



## ROLE OF PANCHKARMA IN THE MANAGEMENT OF AVASCULAR NECROSIS OF HEAD OF FEMUR

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### ABSTRACT

Avascular necrosis is the condition affecting different bones resultants death of bone tissue due to lack of blood supply to the bone in transiently or permanently. Femoral head is the most commonly affected area in avascular necrosis. Ayurveda diagnosis made as the Astimajjagata Vata under Vata Vyadhi. This is a progressive disorder and ultimately therapeutic approach is having surgical intervention. All

therapeutic procedures in modern medicine for avascular necrosis might be introduced as cost worthy and poor prognosis. Ayurveda can effectively interrupt to the avascular necrosis with their cost effective and non-invasive approach. Unique Panchkarma therapies along with palliative medications have miracle effect and can boost the quality of life of condition of avascular necrosis. Brimhana therapy, Abhyanga, Parisheka and Tiktakshira Basti etc have excellent beneficial and cost effective validity in the management of Astimajjagata Vata. The purpose of this study was to review the current use of Panchkarma for the treatment of avascular necrosis of the femoral head.

**KEYWORDS:** Avascular necrosis, Astimajjagata Vata, Brimhana, Tiktakshira Basti, Abhyanga, Parisheka.

## INTRODUCTION

Avascular necrosis (AVN) is a progressive disorder where the cellular death of bone component due to interruption of the blood supplies to the bone in transiently or permanently.<sup>[1]</sup> It is also known as osteonecrosis, aseptic necrosis or ischemic necrosis. Head of the femur is one of the common classical site is involved and body of the scaphoid, carpal, talus and lunate are the places which are less common involved. In USA, this estimated in 10,000–20,000 adults diagnosed in every year. Average ages of onset are 20 to 40 years.<sup>[2]</sup> In young adults with 60% of the cases being bilateral. Male to female ratio of this condition is 5-8:1 and 10% of all hip replacement is done.<sup>[3]</sup> Ayurveda diagnosis can be made as Asthi-majjagata Vāta (Vata associate in bone and marrow tissues) under the Vata Vyadhi. Due to provoked of Vata dosha which residing in Asti (bone tissue) and Majja Dhathu (bone marrow) being manifested the features of Bhedo-asthiparvanam (cracking of the bones and joints), Sandhishula (joint pain), Mamsabalakshaya (diminution of strength and muscles tissue), Asvapna (insomnia) and Santataruk (constant pain).<sup>[4]</sup> These characterized features can be correlated with AVN.

### Causes of AVN<sup>[5]</sup>

Etiology is not completely understood and generally accepted as compromise of bone vasculature with subsequent death of bone and marrow cells. Pathophysiology of AVN fulfils by some mechanisms.

- **Mechanical disruptions** - Cause may be due to intracapsular fractures, dislocation of femoral head, impaction. Due to these disturbances site lead necrosis and AVN might be resultant with in as little or as eight hours.
- **Embolism** – Due to some diseases there may be occurs poor collateral circulation to the bone and it may lead embolism. e.g. Sickle cell disease, alcoholism – fat embolism, pancreatitis, caisson disease
- **An elevation of intramedullary pressure** - may be due to tumors, corticosteroids, hemophilia
- **Venous obstructions** - due to pregnancy, steroids – High steroids such as prednisone takes place in brain injuries, asthma and immune suppression due to kidney or liver transplantations may lead AVN.

**Table 1: Risk factors for avascular necrosis of the femoral head.**

<b>Traumatic/direct injury</b>	<b>Non-traumatic</b>	
Femoral neck/head fracture	Corticosteroid use	Alcohol abuse
Hip dislocation	Idiopathic	Sickle cell disease
Slipped capital femoral epiphysis	Caisson disease	
	Systemic lupus erythematosus	
	Cushing's disease	
	Organ transplantation	
	Prior radiation therapy	Smoking
	Pregnancy	Chronic pancreatitis
	Coagulopathy	Chronic renal failure
	Lipid disorders	

### Pathophysiology of AVN

Pathogenesis occurs due to current theorized mechanisms which are mechanical disruptions of arterial supply, embolism, increased intramedullary pressure, vasculitis or venous obstructions. Blood supply of the femoral head is largely through medial circumflex femoral artery. However, there are several recognized predisposing factors and environmental insults that can lead and increase the developer of AVN. After the initial insult of the bone site it leads die of marrow substances and bone cells. This process is involved the bone in the joint it leads collapse of joint surface. Hematopoietic cells are most susceptible once and they may die within 6-12 hours. Osteocytes, osteoblasts, osteoclasts destructed within 12-48 hours and fat cells may die within 2-4 days. Inflammatory event is response to necrosis during weeks to months. Inflammatory cuff leads to reactive revascularization and subchondral weakness. They are directly causes to the articular collapse. Ultimately an articular disruptions cause to degenerative joint disorders.<sup>[6]</sup>

### Sign and symptoms of AVN

Sign and Symptoms may be varying widely, upon the stage at presentation. AVN tends to affect patients between aged 20–40 years, average age at being 38 years. In the earlier stages of AVN, patients may not have any symptoms. Normally has insidious onset of pain, without a clear cause. Often have a normal range of motion. With progression of the disease, this insidious discomfort may be followed by putting weight on the affected part and even rest. Pain develops gradually and it may be mild or severe. One hallmark of AVN is severe night pain. The time period between first sign and loss of motion of joint is vary from several months to more than a year.<sup>[7]</sup>

### Diagnosis of AVN

Early diagnosis is essential because of prevent the affected bone from collapsing and further damage of the joint. AVN is usually diagnosed by an X-rays, a magnetic resonance imaging (MRI) scan and a bone scan (scintigraphy). Computerized tomography (CT) scans generally not use because it is less sensitivity more than scintigraphy and MRI. In early-stage of disease x-rays are not sensitive enough to detect the bony changes. The features of AVN on imaging are important because accurate staging of the disease is essential in order to be able to treat each patient appropriately. In early stages of AVN changes can be identified best by MRI and later stages can be seen with X-rays. X-ray changes may demonstrate joint space collapse, articular flattening, loose bodies, and focal sclerosis and may be see the crescent sign. Crescent sign is decreased bone density in the adjacent joint space with surrounding area increased bone density.<sup>[8]</sup>

**Table 2: Steinberg's classification of avascular necrosis of the femoral head.**

Stage	Description
0	No symptoms, Normal or non-diagnostic X-ray, bone scan and MRI
1	Mild pain in the affected hip, pain with internal rotation, Normal x-ray, bone scan or MRI diagnostic
2	Worsening or persistent pain, increased sclerosis or cysts in the femoral head
3	Subchondral collapse, produce crescent sign
4	Flattening of femoral head, normal acetabulum, normal joint space
5	Acetabular involvement, Joint space narrowing with/without femoral head involvement
6	Obliteration of joint space, advanced degenerative changes.

### Treatment for AVN<sup>[9]</sup>

In biomedical field generally adopted therapy for AVN is conservative treatment and anti-inflammatory prescriptions for reduce pain. Reducing weight bearing by putting on clutches to slow the damage to the bone and promote natural healing. Physical therapy for promote maintain of muscle strength. If conservative treatments are not enough to lasting pain, a surgical treatment takes place to repair the bone. Core decompression - is a surgical procedure that removes the inner layer of bone, which reduces pressure within the bone, and, creates increased blood flow to the area, which promotes bone healing. This procedure is best in people who are in the early stages of AVN, before the joint surface collapses. Osteotomy may be indicated who are in the more advanced stages. Joint replacement or Arthroplasty condition of the joint deteriorates is not respond to a core decompression or an osteotomy then this procedure may be necessary. In this surgery, the affected joint is removed and replaced with artificial parts.

## DISCUSSION

Vayu gets aggravated in two different ways viz diminution of tissue elements and by the occlusion of its own channel of circulation. Aggravated Vayu provokes other two Doshas and leading to the manifestation of various diseases and drying up of tissue elements like rasa (plasma).<sup>[10]</sup> Vata consist Vayu and Akasha mahabhuta in dominance even Asti Dhatu consist Vayu and Akasha mahabhuta. According to Ashrya-Ashri Bheda if Vata dosha is increased Asti dhatu gets diminish. Provoked Vata Dosha lead vitiation of bones and fulfils the pathogenesis of Astimajjagata Vāta. However drying up of the tissue elements at the site of hip joint may be the reason involves the reduction of blood supply to the femoral head. According to Ayurveda principles, obstinate nature of deep seated diseases such as Astimajjagata Vata may get cured only by careful treatments; otherwise those diseases cannot be cured by all.<sup>[11]</sup> General line of treatment of Vata Vyadi is Abhyanga, Sweda, Basti, etc. In here the treatment process should be towards through the Vatashamaka and Brihmana therapies such as Abhyanga, Snigdha formentation and Brihmana Basti because of diminution of Datus.<sup>[12]</sup>

### Mode of action of Tiktakshira Basti

Basti which substance likes milk, ghee and Tikta rasa ingredients are especially best for the Asthi Pradushya Janya Vikara<sup>[13]</sup> and it does strengthen and improved the quality of Asthi Dhatu (~ bone tissue). Tikta rasa enrich predominance of Vayu and Aakash Mahabhuta. Asti Dhatu has equal constitute. Thereby possibility of aggravated of Vayu. But affected joints are associate morbid Shleshaka Kapha which is located in Sandhi. By applying Tikta Rasa it helps to decrease the vitiated Kapha Dosha in the joints.<sup>[14]</sup> Mainly Panchtikta Kshira Basti dominance Tikta and Katu Rasa (bitter and pungent taste). Besides it improves the Dhatvagni (~enzyme complex). So all tissue elements are nourished well and Asthimajja Dhatu (bone marrow) Kshaya(depletion of tissue elements) will be reduced. Even Tikta Rasa has Lekhana (scraping) property, it helps in the weight reduction & leads protection of weight bearing joint specially benefit for hip joint. Vata pacify by potency of Ushna Veerya & Madura Vipaka. The substances which added to the Tiktakshira Basti such as milk and Sneha (oil) help to prevent of the further vitiation of Vata Dosha. Milk has Madura Rasa, Guru Pichhilya Guna (sticky property) and Jeevaneeya (rejuvenation) properties. So body can get the effect of Rasayana (immunomodulation property), Vrishya (aphrodisiac), Brimhana (nourishing) benefits and lead the decrease of diminution of Dhatu.<sup>[15]</sup> According to one study Tikta Rasa

(bitter taste) may have positive impact on cell implantation and Tikta Rasa helps to reduce the degeneration of Asti (bone tissue) and Majja (bone marrow tissue).<sup>[16]</sup>

### **Mode of action of Shashtikashalipinda Sweda(SSPS)**

By proper administration of Snigdha Sweda (oily fomentation) therapy vitiated Vata Dosha can be neutralized. It is important because Vata is the main factor responsible for controlling whole motor and sensory activities of the body.<sup>[17]</sup> Sankara Sweda is one of the variety of fomentation therapy mentioned in Ayurveda.<sup>[18]</sup> Sankara is a customary name means of bolus containing prescribed drugs such as Vatahara drugs, ghee, meat, porridge; milk ect with or without being wrapped with cloths.<sup>[19]</sup> Nourishing type of fomentation therapy which are commonly prescribed in the conditions of Dhatukshaya (~depletion of tissue). So it can be given in Astimajjagata Vata. It consists of Shashtikshali (~type of pulses), cow's milk, Bala (*Sida cordifolia*) roots ect, these all substances are having nourishing and Vata palliation properties. Hence it pacifies the Vata Dosha, cleans the Srothas in the body and improves the blood circulation, nourishes and strengthens the tissues.

### **Mode of action of massage**

In AVN should be adopted oil which is having Vata palliative and nourishing properties. It helps to neutralize the Vata and improve the strength of muscle. Effect of Abhyanga (massage) on dates cited in Ayurveda classics, thus Abhyanga should be done at least 5 minutes in each position if one wants to get its effect in deeper tissue Majja. It bestows stability to the body and cleans the skin. Opening the orifices of veins and increase the blood circulations.<sup>[20]</sup> So it improves muscle moistness and nourishes all the tissues. It decreases the dryness of Sira and Snayus (~vessels and ligaments). It also stimulates the nerve ending by tactile stimulation and increase blood supply. It tones up the depleted muscle and improves the strength of weak muscle.<sup>[21]</sup>

### **Mode of action of Parisheka**

Pouring of warm medicated oil for induction of perspiration over the particular portion of body from a specific height is known as Parisheka sweda.<sup>[22]</sup> Instead of oil it may be used herbal decoctions, milk, medicated ghee, Kanji, cow's urine etc. As Parisheka avails therapeutic actions of Snigdha (oleation) and Swedana (perspiration). Snigdha corrects the Shoshana (dryness) and imparts complexion as well as strength. Swedana normalizes the Vata. Parisheka is very efficacious in fractures, contusive wounds, dislocation of the joints and pains of the joints and limbs. Oil used for anointing satisfies/clean the orifices of the

veins, follicles of hairs and orifices of the arteries and bestows the strength thereby.<sup>[23]</sup> Besides, the effects of it are marvelous in Vata borne diseases. It helps to pacify the Vata and relieve the pain, heal the bone and increase the blood circulation of the site.

## CONCLUSION

In biomedical aspect there is an only conservative treatment for AVN and finally recommended surgery. So demand becomes toward the alternative approaches for contemporary treatments. As a holistic therapy Ayurveda can prove special interrupt through Panchkarma gives quality of life and longer survival in the AVN patients. After reviewing this literature it is much clearer AVN can manifest itself under predominant of Vata. Curiosity occult properties of spelt out Panchkarma therapies like Tiktakshira Basti, Abhyanga, Shalishashtikpinda Sweda, and Parisheka could be synergistic, cost effective and enriched quality of life in the management of AVN.

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