

## MANAGEMENT OF AVASCULAR NECROSIS (AVN) IN AYURVEDA: A CASE STUDY

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### ABSTRACT

Avascular necrosis (AVN) is the death of bone tissue due to loss of blood supply, therefore also called as ischemic bone necrosis. AVN of the femur head is the most common type of necrosis because the artery supplying to that area is very narrow which easily gets injured followed by dislocation or a sub-capital fracture which leads to lack of nourishment resulting in necrosis. The contemporary line of management relies on surgical intervention which is very expensive. According to the principles of *Ayurveda*, pathogenesis of AVN can be better managed on the lines of *Vatarakta chikitsa*. In this present case, a 25-year-old female diagnosed with AVN of bilateral hip joint associated with subchondral fracture, was managed by the line of *Vatarakta chikitsa*. The patient was evaluated for improvements in gait, pain, tenderness, and range of movement. The conservative management of AVN using *Ayurvedic* principles effectively alleviated symptoms and enhanced the patient's quality of life.

**KEYWORDS:** Avascular necrosis (AVN), Osteonecrosis, *Basti*, *Sarvanga Dhara*, *Vatarakta*.

## INTRODUCTION

Avascular necrosis (AVN), often occurs in young adults, with 60% of cases affecting both sides. It results from injury or blockage in the blood vessels that supply the bone tissue. In India (2019), one study reported an 8% prevalence rate of avascular necrosis, with diagnoses typically occurring between the ages of 18 and 54.<sup>[1]</sup>

AVN is generally classified into two main types: 1) Post traumatic and 2) Idiopathic. The arteries supplying the femoral head are narrow and therefore prone to injury, which can occur from dislocation or a sub-capital fracture of the femoral neck. This disrupts the blood supply to the femoral head, leading to necrosis. The condition may initially be asymptomatic but later presents with mild to severe pain and alterations in gait.<sup>[2]</sup> The disease, also known as osteonecrosis, commonly affects the femoral head's capital epiphysis.

In *Ayurveda*, presentations of AVN could be considered as *Vatarakta* due to similar signs and symptoms like pain in joints, bones, and bone marrow due to *Vata*, swelling, and deformation of joints, and bones.<sup>[3]</sup>

The present study shows that AVN can be successfully managed with a holistic *Ayurvedic* approach, which helps to improve the quality of life.

## Patient information

### Presenting complaints

A 25-year-old female patient, came to OPD, with a chief complaint of bilateral hip joint pain for 3 months, and radiating pain over the right inner thigh, buttock region, and difficulty in walking for 2 months.

### History of present illness

Three months ago, the patient was asymptomatic. Gradually, she developed bilateral hip joint pain, which progressed to radiating pain in the right inner thigh and buttock region, accompanied by difficulty walking. The pain was severe, pricking in nature, and worsened with physical activity and walking. However, it was alleviated by rest and lying down. The patient was diagnosed with AVN of bilateral femoral head with the aid of MRI by an orthopedic surgeon who had recommended surgical intervention but the patient was not willing and she approached the present treatment facility for conservative treatment.

**History of past illness**

No significant past illness.

**Treatment history**

Nil.

**Family history**

No relevant family history contributes to the patient's current situation.

**Clinical findings**

From the general examination, it was found that the patient was well-nourished and BMI is 20.8 kg/m<sup>2</sup>. From *Dashavidhpariksha* it was found that *Jaranashakti*, *Abhyavaranashakti*, and *Vyayamashakti* were *Avara*.

Tenderness was present in the bilateral hip region, with no swelling, and all movements were possible with pain. Pain is mostly experienced during extension and abduction. There was no muscle atrophy. Gait was Antalgic. The Faber test was positive for bilateral hip joints. The Straight Leg Raise (SLR) test was positive on the right (70°) and negative on the left. The Bragard test was positive on the right leg and negative on the left.

The clinical investigation which was done on 08/06/2023 showed, negative ANA (antinuclear antibody) and ESR (Erythrocyte Sedimentation Rate) was 78 mm/hr, CRP (C-reactive protein) was 12.2 mg/L and Hb (Haemoglobin) was 9.68 g/dL.

**Timeline**

A brief timeline of the occurrence of first symptoms, diagnosis, and commencement of *Ayurveda* management is indicated in Table 1.

**Table No. 1: Timeline of events.**

Health event	
Occurrence of first symptom	15/01/2023(bilateral hip joint pain)
Diagnosis of AVN	19/04/2023(Based on MRI findings by the physician)
First OPD consultation in Ayurveda Hospital	13/06/2023(bilateral hip joint pain, radiating pain over the right inner thigh, buttock region, and difficulty in walking)
Admission to Ayurveda Hospital	14/06/2023
Discharge from Ayurveda Hospital	23/06/2023
Follow-up - after 3 months	25/09/2023

### Diagnostic focus and assessment

The diagnosis was based on clinical symptoms and MRI findings.

### MRI of bilateral hip joints on (19/04/23)

- Avascular necrosis of both femoral heads, with subchondral fracture and early structural collapse – **FICAT ARLET** classification stage II on both sides.
- Bilateral hip joint effusion

### Assessment criteria

The Visual Analogue Scale (VAS) is used to assess pain levels, where a score of "0" indicates no pain and "10" represents the worst possible pain.

### Therapeutic intervention

The patient received both medicinal and procedural therapies on the line of *Vatarakta chikitsa*. The details are mentioned in Table 2.

**Table No. 2: Admission (14/06/2023 – 23/06/2023).**

Dates	Procedure	Medicine	Dosage	Duration	Observations
14/06/23 to 23/06/23	<i>Sarvanga Dhara</i>	<i>Dashamula Kashaya</i>	External application	10 days	A mild reduction of pain in the bilateral hip joints was observed.
14/06/23 to 23/06/23	<i>Lepa</i>	<i>Dashanga Lepa Churna</i>	External application	10 days	A mild reduction of pain in the bilateral hip joints was observed.
15/06/23 to 23/06/23	<i>Kala Basti</i>	<i>Anuvasana basti</i> – A1 to A9 - <i>Chandana Bala Lakshadi Taila</i> (70 ml) <i>Niruha basti</i> – N1 to N6 - <i>Dashamula Ksheera Basti</i>	2 basti/day	9 days	Further reduction of the above symptoms.

**Table No. 3: Ingredients of basti.**

<i>Anuvasana basti</i>	<i>Chandana bala lakshadi taila (70 ml)</i>
<i>Niruha Basti</i>	<i>Dashamula Ksheera Kashaya</i> (300 ml) + <i>Chandana Bala Lakshadi Taila</i> (70 ml) + <i>Madhu</i> (30 ml) + <i>Saindhava Lavana</i> (5g) + <i>Shatapushpa churna</i> (5g) + <i>Guduchi churna</i> (5g) + <i>Yashtimadhu churna</i> (5g)

### During Admission (14/06/23 to 23/06/23)

- Syp. Cardorium Plus 10ml – 10 ml – 10 ml (After food)

- *Kaishora Guggulu* 1-1-1 (After food)
- Capsule *Gandha Taila* 0-0-2 at bed time
- *Guduchi Swarasa* + *Bhumyamalaki Swarasa* 15 ml – 0 – 15 ml (Before food)

**X 10 days**

#### **Discharge medicines (24/06/23 to 23/09/23)**

- *Kaishora Guggulu* 1-1-1 with Milk (After Food)
- Capsule *Gandha Taila* 1-0-1 with Milk (After Food)
- Syp. Cardorium Plus 10ml – 10 ml – 10 ml (After Food)
- *Pinda Taila* – External Application over hip region

**X 03 Months**

#### **Follow-up and Outcome**

Biochemical parameters and examinations were assessed before treatment, after treatment, and during follow-up and improvement was observed in each parameter. Follow-up improvements in lab parameters and examinations are summarised in Tables 4 and 5.

**Table No. 4: Follow-up and Outcome.**

Hematological Test	Before Treatment (08/06/2023)	After Treatment (19/07/2023)	Follow Up After 3 Months (06/09/2023)
Hb%	9.68 g/dl	10.00 g/dl	10.60 g/dl
ESR	78 mm/hr	66 mm/hr	40 mm/hr
C-RP	12.2 mg/L	8.4 mg/L	5.2 mg/L
ANA	Negative	-	-

**Table No. 5: Follow-up and Outcome.**

Symptoms	Before treatment (14/06/2023)	After treatment (23/06/23)	Follow Up After 3 Months (25/9/2023)
Pain (Vas scale Score)	6-7 (Severe)	3-4 (Moderate)	1-2 (Mild)
Range of Movements	Possible with pain	Possible with reduced pain	Possible with mild pain
Tenderness	Present over bilateral hip joints	Absent bilateral hip joints	Absent over bilateral hip joints
SLR test	Positive on the right leg (70°)	Positive on the right leg (90°)	Negative on bilateral legs
Bragard test	Positive on the right leg	Positive on the right leg	Negative on bilateral legs
Faber test	Positive on bilateral hip joints	Positive on bilateral hip joints	Positive on bilateral hip joints

## DISCUSSION

According to *Ayurveda* point of view there is no direct correlation with avascular necrosis but clinical presentation indicates the dominance of *Vata Dosha* and *Vikruti* (Vitiation) of *Asthi Dhatu* (Bony tissue). In AVN, the blood (*Rakta Dhatu*) supply to the femoral head is decreased due to any type of *Margavrodha* (Occlusion of blood vessels) ultimately leading to necrosis. *Margavrodha* is also responsible for aggravating *Dhatu*. In the advanced stage, due to continuous *Vata Dosha* (Due to necrosis) imbalance, it is further responsible for causing vitiation of *Pitta* and *Kapha*. So *Basti* is the first line of treatment of *Vata Dosha* as well as *Pitta*, *Kapha Dosha*, and *Rakta*.<sup>[4]</sup>

### Probable mode of action of *panchakarma* therapies

In this case, there was no history of trauma or other factors that reduce bone composition. As there is involvement of *Vata* and *Rakta* treatment started with *Basti*. *Basti* is considered as *Ardha chikitsa* for *Vata dosha*. According to *Acharya Charaka*, *Tikta Dravya Sadhita Ksheera Basti* is specially indicated in *Asthikshayaja Vikara* (disorders caused by decreased *Asthi Dhatu*).<sup>[5]</sup>

*Dashamula Ksheera Basti* is proven to be *Vata Doshahara* (alleviates *Vata*), *Asthi Poshaka* (Nourishing bones), and *Vedhana Sthapaka* (Analgesic). The *Kashaya* thus prepared with *Ksheera* having *Snigdha* (Unctuous) & *Madhura* (Sweet) *Guna* helps to manage *Vata* & *Pitta Dosha* and acts as *Brimhana* (Nourishing), *Jeevaniya* (Anti-ageing) *Rasayana* (Rejuvenating), *Balya* (strengthening). *Saindhava* because of its *Sukshma Guna* reaches the minute *Srotasa*'s of the body & helps to remove occlusion and open fresh blood supply to the *Asthi*, *sandhi*, etc. *Guduchi churna* (*Tinospora cordifolia*), *Yashtimadhu churna* (*Glycyrrhiza glabra*), and *Shatapushpa churna* (*Anethum graveolens*) are indicated for *Vatarakta* and *Vataja* disorders. *Chandana Bala Lakshadi Taila* is used for *Anuvasana Basti* and is known for its *Vatashamaka* (Alleviates *Vata*), *Shothahara* (Anti-inflammatory), and *Shoolahara* (Analgesic) properties.<sup>[6]</sup>

*Sarvanga Dhara* with *Dashmoola Kashaya* is indicated for the treatment of pain due to *Vata*. It is a form of *Swedana* (Sudation), which enhances blood circulation. *Dashamoola Kashaya*, which is said to have *Tridosha* pacifying in general and *Vata* in particular properties,<sup>[7]</sup> thereby providing significant relief from pain.

*Dashanga Lepa Churna* was used as *Lepa* (ointment application), which contains *Shirisha* (*Albizia lebbek*), *Yashtimadhu* (*Glycyrrhiza glabra*), *Tagara* (*Valeriana wallichii*), *Raktha Chandana* (*Pterocarpus santalinus*), *Ela* (*Elettaria cardamomum*), *Jatamansi* (*Nardostachys jatamansi*), *Daruharidra* (*Berberis aristata*), *Kushta* (*Saussurea lappa*), and *Bala* (*Sida cordifolia*) is *Shothahara* (Anti-inflammatory), and *Shoolahara* (Analgesic). It also helps to manage *Vata Dosha*.<sup>[8]</sup>

### Probable mode of action of internal medicines

*Kaishore Guggulu* is a drug of choice in *Vatarakta* in which obstruction in blood vessels is the main pathology.<sup>[9]</sup> So, this condition also might have helped improve blood circulation of the head of the femur.

*Cardorium Plus*<sup>[10]</sup> containing *Arjuna*, *Gokshura* (*Tribulus terrestris*), *Pushkaramoola* (*Inula racemosa*), *Vrishamla* (*Garcinia cambogia*), *Jatamansi* (*Nardostachys jatamansi*) acts as an anti-inflammatory, immuno-modulator, and antioxidant. It also enhances the blood flow by disintegrating the blocks and strengthening the blood vessels.

*Guduchi Swarasa* (*Tinospora cordifolia*) is indicated for *Vatarakta* and *Vataja* disorders. It is also reported for the mineralization of bones<sup>[11]</sup> and *Bhumyamalaki Swarasa* (*Phyllanthus niruri*) is used for purifying blood. *Swarasa* acts as an anti-inflammatory, immuno-modulator, and antioxidant, which gives symptomatic relief by its uricosuric action and excretes excess uric acid from the body.<sup>[12]</sup>

Capsule *Gandha Taila*<sup>[13]</sup> has been added to the prescription as it is *Asthi Sthairya Krith* and helps to subside *Vata Vyadhi*.

*Pinda Taila*<sup>[14]</sup> is a drug of choice in *Vatarakta* as an external application, as it alleviates *Vata Dosha* and acts as *shothagna* (Anti-inflammatory) and *Vedanashamaka* (Analgesic).

### CONCLUSION

In this case study, *Ayurvedic* treatment for Avascular Necrosis (AVN) helped improve the range of motion in the hip joint. The treatment provided to the patient involved non-invasive and cost-effective procedures. While it could not fully reverse the anatomical changes associated with the condition, it effectively prevented further complications. The conservative management of AVN, utilizing *Ayurvedic* therapies such as *Basti*, *Sarvanga Dhara*, and



*Lepa*, along with oral medications, resulted in significant pain relief and improved the patient's quality of life.

### Patient perspective

The patient found the intervention to be helpful in managing the condition. Patient mentioned, “My symptoms have reduced drastically. I feel more comfortable with myself. I wish to continue Ayurveda therapy and I hope that it will help for my long-standing health problem.”

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### Conflict of interest

None.

### Patient consent

Written permission for publication of this case study had been obtained from the patient.

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None.

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