

Ayurvedic Concept and Management Strategies in Avascular Necrosis

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ABSTRACT

Avascular necrosis (AVN) is a condition where bone tissue dies due to a lack of blood supply, and it can be quite difficult to manage. The main goals of treatment are to preserve the bone, reduce pain, and help the patient regain normal movement. Modern treatments like drilling, bone grafting, or joint replacement are often used, but they can be expensive and don't always give long-term success.

AVN usually behaves like a chronic musculoskeletal disorder, with ongoing pain and stiffness. In Ayurveda, this condition can be understood as Asthi Majja Kshaya (loss of bone and marrow tissue) and Asthimajjagata Vata (aggravation of Vata affecting bones and marrow).

Ayurvedic treatment focuses on a holistic approach. It includes Panchakarma therapies (detoxification procedures that remove toxins, balance the Doshas, and rejuvenate the body) along with Shamana therapy (medications to pacify the aggravated Doshas).

These treatments have shown encouraging results, such as reduced pain and tenderness, improved joint movement, decreased stiffness, and better walking ability.

Overall, Ayurveda offers a comprehensive approach to AVN—not just relieving symptoms, but also addressing the underlying causes and improving the patient's quality of life.

KEYWORD

Ayurveda, Avascular Necrosis, Panchkarma, Shodhana, Shamana, Rejuvenation.

INTRODUCTION

Avascular necrosis (AVN), also called osteonecrosis, occurs when the blood supply to a bone is reduced or completely blocked. It mainly affects the ends of long bones, especially in weight-bearing joints like the hip.¹ Studies suggest that AVN affects around 8% of people, most commonly between the ages of 18 and 54, and it is seen more often in men.² Even though several modern treatments are available—such as vascularized

bone grafts, biological therapies, and joint-preserving procedures like core decompression—managing AVN is still quite difficult. In many cases, the condition gradually worsens and eventually requires hip replacement surgery. However, even this option comes with its own set of risks and complications.

AVN is also known by different names, such as osteonecrosis, ischemic bone necrosis, and aseptic necrosis, all referring to the same underlying problem of reduced blood supply leading to bone damage.

AVN is also known by names like osteonecrosis, aseptic necrosis, and ischemic necrosis. The main reason behind this condition is reduced blood supply (ischemia), which leads to the death of bone marrow cells. In the early stages, AVN may not be

visible on regular X-rays, which can delay diagnosis. That's why MRI is considered the best method for detecting AVN.

In later stages, MRI often shows a typical “crescent sign,” which indicates progression of the disease.³ The exact cause of AVN is not always clear, but it is believed to develop due to both traumatic and non-traumatic factors that disrupt blood flow to the bone. When the blood supply is cut off, the bone tissue begins to die, leading to weakening and eventual collapse of the affected area.

Among the most common causes are traumatic injuries such as fractures of the femoral neck or dislocation of the hip joint. These injuries can disturb the normal blood supply to the femoral head, increasing the risk of developing AVN over time.

AVN can also develop due to several non-traumatic factors that affect blood supply to the bones. Habits like excessive alcohol intake, long-term use of high-dose corticosteroids, and smoking can damage blood vessels and increase the risk of AVN.

Certain medical conditions, such as sickle cell disease, coagulopathies, chronic inflammatory disorders, and infections like HIV, further contribute to its development by impairing blood flow and oxygen supply.⁴

These factors highlight that AVN has a multifactorial origin, requiring a comprehensive approach that addresses both lifestyle risks and underlying diseases. In Ayurveda, although AVN is not described as a specific condition, it can be understood through the imbalance of Doshas and involvement of affected tissues (Dushyas), which guides its holistic management.

The Steinberg system of classification for avascular necrosis outlines the following stages:

1. Stage I: Normal radiographs; abnormal findings on MRI or bone scan.
2. Stage II: Identification of abnormal lucency or sclerotic site within the femoral head.
3. Stage III: Presence of subchondral collapse, often indicated by the crescent sign, without flattening of the femoral head.
4. Stage IV: Flattening of the femoral head while maintaining a normal joint space.
5. Stage V: Observance of joint space narrowing, acetabular changes, or both.
6. Stage VI: Manifestation of advanced degenerative changes within the affected joint.

In cases where AVN develops due to trauma, factors like injury, heavy physical activity, or external stress can disturb the normal functioning of bone and bone marrow channels (Asthi and Majjavaha Srotas) as described in Ayurveda. This imbalance may lead to conditions such as Asthi Majjagata Vata or Asthi Majjakshaya. The common symptoms seen in AVN—like joint pain, weakness, and reduced blood supply—closely resemble the features of Asthi Majjagata Vata.⁶ On the other hand, when AVN occurs without trauma, it is often due to problems like blockage in blood vessels or pressure on them, which reduces blood flow to the bone.

In Ayurveda, this can be related to Vatarakta, where aggravated Vata interferes with blood circulation and affects its quality. Symptoms of Vatarakta, such as pain and inflammation in joints (especially in areas like the hip or small joints), can also be seen in AVN.

By understanding AVN through Ayurvedic concepts, we can better connect its causes and symptoms with traditional knowledge. This approach may help in developing more holistic methods for prevention and treatment.

Ayurvedic Literature Review

In Ayurveda, Asthi Dhatu (bone tissue) plays a vital role in maintaining the body’s structure and stability. It is responsible for Dharana (support) and Poshana (nourishment) of the body. Among the seven Dhatus, Asthi is considered the hardest, similar to the strong outer bark of a tree, providing firmness and strength to the skeletal system.

A key concept in Ayurveda is Ashraya–Ashrayi Bhava, which explains the relationship between Asthi Dhatu and Vata Dosha. Asthi acts as the seat (Ashraya) of Vata.

Therefore, any imbalance in Vata directly affects Asthi Dhatu. When Vata increases, it can lead to Asthi Kshaya (loss or कमजोरी of bone tissue), while a decrease in Vata may cause an abnormal increase (Vridhhi) in Asthi, potentially leading to stiffness or excessive bone formation. Hence, maintaining a balance between Vata Dosha and Asthi Dhatu is essential for bone health.⁷

Majja Dhatu (bone marrow), the sixth Dhatu, is formed from Asthi Dhatu according to the principle of Uttrotara Dhatu Parinama Siddhanta, which explains the sequential transformation of body tissues. As described by Acharya Charaka, the Moolasthan (origin site) of Majja is within the bones. In long bones (Sthula Asthi), Majja is present as a soft, semi-fluid, jelly-like substance.

Functionally, Majja Dhatu is very important as it nourishes the body and contributes to the formation of Shukra Dhatu, which is responsible for reproduction, vitality, and overall strength.

Samprapti of Asthi Majjakshaya -

In Ayurveda, the Samprapti (pathogenesis) of Asthi Majjakshaya—the depletion of bone (Asthi) and marrow (Majja) tissues—is mainly understood through the concept of Kshaya (degeneration) of Dhatus. This condition develops when both Asthi and Majja Dhatus gradually decrease in quality and quantity.

Such depletion can occur due to improper diet, unhealthy lifestyle habits, chronic diseases, or other pathological factors. As these tissues weaken, the body loses its structural strength and internal nourishment. This leads to symptoms like bone pain, कमजोरी (weakness), fragility of bones, reduced bone density, and overall decline in vitality.

With the reduction of Majja Dhatu, lubrication and nourishment within the bones also decrease, further aggravating dryness and degeneration—primarily driven by increased Vata Dosha. This creates a cycle where Vata aggravation accelerates tissue depletion.

Thus, the Samprapti of Asthi Majjakshaya involves a progressive loss (Kshaya) of Asthi and Majja Dhatus, resulting in weakened structural integrity and reduced strength of the body. Based on its signs and symptoms, it can also be correlated with Asthi Majjagata Vata.

Management in Ayurveda focuses on restoring Dhatu balance through proper diet (Ahara), lifestyle modifications (Vihara), nourishing therapies, and herbal medications tailored to the individual's constitution.

Treatment-

The treatment approach follows the fundamental principles of Ayurveda, which emphasize addressing the root cause of the disease and managing the condition in a holistic manner.

The first and most important step is Nidana Parivarjana—identifying and avoiding the causative factors responsible for the disease.

The next step involves Samprapti-based treatment, which is planned according to the disease pathogenesis. This includes therapies such as:

- Snehana (oleation therapy) to reduce dryness and pacify aggravated Vata
- Swedana (sudation therapy) to relieve stiffness and improve circulation
- Virechana (purgation therapy) for detoxification and Dosha balance
- Basti (medicated enema), considered the most effective therapy for Vata disorders
- Jalaukavacharana (leech therapy) to improve blood flow and reduce local pathology

Together, these therapies aim to restore Dosha balance, nourish depleted tissues, and improve overall function.

DISCUSSION-

The aim of treatment is to balance the Doshas, remove toxins, and promote healing of the affected tissues.

1. Nidana Parivarjana (Elimination of causes):

This is the first and most important step. It focuses on identifying and avoiding factors responsible for the disease. In AVN, this includes avoiding trauma, excessive strain on joints, improper lifestyle habits, and ensuring adequate rest to prevent further damage.

2. Samprapti-based Treatment:

Treatment is planned according to the disease process, mainly targeting Asthi Majjagata Vata.

A. External Therapies:

Abhyanga (oil massage), Snigdha Pinda Swedana, and Shashtika Shali Pinda Swedana help improve circulation, reduce pain, and enhance joint mobility.

B. Internal Oleation C Basti:

Therapies like Matra Basti, Ksheera Basti, and Yapana Basti nourish tissues and pacify Vata. Medicated ghee preparations such as Tikta Ghrita, Guggulu Tikta Ghrita, and Panchatikta Ghrita support tissue regeneration.

- **Snehapana (Internal Oleation):**

Intake of medicated ghee or oils helps balance Vata and Pitta, reduce inflammation, and prepare the body for detoxification.

- **Virechana (Purgation):**

Helps eliminate excess Pitta and toxins, especially useful when Rakta involvement is present, thereby restoring systemic balance.

- **Basti (Therapeutic Enema):**

Basti is a key therapy for managing Vata disorders and is usually administered after Snehapana and Virechana. It involves the introduction of medicated oils or decoctions into the colon. This therapy helps in nourishing tissues, balancing Vata and Pitta

Doshas, and promoting detoxification. It is especially effective in conditions involving degeneration and dryness, such as AVN.

- **Jalaukavacharana (Leech Therapy):**

This is a form of bloodletting used to remove vitiated blood and improve local circulation. It helps reduce pain, inflammation, and tissue damage. Leech saliva contains natural anticoagulants and analgesic substances that enhance blood flow and provide relief. By removing stagnant blood, it promotes healing and may support angiogenesis (formation of new blood vessels). It is also a relatively less invasive alternative compared to surgical interventions.

Ayurvedic Understanding in AVN

AVN is primarily associated with aggravated Vata Dosha along with Margavarodha

(obstruction of channels), leading to reduced blood supply (Rakta Dhatu) to the bone (especially the femoral head). In advanced stages, involvement of Pitta and Kapha

Doshas may further complicate the condition.

The above therapies aim to pacify Vata, remove obstruction, improve circulation, and nourish bone tissue, thereby supporting healing and slowing disease progression.

Conclusion

Avascular necrosis (AVN) is a difficult condition that occurs due to reduced blood supply to the bone, leading to tissue damage. Modern medicine mainly focuses on pain relief and surgical options, whereas Ayurveda offers a supportive and holistic approach.

Therapies like Snehana, Swedana, Virechana, Basti, and Jalaukavacharana help in detoxifying the body, improving blood circulation, reducing inflammation, and nourishing affected tissues. These therapies may help in relieving symptoms and slowing the progression of AVN.

Along with these treatments, Ayurveda also emphasizes proper diet, healthy lifestyle, and use of herbal medicines to improve overall strength and immunity.

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