

CASE STUDY

Ayurveda's Approach to Avascular Necrosis: A Case Study

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ABSTRACT

Avascular necrosis (AVN) is also known by various other terms such as osteonecrosis, bone necrosis, bone infarction, aseptic necrosis, and ischemic necrosis. AVN is a medical condition that occurs when there is a disruption of blood supply to a specific area of bone tissue, resulting in the death of bone cells. This condition can be correlated to *Asthi- Majjagata Vata* according to the sign and symptoms described in *Ayurveda*.

Aims and Objectives: The aim of the study was to assess the efficacy of *tiktaka kshira basti*, *Jaloka Avacharan* (leech therapy) and *Shastikashali Pinda Swedana* with oral *Ayurveda* medicine in the management of AVN. The objective was to reduce the need of surgical intervention.

Materials and Methods: A diagnosed and non-operated case of AVN of hip joint with complaints of pain of bilateral hip joint and restricted movements was managed by *Ayurvedic* approach.

Observation and Results: Significant improvement was noticed after the treatment. Pain was reduced significantly with improvement in the range of movement.

1. INTRODUCTION

Avascular necrosis (AVN) of the femoral head is a pathological phenomenon originating from the occlusion of blood vessels supplying osseous structures. This condition predominantly affects individuals within the 3rd-5th decades of life. Referred to interchangeably as osteonecrosis, aseptic necrosis, and ischemic necrosis, AVN's etiology lies in the ischemia resulting from compromised blood flow, precipitating the demise of bone marrow cells. Typically localized within the epiphysis of long bones, AVN most frequently manifests in the femur. In its nascent stages, patients are often asymptomatic; however, as the ailment progresses, pain ensues. Radiographic observations may remain unremarkable in initial phases, with magnetic resonance imaging (MRI) emerging as the preeminent modality for AVN diagnosis. Advanced stages of the condition frequently exhibit the "crescent sign," indicative of articular surface flattening coupled with joint space reduction.^[1]

While the precise pathogenesis of AVN remains elusive, the prevailing hypothesis posits that osteonecrosis/aseptic necrosis

arises due to a constellation of traumatic and non-traumatic factors, impeding vascular supply to the osseous tissue. Vascular obstruction precipitates bone marrow and osteocyte apoptosis, culminating in the collapse of the afflicted segment. Traumatic triggers, such as femoral neck fractures and hip joint dislocations inclusive of femoral head dislocation from the acetabulum, are among the prominent causative factors.^[2] AVN's clinical parallels can be drawn to the *Ayurvedic* concept of "*Asthimajjagatavata*," one of the "*Vatavyadhis*." The *Ayurvedic* principle of *Asharya-asharyi bhava* (Mutual Interdependence) establishes a corollary between the *Asthi* (bone) and *Vata* entities. This tenet underscores that *Asthi dhatu* (bone Tissue) serves as the *Asharaya* for *Vata dosha*. A reciprocal relationship exists, wherein an increment in *Vata dosha* leads to *Asthi kshaya* and vice versa, in terms of elevation (*Vridhhi*) and diminishment (*Kshaya*).^[3] The texts of *Acharya Charaka* delineate the *Moolasthan* (origin) of *Majjavaha srotasa* as the *Asthi*, housing *Sandhi majja* (marrow) in *Sthulaasthi* (long bones) in a gelatinous matrix. In addition, *Acharya sushruta* explicates the role of *Majja* in bestowing strength and nourishment to the *Sharira* (body).^[4] *Asthi*, as the *Asharaya Bhava* of *Vata Dosha*, coexists with *Majja* within *Asthi dhatu*. A cascade of *Vataprakopaka nidanas* disrupts *Asthi dhatu*, leading to *Majja's* residence within *Asthi* and culminating in *Utrotara Dhatu* depletion, or *Majjakshya*. clinical manifestations,

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encompassing *Bhedo asthiparvanam* (a type of fracturing pain), *Sandhishula* (arthralgia), *Satataruk* (persistent pain), *Māmsabalakṣaya* (muscular atrophy), and *Asvapna* (insomnia),^[5] bear semblance to the symptomatic presentation of AVN.”

2. MATERIALS AND METHODS

2.1. Case History

A 56-year-old patient diagnosed with AVN came to D.Y Patil School of ayurveda, Navi Mumbai, with complaint of pain in bilateral hip region in the past 1 year which was associated with walking, sitting, and sleeping with supine posture.

2.2. History of Present Illness

Patient is apparently well before 1 years then he gradually developed pain in the left hip region, patient was diagnosed with AVN of bilateral femoral head by an orthopedic doctor and advised surgical intervention but patient did not want to do so he came to our hospital for further treatment.

2.3. Past History

Patient had past h/o COVID infection during 2020.

No past h/o alcohol/smoking or any accidental injuries.

2.3.1. Investigation

Patient had done MRI before he came to D.Y Patil School of ayurveda and hospital and diagnosed with AVN of bilateral femoral head.

2.4. Examination of Patient

Examination of patient conducted as per ayurveda and modern perspective.

Ashta vidha pariksha

1. *Nadi* – 84/min, regular
2. *Mutra* – *samyaka* (normal)
3. *Mala* – *sama* (normal)
4. *Jivha* – *niram*
5. *Shabda* – *spashta*
6. *Sparsha* – *samsheetoshna*
7. *Drik* – *spashta*
8. *Akriti* – *krusha*.

Dashvidha Pariksha

1. *Prakruti* (Nature) – *Vatapradhan pitta*
2. *Sara* (Body tissue) – *Avar*
3. *Samhanana* (Body compact) – *Avar*
4. *Praman* (Body proportion) – *Avar*
5. *Satmyataha* (homologation) – *Madhyam*
6. *Satva* (Mentle strength) – *Madhyam*
7. *Aharshakti Abhyavaharan* (food intake and digestive power) – *Madhyam*
8. *Vyayamshakti* (Physical activity) – *Avar*
9. *Vaya* (age) – *Madhyam*
10. *Desh* – *Sadharan*.

2.4.1. O/E

- G.C – Moderate
- B.P – 130/70 mmhg
- Pulse – 84/min

- Temperature – Afebrile
- SPO₂ – 99%
- Weight – 52 kg.

2.4.2. Systemic and local examinations

- Systemic examination: No Abnormality detected
- Palpation: Tenderness at the left hip joint
- Mild raise in temperature
- Inspection: No swelling, no color change
- Diagnosis: On the basis of clinical symptoms and *Rogi pariksha*, the disease is diagnosed as AVN w.s.r to *Asthi-majjagata vata*.

2.5. Assesement Criteria

Range of motion of hip joint – Adduction, Abduction, Extension, Flexion, Internal rotation, External rotation measured by Goniometer.^[6]

2.6. Treatment Plan-Oral Medication [Table 1]

After examination, the following medicines were administered to the patient:

Table 1. Abyanthara Chikitsa.

Table 2. Sthanika Chikitsa.

2.7. Abhyanthara chikitsa/Oral medication

Sanshmani vati, *Triphala guggul Ashwagandha churna tikdi Maharasnadi kwath*, was given for 28 days with kosha jala.

2.7. Panchakarma Procedure [Table 2]

Abhyanga with *Sahchar Taila* was done followed by *Swedana* (*Shashti shali pinda sweda* (For 28 day) and prior to *Panchtikata ksheer basti* procedure.

3. OBSERVATION AND RESULTS

After treatment changes was seen which was based on range of motion of hip joint. There was significant improvement in the range of hip joint after treatment [Table 3].

4. DISCUSSION

AVN, also referred to as osteonecrosis or bone infarction, manifests as the death of bone tissue resulting from the interruption of blood supply. The early stages often present without noticeable symptoms. However, as time elapses, joint pain gradually ensues, potentially curtailing the capacity for movement. Complications associated with AVN can encompass the fusion of the affected bone or neighboring joint surfaces. Internal medicine has significant effect as in *Sanshmani vati Guduchi* is known for its immune-modulating and detoxifying properties. It is often used to support the immune system and overall well-being. It is often used to manage fever and associated symptoms due to its potential antipyretic (fever-reducing) properties.^[7] It shows a good effect in the local temperature of hip region.

Due to *Balya* and *Vaya-Sthapana* properties of *Ashwagandha* (*Withania somnifera*.), it directly acts as *Rasayana* and causes *Dhatu Pushti*, which results in *Samprapti Vighatana* and ultimately leads to *Shaman*. It supports sleep and anti-stress effect due to alcohol, alkaloids, and glycosides, which results in *Samprapti vighatana*. *Ashwagandha* improves the degenerative changes by effect on chondroblasts in cartilage. In *Triphala guggul*, the constituents of

this formulation primarily exhibit *Tridoshahar* properties, balancing all three doshas. In addition, most ingredients possess *Madhur vipaka* (Sweet Action) and *Ushna virya* (Hot potency), effectively mitigating *Vata dosha* and contributing to its anti-inflammatory effect. An integral ingredient, *Triphala*, proven anti-inflammatory and free radical scavenging capabilities, aiding in inflammation reduction and combating infections. The *Rasayana Karma* of P. Longum Linn further enhances the formulation's efficacy. Central to the composition, *Guggul*, acclaimed as a potent *Shothahara dravya* (Anti-inflammatory drug) in *Ayurveda*, plays a pivotal role in addressing inflammatory conditions. It contains phytochemicals, including sterols, aliphatic sterols, diterpenoids, triterpenoids, and steroids, as well as long-chain and guggul sterones. The constituents of *Triphala guggul* extend their influence with notable antimicrobial properties. Furthermore, in *Maharasnadi kwath*, the main components of formulation are *Rasna*, the role of *Maharasnadi kwath* extract is mostly observable on the nervous system and musculoskeletal system. *Maharasnadi kwath* pacifies inflammation and irritation of nerves and removes toxins from the body. Furthermore, it reduces inflammation of organs/parts of the musculoskeletal system.

Tiktaka ksirabasti – The therapeutic intervention of *Tiktaka Kṣīrabasti* was judiciously employed to reinforce the integrity of the *Asthi Dhātu* (osseous tissue).^[10] The inclusion of *Tikta Rasa* substantiates a dominant presence of *Vāyu* and *Ākāśa Mahābhūtas* (fundamental elements), rendering it inherently compatible with anatomical constituents such as the *Asthi*, which share a congruent elemental composition. *Ghṛita* distinguished by its *Vāta-Pitta shāmaka* (pacifying *Vāta* and *Pitta doshas*) attributes, *balya* (strengthening) qualities, *agnivardhaka* (augmenting metabolic vigor) effects, and characterized by *madhura* and *śīta virya* (cold potency), assumes the role of a *Vāta* pacifier. Notably, the incorporation of *Kṣīra*, characterized by its *madhura* and *snigdha* properties (denoting sweet and unctuous qualities), confers regulatory control over the *Vāta Dosha*, while simultaneously affording a nourishing *brimhaṇa* influence.^[11] Empirical research inquiries focused on *Kṣīrabasti* have unequivocally validated its therapeutic efficacy in mitigating *Asthi-Kshaya* (osteoporosis) and allied clinical presentations. Collectively, these investigations substantiate the therapeutic merit of *Kṣīrabasti* in addressing complex musculoskeletal ailments.^[8]

Shashtishali Pinda Sweda – classified within *Ayurveda* as a *Brimhana*, *Vatahara*, and *Balya* and form of *Sweda* therapy. Its effectiveness is attributed to the inclusion of ingredients such as *Godugdha* (cow's milk) and *Shashtikashali*, which collectively nourish muscle tissues. In addition, *Balamoola* contributes to the nourishment of nervous tissues. On application of therapeutic heat, a noticeable vasodilation occurs. This phenomenon significantly improves blood circulation, facilitating the elimination of waste products from the body. Simultaneously, an increase in anabolic processes unfolds, driven by the adequate supply of oxygen and nutrients to the tissues. This robust physiological interplay fosters optimal tissue growth and repair.^[9]

The thermal intervention also adeptly addresses stiffness issues and augments tissue extensibility. Subsequently, beyond this, the treatment remarkably expands the range of motion, thus bolstering overall flexibility and mobility. Collectively, *Shashti Shali Pinda Sweda* fortifies tissue strength, thereby accentuating muscular capabilities. To ensure the tailored appropriateness of such therapies, it is imperative to seek guidance from a qualified *Ayurvedic* practitioner.

Jaloka Avacharan (Leech therapy) – Leeches contain natural anticoagulants and vasodilators in their saliva. When they attach to the skin and begin feeding, their saliva can help improve blood

circulation by preventing clotting and dilating blood vessels. This can be beneficial in cases of poor circulation or congested blood flow.^[10]

Following the completion of the treatment protocol, the patient was provided with *Shamana* drugs for continued therapeutic support. Throughout the entire course of treatment, careful guidance was offered regarding *Pathya* (favorable dietary and lifestyle practices) as well as *Apathya* (adverse habits to avoid). As part of these recommendations, the patient was instructed to prioritize the consumption of warm water and opt for easily digestible food items, promoting a harmonious recovery process.

5. CONCLUSION

AVN of the femoral head was addressed through the application of *Panchakarma* procedures, effectively halting any subsequent deterioration. This study reached the conclusion that *internal* medicine with *panchkarma* procedure like *Tiktaka Ksheera Basti* and *Jaloka avacharan* (leech therapy) exhibited notable efficacy in providing symptomatic relief for AVN. However, for broader applicability of these findings across a wider patient population, it is imperative to conduct further investigations involving larger study groups.

6. ACKNOWLEDGMENTS

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7. AUTHORS' CONTRIBUTIONS

All the authors contributed equally in design and execution of the article.

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9. ETHICAL APPROVALS

This study not required ethical clearance as it is a review study.

10. CONFLICTS OF INTEREST

Nil.

11. DATA AVAILABILITY

This is an original manuscript and all data are available for only review purposes from principal investigators.

12. PUBLISHERS NOTE

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REFERENCES

1. Longo D, Fauci A, Kasper D, Hauser S, Jameson J, Loscalzo J. Hand book of Harrison's Principles of General Medicine. 18th ed. United States: McGraw Hill Professional; 2011. p. 1098.
2. Mont MA, Hungerford DS. Nontraumatic avascular necrosis of the femoral head. *J Bone Joint Surg Am* 1995;77:459-74.
3. Solanki B, Jena S, Bhatted S, Prasanth D. A conceptual study on avascular necrosis of femoral head: An Ayurveda perspective and management. *Int J Health Sci Res* 2020;10:105-12.
4. Acharya YT, Acharya NR. *Susrutha Samhita of Susrutha*. Reprint ed.

- Varanasi: Chaukhamba Orientalia; 2013. p. 67.
5. Acharya YT, editor. Shri Chakrapanidatta, Commentator, Agnivesha, Charka Samhita, Chikitsasthana; Vatavyadhichikitsa Adhyaya, 28/33. Varanasi: Chaukhamba Surbharati Prakashan; 2014. p. 617.
 6. Meena RL, Bhatted S, Dharmarajan P, Meena N, Kumar J, Nirmal H. Management of avascular necrosis through ayurveda - a case study. J Res Tradit Med 2017;3:123-8.
 7. Sharma PV. Dravyaguna Vigyana. Vol. 2. Varanasi: Chowkhamba Bharti Academy; 2006. p. 761.
 8. Sharma K, Bhusal N, Mangal G. Effect of Panchtik Ksheer Basti in management of avascular necrosis of head of femur (Case Study). Res Rev J Ayurvedic Sci Yoga Naturop 2018;5:21-4.
 9. Kumar V, Sonu D. A case study on the effect of shashtik shali pinda sweda and mahamasha taila nasya karma in the management of ekanga vata with mamsakshaya W.S.R. Demyelination of nerve. World J Pharm Pharm Sci 2017;6:1291-6.
 10. Weinfeld AB, Yuksel E, Boutros S, Gura DH, Akyurek M, Friedman JD. Clinical and scientific considerations in leech therapy for the management of acute venous congestion: An updated review. Ann Plast Surg 2000;45:207-12.

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Table 1: Oral medication

S. No.	Drug	Dose
1	<i>Sanshmani vati</i>	2 bd after food
2	<i>Triphala guggul</i>	2 tds after food
3	<i>Ashwagandha churna tikdi</i>	2 tds after food
4	<i>Maharasnadi kwath</i>	2 tsf bd after food

Table 2: Panchakarma procedure

S. No.	Procedure	Drug used	Days
1	<i>Sarvang snehan</i>	<i>Sahachar oil</i>	28 days
2	<i>Shastishali pinda sweda</i>	<i>Shali chawal</i> <i>Milk</i> <i>Balamool</i> <i>Go-grita</i> <i>Medicated oil</i>	28 days
3	<i>Tiktaka ksheer basti</i>	<i>Madhu</i> <i>Saindhav lavan</i> <i>Panchtikta grita guggul</i> <i>Satpushpa kalka</i> <i>Dashmoola kwath</i> <i>Go-grita</i>	28 days
4	<i>Jaloka avacharan</i>	<i>Jaloka</i>	Once a week

Table 3: Before and after treatment changes

S. No.	Range of motion	BT	AT	Normal range
1	Abduction of hip joint	25°	30°	30–50°
2	Adduction of hip joint	10°	20°	20–30°
3	Flexion of hip joint	30°	80°	110–120°
4	Extension of hip joint	5°	10°	10–15°
5	Internal rotation of hip joint	20°	30°	30–40°
6	External rotation of hip joint	10°	30°	40–60°