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Case Study

THERAPEUTIC EFFECT OF *PANCHAKARMA* IN BILATERAL AVASCULAR NECROSIS OF THE FEMORAL HEAD

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ABSTRACT

Avascular necrosis (AVN) of the femoral head is a progressive degenerative disorder caused by compromised blood supply, leading to pain, joint dysfunction, and disability. In Ayurveda, AVN can be correlated with *Asthi-Majjagata Vata*. Surgical intervention is commonly advised, though many patients seek conservative alternatives. This case study evaluates the efficacy of Ayurvedic management in a 31-year-old male with bilateral femoral head AVN (Stage IV right hip, Stage II left hip). The treatment protocol included *Churna Basti*, *Navara Dhara*, followed by *Manjistadi Ksheera Basti* and *Panchatikta Ksheera Basti*. Clinical assessment was performed using the Merle d'Aubigné Hip Score before and after treatment. The patient showed significant improvement in pain, hip mobility, gait, and walking ability, with marked enhancement in functional scores. The findings suggest that *Panchakarma*-based Ayurvedic interventions with *Vatahara*, *Brimhana*, and *Rasayana* effects may offer an effective conservative approach in AVN management and help delay disease progression and surgical intervention.

INTRODUCTION

Osteonecrosis, also known as avascular necrosis (AVN), is a degenerative bone condition characterized by the death of bone cells due to an interruption in the subchondral blood supply[1]. It primarily affects the epiphysis of long bones at weight-bearing joints, with the most common sites being the femoral head, knee, talus, and humeral head. Among these, the hip is the most frequently affected location.

Avascular necrosis of the femoral head occurs when the blood supply to the proximal femur is disrupted. It can result from both traumatic and atraumatic causes, including fractures, dislocations, chronic steroid or alcohol use, coagulopathies, and congenital conditions. In the United States, AVN of the femoral head is diagnosed in an estimated 20,000 to 30,000 new cases each year. The reduction in subchondral blood flow leads to hypoxia, causing cellular membrane breakdown and subsequent necrosis. Pathologically, early necrosis is marked by an inflammatory response dominated by neutrophils and macrophages. Over time, this results in subchondral collapse and progressive joint degeneration.

In its early stages, osteonecrosis of the hip is often asymptomatic. As the disease progresses, patients typically present with hip and groin pain, which may also radiate to the buttock and thigh. Pain at rest, stiffness, and gait disturbances are common symptoms in later stages.

Diagnosis is based on clinical presentation and imaging studies. X-rays, radionuclide bone scans, and magnetic resonance imaging (MRI) are commonly used, with MRI being the gold standard for diagnosis. MRI reveals osteosclerotic changes due to impaired osteoclast function, while radiographs may show subchondral radiolucency, known as the pathognomonic "crescent sign," indicating subchondral collapse.

Treatment may include medical and surgical options. Statins can improve blood flow, while bisphosphonates or NSAIDs help reduce bone loss and pain. Surgically, core decompression relieves pressure

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and promotes blood flow. Bone grafts, with or without a blood supply, support bone healing. Osteotomy realigns bone to reduce joint stress. In advanced cases, damaged areas may be replaced with a donor graft or through total joint replacement.

Based on its signs and symptoms in present case, this condition is considered under the broad spectrum of *Asthi-Majjagata Vata.*

Case Report

The patient presents with complaints of pain in bilateral hip region (Right > Left) associated with stiffness, since 3 years.

History of present illness

A 31-year-old male, with no known history of systemic illness, presented to the outpatient department with complaints of bilateral hip pain persisting for the past three years. The pain initially began as a mild discomfort in the right inguinal region during routine daily activities and progressively radiated to the entire right hip. There was no preceding history of trauma or injury. Over time, the pain gradually intensified and became persistent, eventually involving the left hip as well. The patient reported that the pain remained constant throughout the day, including during periods of rest. He also experienced increasing stiffness in both hips, leading to significant difficulty in performing daily activities. Due to the progressive nature of his symptoms, he sought medical attention and underwent an MRI, which revealed bilateral avascular necrosis (AVN) of the femoral heads- grade 4 on the right side and grade 3 on the left. Surgical intervention was advised; however, the patient was reluctant to undergo surgery and subsequently presented to SJCAUH hospital for further evaluation and conservative management options.

History of past illness: Nothing significant

Table 1: Personal History of patient:

Name	XYZ
Age	31 Years
Marital status	Unmarried
Occupation	Sales executive
Ahara	Mixed
Rasa	*Katu rasa pradhana sarva rasa*
Agni	*Samagni*
Kosta	*Madhyama*
Nidra	Disturbed
Emotional status	Stress (economical)
Vyasana	None

Table 2: General examination

Height	5.9feet
Weight	77kg
BMI	23.8kg/m^2
Pallor	Absent
Icterus	Absent
Clubbing	Absent
Lymphadenopathy	Absent
Cyanosis	Absent

Table 3: *Asthasthana pareeksha*:

Nadi	*Vatakapha*
Mala	*Abaddha*
Mutra	*Prakruta*
Jihwa	*Alipta*

Shabda	*Prakruta*
Sparsha	*Anushna sheeta*
Drik	*Prakruta*
Akruthi	*Madyama*

Table 4: *Dashavidha pareeksha*

Prakriti	*Vatakaphaja*
Vikriti	*Vatapradhana Tridosha*
Sara	*Madhyama*
Samhanana	*Madhyama*
Satmya	*Katupradhana sarvarasa*
Satva	*Madhyama*
Aharashakti	*Abhyavarana – Madhyama* *Jarana – Madhyama*
Vyayamashakti	*Avara*
Vaya	*Madhyama*
Pramana	*Madhyama*

Table 5: *Samprapti Ghataka*:

Dosha	*Vata kapha*
Dushya	*Rakta, Asthi, Majja*
Agni	*Jatharagni, Dhatvagni*
Agnidushti	*Mandagni*
Udbhavasthana	*Pakvashaya*
Sancharasthana	*Sarva- shareera*
Vyaktasthana	*Trika Sandhi*
Rogamarga	*Madhyama*
Sadhyasadhyata	*Krichrasadhya*

Musculoskeletal System

Gait- Antalgic

Curvature Of Spine- Normal

Table 6: Hip Joint Examination

Inspection			**Palpation**		
	Right	**Left**		**Right**	**Left**
Discoloration	Absent	Absent	Tenderness	Present	Present
Scar Marks	Absent	Absent	Warmth	Absent	Absent
Swelling	Absent	Absent	Crepitus	Present	Absent
			Stiffness	Present	Present
Range of Movements					
	Right	**Left**			
Flexion	30^0	70^0			
Extension	5^0	10^0			
Adduction	10^0	15^0			
Abduction	15^0	20^0			
External Rotation	0^0	10^0			
Internal Rotation	0^0	5^0			

Table 7: Specific signs elicited in the patients

Sign	Right	Left
SLR	Couldn't be elicited	
Bowstring		
Bragard's		
Trendelenburg sign	Positive	Positive
Heel walk	Not possible	Not possible
Toe walk	Not possible	Not possible
Walking time	Able to walk with support for 3 minutes	
Pain scale	8	6
Stiffness	> During activity	Mild

Table 8: Contents of *Manjistadi ksheera basti,* and *Panchatikta ksheera basti*

Manjistadi ksheera basti		***Panchatikta ksheera basti***		***Churna basti***
Makshika	60ml	*Makshika*	60ml	*Vaishwanara churna- 25g*
Saindhava	10gms	*Saindhava*	10gms	*Rasna churna- 25g*
Guggulutiktaka ghrita	80ml	*Panchatikta ghrita*	80ml	*Shatapushpa-20g*
Kalka- Shatapushpa+ Manjista+ Godanthi Bhasma (1 pinch)	20gms	*Kalka- Manjista+ Yastimadhu + Ashwagandha + Godanthi Bhasma* (1 pinch)	20gms	*Saindhava- 10g*
				Kottamchukkadi taila- 30ml
				Nimbu swarasa- 50ml
Manjistadi ksheerapaka	300ml	*Panchatiktaksheerapaka*	300ml	*Ushna jala- 250 ml*
Anuvasana basti with *Balaguduchyadi taila* and *Guggulutiktaka Ghrita* (40ml each)	80ml		*Anuvasana basti* with *Balaguduchyadi taila* and *Guggulutiktaka Ghrita (*40ml each*)*	
Total	470ml		470ml	410ml

Table 9: *Nidana panchaka*

Nidana	*Aharaja: Ati Ruksha, Sheeta Ahara Sevana, Abhojana* *Viharaja: Ati chankramana*
Purvaroopa	*Shula* in right *trika sandhi*
Roopa	Pain in Bilateral hip region
Upashaya-Anupashaya	Nothing specific

Investigations

MRI bilateral hip- (15/11/2024)

Superiorly displaced right femoral head impinging the right acetabulum with reduction in right hip joint space. Altered contour of the right femoral head with flattening and subchondral collapse showing areas of geographic altered signal within.

Secondary degenerative changes seen in the right hip.

- Imaging features suggest Stage IV Avascular necrosis of right hip with secondary degenerative changes.
- Marrow oedema noted in the right acetabulum, right femoral head and adjacent gluteal muscles. Geographic area of altered signal intensity noted in the left femoral head without imaging evidence of cortical collapse.
- Imaging features suggest stage II Avascular necrosis of left hip.

Table 10: Assessment criteria (Merle d' Aubigne hip score)

Score	Pain	Mobility	Ability to walk
0	Pain is intense and permanent	Ankylosis in abnormal position	Impossible
1	Pain is severe, disturbing the sleep	Ankylosis in normal position or in a very slight abnormal position	Only with crutches
2	Pain is severe when walking, prevents any activity	Flexion < 40° (Abduction= 0°) or very slight joint deformity	Only with 2 canes
3	Pain is severe but maybe tolerated with limited activity	Flexion 40°-60°	Limited with one cane (less than one hour), very difficult without a cane.
4	Pain only after walking and disappearing with rest	Flexion >60°-80° (can tie shoelaces)	Prolonged with one cane, limited without a cane (limp).
5	Very little pain and intermittent, does not preclude normal activity	Flexion >80°- 90°, limited abduction (>25°)	Without a cane but slight limp.
6	No pain at all	Normal, flexion > 90°, Abduction > 25°	Normal

Table 11: Results (Merle d' Aubigne hip score)

	Phase 1	
	BT	AT
Pain	1	3
Mobility	1	3
Ability to walk	1	4
Total	3	10

DISCUSSION

Ayurveda, the ancient Indian system of medicine, offers a holistic approach to managing Avascular Necrosis (AVN) through *Panchakarma* and lifestyle modifications aimed at supporting healing and overall well-being. Avascular Necrosis is the death of bone tissue caused by an interruption of the blood supply, often leading to bone destruction, joint dysfunction, and disability. It is a progressive and debilitating condition. Conventional treatment often involves surgical options such as core decompression or total hip replacement. However, patients who are reluctant to undergo surgery frequently seek alternative therapies, including Ayurveda.

In Ayurvedic understanding, based on the symptoms exhibited by the patient, this condition is correlated with *Asthimajjagata Vata*[2]. The *Chikitsa* for *Asthimajjagata Vata* includes *bahya* and *Abhyantara snehana*[3], and *Tikta ksheera basti*[4]. In this case, *Churna basti*[5] was initially administered for three days to manage acute pain. This was followed by *Navara dhara* as *Lakshanika chikitsa*. Subsequently, *Manjistadi ksheera basti*, followed by *Panchatikta ksheera basti*, was implemented as *Samprapti Vighatana Chikitsa* to address the root cause of the condition.

Churna basti is a type of *Niruha Basti* containing *Saindhava*, *Taila, Rasnadi Churna*, *Koshna* Jala and *Amla Dravya* as main ingredients. *Churna basti* acts on *shula* which arises due to vitiated *Vata dosha*. Its ingredients include *Vaishwanara churna* and *Rasna churna* which are having *Ama pachaka, Kapha vatahara* and *Shothahara* property.

Navara Dhara was administered as part of *Bahya chikitsa* to provide both *Snehana* and *Swedana* effects, essential for pacifying aggravated *Vata dosha* in *Asthimajjagata Vata*. This therapy involves pouring a warm mixture of *Bala Moola Kashaya*, milk, and *Shashtika Shali* rice over the body. *Navara Dhara* is known for its potent *Brimhana*, *Balya*, and *Rasayana* actions. As a *Snigdha Seka* procedure, it enhances promotes *Dhatu Vriddhi*[6], particularly contributing to the nourishment and regeneration of *Asthi* and *Majja Dhatu.*

Manjistadi Ksheera Basti was administered as part of *Samprapti Vighatana Chikitsa* to address *Vata-pradhana vyadhis* involving *Asthi* and *Majja dhatus*. The formulation, comprising *Manjistha*, *Godanti Bhasma*, *Shatapushpa*, *Yashtimadhu*, *Ashwagandha*, and *Ksheera*, provided *Vatahara*, *Brimhana*, *Shothahara*, *Raktaprasadhaka*, *Balya*, and *Rasayana* actions. These properties helped nourish depleted tissues, improve

circulation, reduce inflammation, and restore *dhatu* integrity, making it particularly effective in degenerative conditions like *Asthimajjagata Vata*.

This was followed by *Panchatikta Ksheera Basti*, a classical intervention indicated for chronic *Vata* disorders affecting the bones and marrow. Prepared with *Panchatikta dravyas* processed in medicated milk, this *Basti* offered both *Shodhana* and *Brimhana* effects. Its *Tikta rasa*, combined with *Ksheera*, facilitated deep tissue detoxification while supporting regeneration of *Asthi dhatu*. The sequential use of these *Bastis* enhanced therapeutic outcomes by simultaneously addressing *dosha* vitiation and *dhatu Kshaya.*

Anuvasana basti was given with *yamaka Sneha (Gugguluiktaka Ghrita*[7] (30ml) *+ Balaguduchyadi taila* (30ml)). The majority of ingredients in *Guggulutiktaka Ghṛita* exhibit *Tikta rasa*, *Uṣhṇa virya*, and *Madhura* and *Kaṭu vipaka*, which help maintain the proper functioning of *Dhatvagni*. This supports enhanced nourishment of the *Asthi dhatu*, thereby reducing degeneration of the *Asthi* and *Majja dhatu* and aiding in their regeneration. *Balaguduchyadi Taila* possesses *Rasayana* and *Brumhana* properties. It is indicated in conditions such as *Saruja*, *Sadaha*, *Sashopha*, and inflammatory disorders. Additionally, *Balaguduchyadi Taila* is *Vataghna* and exhibits *pitta* and *Rakta poshana* properties, which contribute to improving muscle strength.

CONCLUSION

This case highlights the potential of Ayurveda in offering a non-surgical, individualized, and holistic management protocol for AVN. The combination of *Brimhana, Vatahara, Shothahara*, and *Rasayana* therapies shows promising results in delaying disease progression and improving the patient's quality of life.

In this case, the clinical outcomes of this Ayurvedic approach were evaluated using the Merle d'Aubigné Hip Score, which demonstrated a noticeable improvement in the patient's pain levels, range of motion, and gait stability. This supports the efficacy of Panchakarma procedures and Ayurvedic formulations in the conservative management of AVN.

This case highlights the significance of a holistic treatment approach that not only alleviates physical symptoms but also corrects underlying *Dosha* imbalances, thereby promoting overall health and well-being.

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