



## EXPLORING AYURVEDIC TREATMENT: A PROMISING APPROACH FOR AVASCULAR NECROSIS MANAGEMENT

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### ABSTRACT

*Avascular necrosis (AVN) causes bone tissue death due to disrupted blood supply, commonly affecting the hip, knee, and shoulder joints. Trauma, prolonged corticosteroid use, alcohol abuse, and specific medical conditions can trigger AVN. Conventional treatments like medication, physiotherapy, and surgery, although effective, can be expensive with associated side effects. Ayurvedic medicine, a centuries-old Indian system focusing on holistic well-being and dosha balance, was applied to a 31-year-old male diagnosed with AVN in the hip joint. Despite no direct AVN - Vatarakta correlation, clinical alignment with Vata Pradhana and Asthi-Siragata Vata was observed. Treatment involved Ayurvedic medicines, Panchakarma therapies (Virechana, Basti), and lifestyle adjustments. Following three months of treatment, marked improvements in gait, pain, tenderness, range of movement, and overall quality of life were reported. This case study suggests that Ayurvedic treatment can serve as a viable alternative to conventional AVN therapies, especially in cases related to Vatarakta and Asthi-Siragata Vata imbalances. The primary aim of this study is to highlight Ayurvedic treatment's efficacy in managing AVN.*

**KEY WORDS:** Ayurveda, Treatment, Avascular Necrosis (AVN), Vatarakta, Asthi-Siragata Vata, Panchakarma, Virechana, Basti.

### INTRODUCTION

#### AVASCULAR NECROSIS (OSTEONECROSIS)

- **Avascular Necrosis Overview:** Avascular necrosis (osteonecrosis), resulting from ischemia, is a common condition leading to bone death due to compromised blood supply. Commonly affected areas include the femoral head, humeral head, and femoral condyles. Its mechanisms vary, from obscure causes to interruptions in bone blood supply induced by trauma, compression, or thromboembolic obstruction.
  - **Clinical Presentation and Diagnosis:** Symptoms manifest as localized pain worsened by weight-bearing. Diagnosis via MRI reveals subchondral bone necrosis and bone marrow edema. Early X-rays may appear normal, later showing osteosclerosis and bone deformities. Long-term consequences can include malignant tumors like osteosarcoma, malignant fibrous histiocytoma, and fibrosarcoma in affected areas.
  - **Morphological Features:** Pathological fractures occur due to bone infarctions, often at sites with disrupted blood supply in end-arterial circulation. Grossly, a wedge-shaped infarct is visible in the subchondral bone beneath the joint's convex surface.<sup>1</sup>
  - **Treatment and Management:** No specific treatment exists; management focuses on pain control and encouraging mobility. Interventions such as core decompression alleviate internal bone pressure through drilling and stimulate vascular growth with implanted devices. Symptoms may spontaneously improve, but joint replacement might be necessary for persistent pain and significant structural damage.<sup>2</sup>
- **Ayurvedic Correlation and Treatment:**  
This condition aligns with "Vatarakta and Asthi-Siragata Vata" as per Ayurvedic signs and symptoms. Ayurveda offers a wide range of effective treatment modalities for managing such manifestations.



#### ❑ AVN and *Vatarakta*

- The disease *Vatarakta* arises from an abnormal combination of imbalanced *Vata* and *Rakta*. The aggravation of *Vata* and blood tissue can occur separately, each influenced by their own causative factors. Alternatively, they might be aggravated by shared factors that affect both *Vata* and *Rakta*. In the progression of this condition, both *Vata* and *Rakta* can further exacerbate and influence each other's imbalances.<sup>3</sup>
- The destruction of bones is attributed to vitiated *Vata* due to the shared residence and relationship between bones and *Vata*, known as *Ashraya-Ashrayi Sambandha*. This occurs through two pathways:
  1. Depletion of tissues exacerbates *Vata*. When blood tissue diminishes, leading to a loss of blood circulation to the bones and subsequent bone death, it intensifies *Vata* imbalance.
  2. Aggravated *Vata* leads to tissue depletion, directly causing the destruction and demise of bone tissue. This imbalanced *Vata* also harms blood tissue and disrupts the channels (*Srotas*) responsible for carrying blood (*Raktavaha*) and bones (*Asthivaha*). The factors causing *Vata* and blood aggravation, either separately or combined, contribute to the occurrence of *Vatarakta*.
- This disease, *Vatarakta*, similarly affects bones and joints, akin to AVN. Trauma and imbalanced blood are noted among the causes of *Vatarakta*, with trauma also recognized as a primary factor in modern medicine for AVN. AVN primarily affects localized bones and joints, while *Vatarakta* is said to impact all body joints. Unlike AVN, *Ayurveda* outlines premonitory symptoms for *Vatarakta*, aiding in early disease identification. These symptoms closely resemble the manifested symptoms of AVN, such as pain (*Shula*), throbbing sensations (*Toda*), and constriction of arteries in fingers/toes and joints, which is a significant factor in AVN development. Severe bone and joint pain (*Ati Ruk*) are also common symptoms in both conditions.<sup>4</sup> Treatments prescribed for *Vatarakta* have shown efficacy in alleviating AVN symptoms and arresting disease progression.

#### ❑ AVN and *Asthi-Siragatavata*

- Pathology and presentation of AVN is similar to *Asthi* and *Siragatavata* (vitiating *Vata* dosha affecting the blood vessels and bones) hence, *Asthi* and *Siragatavata* was considered as *Ayurvedic* diagnosis of the case and the patient was treated on general lines of management of *Vata Vyadhi* (various neuromusculoskeletal diseases). *Shoola* (pain), *Aakunchana* of *Sira* (spasm of vessels) and *Puranam* of *Sira* (filling/dilatation of vessels) are also the distinguish features of *Siragata Vata*.<sup>5</sup> It can be correlated with the *Asthigata Vata* where the symptoms include *Asthikshaya*, *Asthisoushrya*, *Balakshaya* (weakness), *Shiryantiva Cha Asthinidurbalani* (destruction of bony tissue causing generalized weakness) and *Bhedoasthiparvanam* (breaking type of pain in bones).<sup>6</sup>

## MATERIALS AND METHODS

- Patient Selection: The patient was selected from the inpatient department of SVM Ayurveda Medical College and RPK Hospital, Ilkal.
- Study Design: This observational study was a single-arm investigation aimed at assessing the effectiveness of *Ayurvedic* treatment for AVN. The study spanned three months, during which the patient received *Ayurvedic* intervention for AVN. Informed consent was obtained from the patient in their native language before commencing treatment. The study focuses on a 31-year-old male patient who displayed signs and symptoms indicative of *Vatarakta* and *Asthi-Siragata Vata* (AVN) for the past eight months, discussed comprehensively.
- Assessment Criteria: Evaluation was based on pre- and post-treatment signs and symptoms. The treatment comprised *Panchakarma* (*Shodhana*) therapy in combination with oral medications (*Shamana*).

#### ❖ Case Report

- A 31-year-old male, hailing from Gangavathi, Karnataka, presented at the outpatient department (OPD) with primary complaints of hip joint pain, walking difficulties, and painful internal rotation of the lower limb.

#### ❑ History of Present Illness

- A previously healthy 31-year-old male, who had a bout of COVID-19 in 2020, subsequently experienced the onset of pain in his right hip joint after physical activity. The continuous pain extended to both thighs, worsening considerably over eight months. Seeking relief, he consulted a physician and received allopathic treatments, including steroids, which provided temporary relief. However, the pain intensified in his left leg over time. Notably, there were no prior instances of diabetes, hypertension, or metabolic disorders. After six months, an MRI revealed bilateral Femoral Head AVN—Grade III on the right side and Grade II on the left. Clinical examination showed restricted hip joint movement in flexion, forward bending, and lateral rotation.
- Following the diagnosis, allopathic doctors recommended surgery, leading to the patient undergoing core decompression. While experiencing some relief post-surgery for a brief period, he subsequently encountered severe, intermittent pain in the hip and back regions, affecting his mobility. As the discomfort persisted and expanded to the groin and thigh regions,



he sought further assistance at the Kayachikitsa department of RPK Ayurvedic Hospital in Ilkal. Upon evaluation, the patient was diagnosed with *Vatarakta* and *Asthi-Siragata Vata*, classified as subtypes of AVN in Ayurveda.

**General examination**

- The patient presented with an average build and exhibited normal vital signs: a pulse rate of 78 beats per minute, a respiratory rate of 17 breaths per minute, a blood pressure reading of 120/80 mmHg, and a body weight of 73 kg.

**Personal History**

- The patient reported a reduced appetite despite being on a mixed diet. Sleep disturbances were noted, and while the frequency of urination was regular, bowel movements were irregular with unsatisfactory stools. Notably, the patient, a professor, did not have any addictions or habits.

**Past Medical History**

- The patient did not have a known history of major illnesses. However, he was diagnosed with COVID-19 a year and a half ago and underwent prolonged corticosteroid therapy as part of his treatment. Furthermore, he underwent surgery for AVN, specifically core decompression, six months prior.

**Ayurvedic Examination:**

- The patient underwent examinations of pulse, tongue, and urine, providing additional insights into their dosha imbalances and overall health condition. The pulse examination indicated an elevation in *Vata Dosha*, while the examination of the tongue revealed a coating, suggesting the presence of toxins (*Ama*).
- Furthermore, the assessment considered the patient's dietary habits and lifestyle elements, including sleep routines, exercise patterns, and stress levels. These factors were evaluated to understand their potential contributions to *Dosha* imbalances and the onset of AVN.

**Ashtasthana Pariksha**

SN	Pariksha	Findings
1	<i>Naadi</i>	<i>Vatta – Kapha</i>
2	<i>Mutra</i>	4 to 5 times/day and 1 time/night
3	<i>Mala</i>	Constipated and feels unsatisfied.
4	<i>Jihva</i>	<i>Liptata</i> (coated)
5	<i>Shabda</i>	<i>Prakruta</i> (Normal)
6	<i>Sparsha</i>	<i>Anushnasheeta</i> (Normal body temperature)
7	<i>Drik</i>	<i>Prakruta</i> (Normal)
8	<i>Akruti</i>	<i>Madyama</i> (Moderate)

**Modern Examination**

**Local Examination**

The physical examination revealed severe and painful limitations in the right hip's range of motion, notably during abduction and extension. Tenderness and mild temperature elevation were observed upon muscle palpation, while a limp was evident in the patient's gait. During the straight leg raise test, hip pain emerged alongside thigh discomfort. Lower limb neurological testing displayed normal reflexes and sensation bilaterally. A surgical scar mark was noted upon inspection, devoid of swelling or colour changes.

**Investigation**

Investigation	Observation
X-ray (Both hip joint)	No significant Changes
CBC	NAD
Urine Routine Microscopic	NAD
ECG	NAD
MRI of Both Hip Joints	Findings are s/o AVN (Avascular necrotic changes) of B/L femoral heads which was stage - 3 in the right hip and n left hip Stage - 2
USG(A+P)	NAD
Vitamin D	49.62 mg/dl
Calcium	9.9 mg/dl



❖ **Samprapti (Pathology)**

- The inadequate blood supply, known as *Avarodha* caused by *Vata* in the *Sira*, affects the femur's head, leading to depletion (*Sosha*) in *Sira*, *Snayu*, and *Kandara*. This depletion weakens the head, neck of the femur, and the hip joint. Additionally, *Vata* accumulates in the *Rakta* (blood) and *Asthivaha Srotas* (channels related to bones), resulting in the *Sosha* (dehydration) of *Asthidhatu* (bone tissue) due to insufficient nourishment. Furthermore, aggravation of *Vata* due to inappropriate dietary choices and lifestyle habits leads to its accumulation in the hip joint, contributing to progressive degeneration, causing intense pain, and hindering hip joint movement.

❖ **Diagnosis- Vatarakta and Asthi-Siragata Vata (Avascular Necrosis).**

❖ **Treatment**

The general principles of management involve initial *Snehana* (oleation therapy) followed by the treatment of *Vatarakta* patients with either *Sneha Virechana* or *Mrudu Rooksha Virechana*. Post-purgation, frequent *Basti* (enema therapy) comprising both *Anuvasana* (oil-based) and *Niruha* (decoction-based) *Basti* is recommended. Additionally, therapies such as *Seka* (pouring of medicated liquids), *Abhyanga*, *Pradeha* (medicated pastes), dietary regulation, and appropriate oleation should be administered, ensuring they do not induce excessive heat (*Vidaha*).<sup>7</sup>

- Ayurvedic oral medications were prescribed to the patient for *Deepana-Pachana* (enhancing digestion and metabolism). The specifics of these medications are outlined below:

S. N.	Drug	Dose	Time	Duration
1	<i>Tab Guduchyadi kashaya</i>	2 tabs	before food BD	1 week
2	<i>Syp Madiphala rasyana</i>	3 tsf	before food BD	1 week
3	<i>Granules freelax</i>	1tsf	Empty stomach early morning	1 week

➤ **Posology For Virechana**

- The posology for *Virechana* involved a series of steps:
  1. *Deepana-Pachana*: Initial medication was administered to enhance digestion until suitable *Agni Deepana* (improved digestive fire) was achieved.
  2. *Snehapana*: *Guduchyadi Ghruta* was used in an increasing dosage following *Arohana Krama*. Starting with 30ml on an empty stomach, the dosage was gradually increased daily until achieving proper digestion signs (*Samyak Snigdha Lakshana*) and then discontinued. This phase typically lasted 4-5 days.
  3. Preparation for *Virechana*: Three days before and on the day of *Virechana*, *Sarvanga Abhyanga* (whole body oil massage) using *Ksheerabala Taila* was performed, followed by *Bashpsweda* (steam therapy).
  4. *Virechana*: *Gandharva Hastadi Taila* was given as *Virechana Yoga* in the morning, and subjects were observed throughout the day for signs of successful purgation (*Samyak Virechana Lakshana*)
  5. *Samsarjana Karma*: Post-purgation, a gradual dietary regimen based on *Pravara*, *Madhyama*, and *Avara Shuddhi* was followed for proper restoration.

❑ **Basti Karma**

- Following a 30-day gap, *Basti Karma*, a therapeutic enema, was administered as per the following protocol:

➤ **Details of therapies administered:**

S. N.	Procedure	Ingredients	Duration
1	<i>Abhayanga and Sarvanga Seka</i>	<i>Ksheerabala Taila</i>	15 days
2	<i>Vashpa Swedana</i>	<i>Dashamoola kwatha</i>	15 days
5	<i>Kala Basti</i>	1. <i>Anuvasana basti</i> : <i>Mahatiktaka ghruta</i> (100ml) + <i>Sahacharadi taila</i> (100ml) 2. <i>Niruha basti</i> : <i>Honey</i> - 60ml <i>Saindhava</i> - 5 gm <i>Mahatiktaka ghruta</i> – 100 ml <i>Satapushpa kalka</i> - 20gm <i>Mustadi Yapana kwatha</i> - 400 ml	15 days



☐ **Shamana Aushadhi**

➤ The following medications were advised after the completion of the *Samsarjana Karma*:

S. N.	Drug	Dose	Time	Duration
1	Cap Viscovas	1 cap	After food TID	2 weeks
2	Cap Bonton	1 cap	After food TID	2 weeks
3	Pinda taila + Lin Kineaz	Q.S.	Early morning for external application	2 weeks

❖ **Observations and Results:**

- Radiological exams showed a decrease in the necrotic lesion size in the femoral head, signalling a positive response to Ayurvedic treatment.

S. N.	Symptoms	Before Treatment	During Treatment	After Treatment
1	Stiffness	+++	++	Nil
2	Tenderness	++	+	Nil
3	Pain	++++	+++	+
4	Muscle power	Grade 4	Grade 5	Grade 5
5	Raising Of Lower Limbs	30(Degrees)	50 (Degrees)	80 (Degrees)
6	Gait	Limping	Improving	Normal
7	Range of motion	Restricted	Improving	Significantly improved

➤ Throughout the treatment, no adverse effects were reported, indicating the safety of the Ayurvedic therapy used.

❖ **Discussion:**

Conventional avascular necrosis (AVN) treatment involves medications, physiotherapy, and surgery to reduce pain, improve mobility, and prevent bone damage. Severe cases may require joint replacement. In contrast, *Ayurvedic* medicine adopts a holistic approach, focusing on harmonizing *Vata*, *Pitta*, and *Kapha* doshas for overall well-being. In AVN, *Ayurveda* identifies subtypes—*Vatarakta* and *Asthi-Siragata Vata*—stemming from *Vata* imbalances. *Vatarakta* causes joint pain and inflammation, while *Asthi-Siragata Vata* leads to discomfort and rigidity. *Ayurvedic* remedies include herbal formulations, *Panchakarma* therapies like *Abhyanga*, *Swedana*, *Virechana*, and *Basti*, along with dietary changes and exercise.

☐ **Ayurvedic Treatment**

➤ **Deepana – Pachana**

This initial treatment is crucial before any *Shodhana Karma* as the presence of *Ama* can hinder the effectiveness of the purification process. It plays a pivotal role in preparing the body for the primary therapeutic action.

- **Tab Guduchyadi Kashaya** – It functions as an *Agnideepana* (boosts digestion), *Tridoshashamak* (balances *Doshas*), and a potent *Rasayana* (rejuvenating tonic). It possesses antipyretic, anti-inflammatory, antiarthritic, antioxidant, and immune-modulating properties. This tablet effectively treats various fevers characterized by symptoms like burning sensation, excessive salivation, thirst, vomiting, and reduced appetite.
- **Madiphala Rasayana**, an *Ayurvedic* remedy derived from the wild lemon or *Madiphala* citrus fruit, serves as a digestive aid. It effectively alleviates hyperacidity and heartburn. Additionally, *Madiphala Rasayana* functions as an immunity booster, enhancing the body's defense mechanisms.
- **Freelax granules** are effective in treating habitual constipation. It Maintains the elasticity of blood vessels facilitates the easy removal of stool.

➤ **Panchakarma**

- **Abhyanga** (Oleation therapy) – decreases *Vata Dosha*, promotes *Dosha* softness, purifies the abdomen (*Kostha*), enhances digestive power, and strengthens the body. The *Ksheerbala Taila* utilized in *Abhyanga* possesses properties that reduce *Vata*, alleviating discomfort (*Shula*). Its attributes like *Snigdha Sukshma* enable deep penetration, reducing *Vata*-related issues, and effectively combating *Vatarakta* due to its *Tikta* and *Kashaya Rasa* (bitter and astringent taste) properties.
- **Swedana** (Sudation therapy)– Sweating expels impurities via perspiration, considered a waste (*Mala*), cleansing the body's seven tissues (*Saptadhatu*). *Swedana Karma* induces intentional perspiration, liquefying accumulated *Dosha* after *Snehapana*. This therapy mobilizes *Dosha* in subtle channels (*Srotas*), improving flow. *Swedana* boosts digestive fire, increases appetite, clears channels, and reduces lethargy.
- **Virechana** - *Gandharva Hastadi Taila* stands out as an effective *Sneha Virechana* medicine. It aligns *Vata*, cleanses channels (*Srotovishodhana*), enhances strength, addresses lower-body imbalances (*Adhobhaga Doshahara*), aids digestion,



and mitigates swelling (*Shothahara*). Ideal for *Sneha Virechana* in *Vata* disorders involving *Rakta/Pitta*, like *Vataraktha*. Its properties - *Teekshna*, *Sookshma*, *Sara*, *Kashaya Rasa*, *Madhura Vipaka* - pacify *Vata* and *Rakta*, enabling elimination of accumulated waste (*Sanchita Mala*).

- **Basti** (Enema) - *Vatarakta* is the *Madhyama Rogamarga Vyadhi*, finds *Basti* as its optimal treatment.<sup>8</sup> *Basti*, through purification, expels excessive deranged metabolic waste, resolving *Vata Avarana* (obstruction), and reinstating *Vyana* and *Apana* functions. Once purification occurs, digestion normalizes, kickstarting proper metabolism, aiding in the formation of balanced bodily tissues (*Samyak Dhatus*).
- **Anuvasana Basti**: *Vata*, the primary *Dosha* and a significant player in disease manifestation (*Samprapti*), necessitated the use of *Basti* therapy for its pacification. *Anuvasana Basti* utilized *Sahacharadi Oil* and *Guggulu Tiktaka Ghrita*. As AVN affects the *Asthi Dhātu* (bone tissue), *Guggulu Tiktaka Ghrita* was chosen due to its indication in *Asthi*-related disorders.<sup>9</sup> *Sahacharadi* oil properties - *Snigdha*, *Guru*, and *Ushna Virya*—harmonize *Vata Dosha*, aligning with the treatment goals.
- **Niruha Basti**: *Mustadi Yapana Basti* is recommended to enhance strength, vitality (*Jeevana Shakti*), and fertility (*Vrishya*). It effectively addresses inflammation (*Shopha*), low back pain (*Katishoola*), discomfort in the calf and thigh areas, and *Vatarakta*. This therapy possesses *Rasayana* qualities, breaking the disease's progression by clearing channel blockages (*Srotoavrodha*), purifying channels (*Sroto Shodhana*), and restoring depleted *Dhatus* (*Kshaya*) due to its nourishing nature.<sup>10</sup> Specifically, in AVN of the hip joint, where blockages in small blood vessels cause reduced circulation to the femoral head, resulting in *Raktavaha Srotorodha* and subsequent depletion of the bone tissue (*Asthi Dhātu*), *Mustadi Yapana Basti* was administered.

#### ☐ **Shamana Aushadhi**

- **Cap Bonton** - Containing various *Ayurvedic* herbs like *Asthi Shrunkhala*, *Arjun*, *Medasak*, and *Abha Guggulu*, is designed to strengthen bones. It aids in quick fracture healing, boosts calcium deposition at fracture sites, and reduces pain and inflammation. This supplement enhances bone density in osteoporosis, offering a natural solution for bone health.
- **Cap Viscovas** - It is formulated to mitigate arterial damage, decrease platelet aggregation, and improve both arterial and venous circulation. With ingredients like *Guggulu*, *Pippali*, *Hareetaki*, *Manjishta*, *Kulaththa*, *Shigru*, and *Paribhadra*, it's beneficial for conditions such as stroke, ischemic heart disease, peripheral vascular disorders, thromboembolism, vascular headaches, and lipid disorders.
- **Pinda Taila** - It combines *Sariva*, *Sarjarasa*, *Manjistha*, and *Madhuchishta* as herbal pastes (*Kalka Dravya*). This blend uses water as a liquid base (*Jala*) and oil as the oleation medium (*Sneha Dravya*). These herbs offer sweet, astringent, and bitter tastes along with cooling properties. They aid in blood purification (*Raktaprasadana*), pacify *Vata* and *Pitta Doshas* (*Vatapittahara*), and alleviate swelling (*Sothaghna Karma*).
- **Lin Kineaz** - It effectively relieves musculoskeletal pain in various areas such as knee joints, neck, lower back, and headaches, acting as an analgesic, anti-inflammatory, rubefacient, and desensitizer. Its active constituents penetrate tissues deeply, inhibiting the release of pain and inflammation-inducing chemical mediators in muscles, joints, and tendons.
- **Panchakarma** therapies may aid in AVN management by offering detoxifying and rejuvenating effects. The combination of modern medical examinations and *Ayurvedic* assessments was crucial in diagnosing and managing AVN. While modern medicine focused on physical and radiological examinations of the necrotic lesion, *Ayurveda* took a holistic approach, considering overall health, *Dosha* imbalances, and lifestyle factors contributing to AVN development. This integration provides a comprehensive approach to diagnosing and managing various health conditions, including AVN.

#### ❖ **Conclusion:**

- A blend of *Ayurvedic* medication and *Panchakarma* therapies improved joint pain, mobility, and overall well-being in an AVN patient. This approach notably reduced the necrotic lesion and enhanced hip joint mobility. *Ayurveda*, particularly in *Vatarakta* and *Asthi-Siragata Vata* cases, shows promise as a safe and effective alternative to standard AVN treatments. While this study suggests *Ayurvedic* treatment's potential, larger studies are needed to confirm its effectiveness and safety in AVN management.

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