highly relevant in the management of degenerative bone disorders such as AVN. The pathogenesis of AVN closely resembles *Asthimajjagata Vata*, wherein aggravated *Vata Dosha* leads to *Asthi Kshaya*, structural weakness, and compromised vascularity of bone tissue.[14] Based on the principle of *Ashraya–Ashrayee Bhava*, the increase in *Vata* directly contributes to progressive bone degeneration.Administered in capsule form, *GandhaTaila* acts as a potent *Vatahara* and *Brimhana* agent, addressing both functional and structural deterioration. Its *Snigdha* and *Guruguna*counteract *Rukshata* and *Sushirata* (porosity) of bone, thereby enhancing bone strength and stability. It also facilitates *DhatuPoshana* at the level of *Asthi* and *Majja*, supporting regeneration and slowing degenerative processes.[15]Pharmacologically, the formulation may aid in improving microcirculation, reducing inflammation, and promoting tissue repair. These actions collectively help in arresting disease progression and improving joint function. Thus, *GandhaTaila* serves as an effective adjunct in the comprehensive management of AVN.

Panchatikta Ghrita Guggulu addresses Avascular Necrosis (AVN) by reversing the core pathology of *Asthimajjagata Vata* through metabolic stimulation and channel clearance. The formulation's *Tikta Rasa* (bitter taste) and *UshnaVirya* (hot potency) specifically target and stimulate *Dhatvagni* (tissue metabolism), which prevents further bone tissue depletion (*Dhatukshaya*). Its *Lekhana* (scraping) properties effectively resolve *Srotorodha*—the obstruction of microchannels by *Kapha-Meda*—thereby restoring the vital flow of nutrients to the ischemic femoral head and bone marrow.*Ghritha*Acting as a potent *Yogavahi*, the *Ghrita* base enhances the bioavailability of active herbal constituents, ensuring they penetrate deep-seated tissues while providing essential lubrication and balancing *Vata-Pitta*. Concurrently, *Guggulu* provides robust anti-inflammatory and antioxidant protection, which mitigates joint pain and arrests the degenerative cascade. Together, these actions improve subchondral microcirculation, reduce intraosseous pressure, and facilitate the regeneration of *Asthi* (bone) and *Majja* (marrow) *dhatus*, ultimately halting disease progression and restoring joint functionality.[16,17]

CONCLUSION

The present study demonstrates that a comprehensive Ayurvedic approach in the management of avascular necrosis (AVN), correlated with *Asthimajjagata Vata*, yields significant clinical improvement. Therapies such as *Panchatikta Ksheera Basti*, *Panchatikta Ghrita Guggulu*, and *GandhaTaila* collectively act by pacifying aggravated *Vata Dosha*, improving *Dhatvagni*, and promoting *Asthi-Majja Dhatu Poshana*. The *Tikta Rasa*-dominant formulations help in relieving *Srotorodha*, enhancing microcirculation, and reducing degeneration. Clinical outcomes showed marked reduction in pain, improvement in gait, and restoration of joint mobility, with complete relief in some parameters and partial improvement in others, especially in bilateral involvement. The use of *Basti* as a prime therapy plays a key role in systemic *Vata Shamana* and direct nourishment of deeper tissues. Adjunct therapies contribute through anti-inflammatory, regenerative, and bioavailability-enhancing effects. Overall, this integrative approach effectively arrests disease progression, improves functional capacity, and offers a promising non-surgical management strategy for AVN.

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