



Review Article

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MANAGEMENT OF AVASCULAR NECROSIS OF HEAD OF FEMUR IN AYURVEDA: A REVIEW

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ABSTRACT

Avascular necrosis is a pathogenic process resulting from traumatic or non-traumatic insult of bone that impairs blood circulation to the femoral head leading to the death of bone tissue. This is a progressive disorder, ultimately approaching surgical intervention. Conservative treatment including Panchakarma (fivefold purification therapy) procedures followed by Ayurveda practitioners seems to give positive results on avascular necrosis. Articles published on the management of avascular necrosis of head of femur by Ayurveda treatment were searched through different portals like Research gate, Google Scholar, DHARA, and Ayush Research Portal etc. on review of these articles it is understood that Ayurveda management can interrupt pathology of avascular necrosis effectively with non-invasive approach. Panchakarma therapy along with palliative medications is effective in the management and prevention of progression of avascular necrosis and thus the patient could improve quality of life.

Keywords: Avascular necrosis, Ayurveda, Panchakarma, Ksheeravasthi.

INTRODUCTION

Avascular necrosis (AVN) also known as osteonecrosis occurs as a result of diverse etiology. Osteonecrosis or avascular necrosis (AVN) is a pathologic process that results from a critical decrease of blood supply to the bone and elevated intra-osseous pressure. While the pathogenic process is not clear, it is believed that osteonecrosis is the final common pathway of traumatic and non-traumatic insults and that it impairs blood circulation to the bone. Subsequently, interruption of blood flow to the bone leads to the death of bone marrow and osteocytes and usually causes the collapse of the necrotic segment¹.

Chronic inflammatory disorders, high-dose corticosteroids, excess alcohol intake, smoking, trauma, sickle cell disease, infections such as human immunodeficiency virus (HIV), tuberculosis, meningococcal infections are some of the common causes of AVN of bone². It is seen in children and young adults in age of 35 to 45 years, as the result of injuries and various genetic bone disorders, and it may occur later in life as the result of abuse of drugs (corticosteroids and alcohol are the main culprits) and secondary to chronic diseases that affect the vascular system.³

In the early stage there are minimal signs and symptoms but in advanced stage the bone collapses and shows many symptoms like groin or hip pain radiating to buttocks, thigh or knee that is aggravated by weight-bearing. If left untreated, the pain gradually increases and worsens with time and overuse of the joint. In the later stage pain even on rest arises which may worsen during night and may be associated with morning stiffness. Prognosis of AVN may depend upon the duration of disease, chances of complications etc. Management is not an easy task; the objectives of treatment includes the preservation of structure & function and relief of pain. Many surgical procedures like core decompression by drilling the hole in the bone & implantation of living bone chip & an electric device to stimulate new vascular growth and

vascular fibular graft is carried out. All these procedures are having low success rate in preventing the progression of the disease.

In Ayurveda, there is no direct correlation with avascular necrosis. In this condition the treatment modality of this disease is according to the involved Dosha and Dushya⁴. It may be correlated with 'Asthimajjagata-vata', one among the diseases of Vata dosha. General line of treatment of Vata Vyadhi is Abhyanga (oil anointing), Sweda (sudation), Basti (enema therapy), etc. In avascular necrosis the treatment process should be through the Vatashamaka (alleviating vata dosha) and therapies such as Abhyanga (oil anointing), Snigdha fomentation and Brihmana Basti (nourishing type of enema therapy) to replenish the diminished Dhatus (body tissues) like Tiktakshira Basti (enema therapy with milk and bitter drugs), Shashtikashali pinda Sweda (sudation with boiled rice) and Parisheka.⁵

Ayurveda Therapy (Ayurveda formulations & Basti karma) may be helpful in reversing the pathology and improving the blood circulation to the head of hip joint. It is observed that during and after treatment, progression of disease is diminished.

Panchakarma therapy involving pinda swedana (a kind of sudation therapy) along with basti (enema therapy) followed by shaman therapy have shown satisfactory results and an improvement of quality of life of the person.

Intervention of Ayurveda Therapeutic Procedure

Therapeutic implementation of different Ayurveda procedures is reported as beneficial in relieving the symptoms and reversal of progression of disease. Here, a brief narration of case reports on AVN is summarized.

Kalwania *et al.*⁶ reported a case of female patient aged 35 years with complaints of pain and stiffness in both hip joints and thigh

region with difficulty in walking in the past 2 years. She was diagnosed as having AVN of neck of Femur (Bilateral) based on MRI reports. The Basti karma was planned in schedule of Kala Basti (enema therapy for 15 days). In this Kala Basti schedule (enema therapy for 15 days), panchatikshira basti given as a Niruha Basti and Anuvasana Basti given by Yasthimadhu Taila (in the amount of 50 ml) followed by oral medications like Kaishore guggulu (2 pills, 500mg each thrice a day), Dashmoola kwath (40 ml twice daily), Manjishtadi kwath (40 ml twice daily) and a combination of Ashwagandha (3g), Chopchini (500mg) and Madhuyashti churna (2g). Author concluded that after the course of treatment there was relief in sign and symptoms of the patient, marked improvement found in the pricking type of pain and stiffness in hip joint and thigh region. There was marked improvement in gait.

Vidya *et al.*⁷ reported a case of 65 years old male patient with complaint of pain in both hip joint and leg with difficulty in walking for 2-3 months. After clinical and radiological examination, it was diagnosed as a case of avascular necrosis. The case was managed with procedures like Abhyanga (massage), Swedana and Panchatikta ksheer basti for 21 days. Author did not report any oral medications. It was concluded by saying that after these treatments, there was considerable relief in pain. The range of motion was also improved.

Rupesh *et al.*⁸ reported a case of 37-year-old male patient (known case of contact dermatitis; under corticoid therapy since 3 years) complaining of pain in left hip region radiating to left anterior thigh with restriction of hip joint movement since 7 months. X-Ray left hip (AP and Lateral) and MRI revealed - Grade 3 (Steinberg classification system) Avascular Necrosis of left hip joint. Case was managed primarily with amapachan (digestive) and vatanulomana (proper direction of vata dosha) drugs followed by panchakarma procedures. Panchakola churna (one teaspoon twice a day), Gandharvahasthadi kashayam (60 ml twice) were administered internally and Dhanyamladhaara were prescribed primarily for 4 days. Sodhananga Snehapana (intake of medicated ghee) was given with Guggulutiktaka ghrita (for 7 days) followed by Mridu Virechana (mild purgation) with Avipathy choornam (20 g). Patra podala sweda (sudation therapy) with dhanwanthara taila was done for 7 days. After this basti (enema therapy) done for 4 days with Panchatikthaka Ksheera yoga followed by Navara Kizhi (Sali shashtika pinda swedam), was found effective in alleviating the symptoms. Guggulutikthakam kashayam (60 ml twice), Gandha Tailam (10 drops twice), Bonton capsules (1 tab twice) and Kashaya of Dhathri, Mustha, Amritha (60 ml) were used after Panchakarma procedure as follow up for 21 days. The author concluded that after treatment regimen, pain reduced and an improvement in the range of movements was observed.

Agrawal *et al.*⁹ reported a case series of 10 patients complaining Vankshan sandhishool (Pain in groin) and Vankshan sandhigraha (Stiffness in groin) diagnosed as Avascular necrosis of head of femur (grade III). The cases were managed by Panchatikta ksheerbasti (120 ml) and Aabha guggulu (500mg) daily for 1 month. After treatment, 58.33% of patient got relief from Vankshan sandhishool and 50% of patient got relief from Vankshan sandhigraha (stiffness). Author concluded that Ayurveda treatment with Panchatikta ksheerbasti and Abha guggulu was found effective in preventing progression of avascular necrosis of hip joint.

Chaturvedi *et al.*¹⁰ reported a case of 37-year male patient with complaints of pain and stiffness in bilateral anterior hip to knee region for one year which was associated with difficulty in doing normal daily activities such as walking, taking bath etc. The

patient was treated with Rūkṣhaṇa (Drying therapy) followed by Shodhana (bio purification) and Brūmhaṇa (rejuvenation). Agnicikitsālepa, Pariṣeka with Dhānyāmla (external application) and Daśamūla Kaṣāya (internal medication); Sarvāṅga cūrṇa bāṣpa svedana (fomentation) with Dhānyāmla bāṣpa and Amṛttara Kaṣāya and Mañjiṣṭhādi kṣāra basti (enema) were used as rukshana mode of treatment. Ṣaṣṭika śāli piṇḍa svedana (sudation using medicated rice), Mañjiṣṭhādi Kṣhara basti as Brūmhaṇa (rejuvenation). Guggulu tikta Kaṣāya was prescribed as follow up treatment. Author concluded that this therapy provided marked relief from pain, tenderness, stiffness and improvement in the gait which led to improved quality of life.

Chaganthi S. *et al.*¹¹ reported a case of 62-year-old male patient complaining Pain in the left hip joint radiating to thigh (anterior part), swelling in bilateral feet and decreased range of movements in the hip joint. The case was diagnosed as Avascular Necrosis of femur head (grade 4). Initially, patient had been administered Dīpana (carminative) and Pācana (digestive) with Hingvaṣṭka cūrṇa (half teaspoon thrice a day) Sunṭhi kaṣāya (40 ml) followed by nityavirecana (daily purgation) with Harītakī cūrṇa + gomūtra (cow's urine). Further, Saghrita kshirabasti (enema therapy with ghee and milk) was administered in kalābasti schedule (for 16 days). After treatment, the pain reduced (from Grade "9" to Grade "3" on "VAS"), pedal edema resolved completely and range of movement of hip joint got improved. Amṛttara kaṣāya, Mahāmañjiṣṭhādi kaṣāya, Sahacaarādi kaṣāyam, Guggulutiktaka ghṛta were prescribed as follow-up medication.

Kadlimatti SM *et al.*¹² reported details of four patients of idiopathic AVN of the femoral head were treated with Tikta dravya siddha ksheer basti, Abha guggulu, Ajasthi bhasma. In this an effort was made to evaluate the efficiency of ayurvedic formulation in the conservative management of AVN of femoral head. The therapy is effective in managing Avascular necrosis by relieving pain, tenderness, general debility and improves the gait of the patient as well. After the therapeutic procedures the disease did not worsen in any of the four cases.

Jagdhane *et al.*¹³ reported a case of 37-year-old male patient complaining pain in both lower limb and groin region, weakness in lower limb and difficulty in walking for 1 year. It was diagnosed as a case of avascular necrosis based on MRI (Modified Ficat's grade 3 in Right side and Grade 2 on Left side). Patient was administered snehan (oil anointing), swedana (sudation) followed by Pancha-tikta Ghṛita-kshira basti (starting from 100 ml to 250 ml) for 30 days. Hingvashtak Churna (3g bd), Lakshadi Guggul (3tab bd) and Asthimajja pachak Kwatha (bd) were given as internal medication. According to the author the complaints of the patients like pain in both lower limbs and groin was relieved by 70-80 % and he was able to walk without limping for at least for 30 to 45 minutes

Vaishali Kuchewar¹⁴ reported a case of 55 years old patient with the complaints of severe pain in both hips radiating to thighs, unable to walk, sit or lie on either side. He was diagnosed as avascular necrosis of femur head (bilateral- stage III C) from MRI. Management was done on the basis of three components of Rasayana chikitsa (nutrition), Agni deepana (digestion& metabolism) and Srotoshodhana (removing obstruction in Microchannels). Patient was administered Abhyanga (anointing with ksheerabala taila) and Swedan (sudation with nirgundi patra potali) followed by Panchatikta ksheera basti (for 21 days) along with palliative medications. Internal medicines like Gandharva haritaki (10 g at night for 5 days), Kaishor guggul (500mg twice for 21 days), Sarivadyasava (20 ml twice for 21 days) and Tab. Me-cal (1 tab twice for 21 days), Siva gulika (500 mg twice) were given. On follow up Panchatikta ghṛuta (20 ml morning),

Sarivadyasava (20 ml twice), Tab. Me-cal (1 tab twice) and Shiva gutika (500 mg twice) were given for 2 months. After treatment, pain was reduced; the range of movement was also improved. MRI after one year of treatment showed no progression in degeneration of bone.

Chawre *et al.*¹⁵ reported a case of 31-year-old female patient with complaint of pain in both knee joint, pain during walking, pain in both hip joint and pain on movements in lower limb such as flexion, extension, lateral flexion and rotation for 2 years. MRI showed grade IV changes in right hip joint and grade II changes in left hip joint along with right hip joint effusion. Patient was given decoction made of rukshana (drying up) drugs (20 ml daily) for 7 days. It was followed by Majjabasti (enema therapy specially made with bone marrow of goat) for 21 days. Snehana (oil massage was done with Mahanarayan Tail) and Swedan (sudation by Dashamula Kwath) was done as preparatory procedure prior to enema therapy. The therapy provided marked relief from pain and tenderness and improvement in gait.

Meena RL *et al.*¹⁶ reported a case of 23-year-old male patient with complaints of pain in bilateral hip region since one and half years which was associated with difficulty in routine activities such as walking, sitting, squatting along with changes in the gait. MRI report showed Grade III avascular necrosis of left femoral head with reactive marrow edema in left femoral neck and mild left hip joint effusion and Grade II avascular necrosis of right femoral head. This case was managed with Panchkarma procedures. Sarvanga Abhyanga (full body massage) with Ksheerabala Taila followed by Bashpa Swedana (Full body fomentation) with Dashmoola Kwatha was intervened for 16 days. Dashmooladi Niruha and Yastimadhu Taila Siddha anuvasana basti was administered for a period of Kaal basti (16 days). Along with these Dashmoola Kwatha (10 ml) TDS, Kaishore Guggulu (500 mg TDS), Panchatikta Guggulu Ghrita (1 tsp BD), Panchasakar

Choorna (5 g bed time) Internal medication was prescribed for a period of 3 weeks. In this study, author concluded that there was significant improvement in range of hip joint and pain after the treatment.

DISCUSSION

Avascular necrosis is clinically characterized by gradual onset of pain in motion and relieved by rest in affected joint with radiation down the affected limb, at times leading to muscle spasm. Radiologically the picture is variable depending upon the stage of the disease. Head of the femur has minimum blood supply with few anastomoses predisposing it to avascular necrosis. Necrosis appears as mottled area and the fibrous zone as a radiolucent band with demineralization of uninvolved bone¹⁷. Mainly loss of blood supply or malnourishment to the bone is involved.

In Ayurveda, the pathogenesis of AVN can be explained that, there is lack of Rakta (blood supply) to hip joints or head of femur due to Strotorodha (Micro channels blockage). It causes malnourishment to the joints or bone (asthi dhatu kshaya). This condition resembles with Asthimajjagatavata according to Ayurveda.

Authors mainly concentrated on the Vata samana (alleviating vata dosha) chikitsa. Many of the studies started with Agnideepana (carminative) Chikitsa. Prior to the Sneha Swedana (anointing and massaging) chikitsa some opted for Rukshana (drying up) chikitsa like Dasamulakwath dhara (pouring hot decoction of dasamul) and Dhanyamla dhara (pouring dhanyamla). Ksheera vasthi (enema therapy using medicated milk) has been given an important position in the treatment of Avascular Necrosis. Different medication prescribed in above said case reports are summarized in Table 1.

Table 1: Summary of Ayurveda medications

Palliative medicines		Panchakarma procedures	
Kashaya	Amrittottara kashaya Asthimajja pachak kashaya Dashmool kashaya Gandharvahastadi kashaya Manjisthadi Mahamanjisthadi kashaya Guggulutikta kashaya Sahacharadi kashaya Dhatrimustamruta kashaya Shunthi kashaya	Swedan	Churna Baspa sweda, Mahanarayan taila. Nirgundi patra potli sweda. Patra potali sweda Shalishastik pinda sweda
Vati	Kaishore guggulu Abha guggulu Lakshadi guggulu Shiva gulika Tab. Me-Cal	Snehan /Abhyanga	Ksheera bala taila
Churna	Ashwagandha, Chopchini, Madhuyasti Hingwasthk chuma, Gandharva-haritaki Panchkol churna,	Parisheka	Dhanyamla dhara Dashmool kwath.
Ghrita	Guggulutiktaka ghrita	Basti	Panchtikta ksherr basti Manjisthadi kshara basti, majja basti
Taila	Gandha taila	Anuvasan	Yastimadhu taila
Bhasma	Ajasthi bhasma	Virechan	Mrudu Avipati churna. Haritaki+ gomutra
Asava	Sarivadyasava	Lepa	Agni chikitsa lepa

Ultimate Dhatu poshana (nourishing asthi majja dhatu) was aimed by the authors. For that the corresponding Srotas (micro channels) has to be cleared and Agni (digestive fire) has to be corrected. Swedana (therapeutic sudation) also plays an important role for Vata roga. Due to Ushna and Snighdha properties, it pacifies Vata dosha. These ultimately lead to removal of the obstruction of nourishment to the relevant bone and joints. By clearing the Srotas further necrosis can be prevented and the drugs will help in alleviating vata. The external and internal use of Ghrita (ghee) will help in Agnivridhi (increase in digestive fire) and is also Vatasamana. Ksheera vasthi particularly with Tikta (bitter) rasa drugs is indicated in asthi ksaya. The khara guna of bitter rasa drugs will help in asthi dhatu vridhi (nourishment of bone tissues). The snigdha (lubricating) guna of ksheera will bring down the vata vridhi. Brumhana therapy will bring about asthivardhana and vatasamana, thus relieving the symptoms of Avascular Necrosis. The Guggulu preparations helps in pacification of vitiated Vata dosha and relieves pain.

CONCLUSION

Avascular necrosis (AVN) of the femoral head is an increasingly common cause of musculoskeletal disability, and it poses a major diagnostic and therapeutic challenge in front of whole medical community, although patients are initially asymptomatic, avascular necrosis (AVN) of the femoral head usually progresses to joint destruction, requiring total hip replacement (THR), usually before the fifth decade

From above review work, it can be concluded that Panchakarma therapy can be a better alternative for satisfactory management of Avascular necrosis without surgical intervention. Earlier diagnosis always provides a chance of better prognosis through Ayurveda

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