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Case Study

A NOTEWORTHY IMPROVEMENT IN AVASCULAR NECROSIS OF HEAD OF THE FEMUR THROUGH *PANCHAKARMA*

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ABSTRACT

Avascular necrosis is a clinical condition where there will be cellular death of the bone components as a result of interruption to the blood supply. According to Ayurveda this condition can be studied under *Vatarakta* and *Asthimajjagata vata* or *Asthi kshaya* depending on the chronicity. Materials and methods: This case series involves four cases diagnosed with Avascular necrosis of femur and treated with various treatment modalities like, *Sarvanga parisheka, Basti* and *Shashtikashali pinda sweda* depending on the clinical presentation and the severity of the disease. Result: There was significant reduction in the symptoms of Avascular necrosis in all the 4 cases and considerable changes in the MRI of one patient. Conclusion: According to Ayurveda there is no direct correlation for this disease. If the disease is treated based on the chronicity and the pathogenesis involved, significant result can be obtained.

INTRODUCTION

Avascular necrosis is defined as cellular death of the bone components due to interruption of the blood supply. The bone structures then collapse, resulting in pain, loss of joint function and long-term joint damage. It is also known as osteonecrosis, aseptic necrosis and ischemic bone necrosis. It typically affects the epiphysis of long bones at weight bearing joints. When the disease advances, it may result in subchondral collapse, threatening the viability of the joint involved[1].

Avascular necrosis is most common in hip joint, but can also occur in other major joints. It usually gets diagnosed when the person starts complaining about pain and restricted movement, which worsens with activity and improves at rest. If left untreated, the bone collapses. Prognosis of avascular necrosis may include duration of the disease, chances of complications etc.

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Causes[2]

Even though exact cause for avascular necrosis is unknown, it can occur due to two main causes,

1. Traumatic: Like displaced hip fracture, iatrogenic secondary to anterograde nailing
2. Atraumatic: Like alcohol, corticosteroids.

Symptoms

Early stages of avascular necrosis are asymptomatic. Later symptoms include,

1. Mechanical pain with variable onset and severity.
2. Pain in hip and groin region, which maybe dull or boring type.
3. Resting pain along with stiffness.
4. Referred pain in buttock, posterior thigh and also antero medial aspect of thigh.
5. Aggravation of pain while climbing stairs, standing from sitting position.
6. Decreased range of movement with changes in gait.

Ayurvedic understanding of Avascular necrosis

According to Ayurveda, there is no direct correlation for avascular necrosis. By looking into pathogenesis, it can be understood under *Vatarakta* and *Asthimajja-gata vata* or *Asthi kshaya*.

In the disease *Vatarakta*, *Vata dosha* gets vitiated by its etiological factors and at the same time, *Rakta* gets vitiated by its own etiological factors. The vitiated *Rakta* produces obstruction to the movement

of the *Vata*. In the later course, the obstructed *Vayu* in turn vitiates *Rakta dhatu* and produce pain restricted movement etc[3]. In the later stages, there will be *Vataprakopa* which further leads to *Kshaya* of *Asthi dhatu*, as they have *Ashraya ashrayi sambandha.*

Treatment according to Ayurveda depends upon the chronicity of the disease. Here we are presenting 4 success cases with different chronicity and the treatment planned.

Case Report

Case 1

A male patient not a known case of hypertension and diabetes mellitus was apparently healthy 7 months back. Gradually he developed pain in right hip and then in left hip too. Pain aggravates on movements involving hip joint and subsides on rest. Gradually the pain started radiating to the anterior aspect of both thigh region associated with heaviness and stiffness in both lower limbs. He consulted nearby physician and MRI revealed Grade 2 AVN of femoral head. He was advised with surgery but patient preferred Ayurvedic line of management. Hence, he approached the Panchakarma OPD, Government Ayurvedic Medical College, Bengaluru.

Case 2

A male patient, who is not a known case of diabetes mellitus and hypertension was apparently healthy 7 months back. Gradually he developed pain in the bilateral groin region first on left side, later in the right hip joint too. Sometimes pain gets radiated to lower limb till the knee joint on physical activity. Pain gets aggravated on flexing hip and knee, getting up from sitting position and relives by heat application. For all these complaints he approached nearby physician and was diagnosed with avascular necrosis of bilateral hip joint of grade 2 and underwent decompression surgery of left hip joint 5 months back but couldn't find satisfactory relief. Hence for further management he approached the Panchakarma OPD, Government Ayurvedic Medical College, Bengaluru.

Case 3

A female patient of age 63 years, who is known case of hypertension since 1½ years was apparently healthy 2 years ago. Gradually developed severe throbbing and dragging type of pain in bilateral hip joint, which was more in the right hip. Pain used to radiate towards the anterior aspect thigh associated with stiffness and heaviness. She feels difficulty while walking and folding the leg at hip joint. The pain gets aggravated during night time, getting up from bed, lying on the affected side and standing for a longer duration. Relives on taking rest. For all these complaints she consulted an allopathic physician and got diagnosed with avascular necrosis of bilateral hip joint and advised to undergo decompression of bilateral femoral head with fibular shunt graft but she preferred Ayurvedic line of management. So, she approached the Panchakarma OPD, Government Ayurvedic medical college, Bengaluru.

Case 4

A male patient of 32 years who is n/k/c/o DM and HTN was otherwise normal 8 months back. He gradually developed pulling and pricking type of pain in left hip without radiating to lower limbs along with heaviness of lower limbs. Pain is continuous in nature without diurnal variation. Pain aggravates on jogging, climbing steps. For all these complaints he consulted nearby physician and was prescribed with analgesics which gave him temporary relief. Hence for the further management he approached the Panchakarma OPD, Government Ayurvedic Medical College, Bengaluru.

Assessment criteria (Merle d'Aubigne hip score): Shown in table no. 01

Table 1: Showing the 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

Absolute results for hip function: Very good: 11-12, Good: 10, Medium: 9, Fair: 8, Poor: ≤7

Clinical Findings

Table 2: Showing the clinical findings

	Case 1	**Case 2**	**Case 3**	**Case 4**
Gait	Antalgic	Antalgic	Antalgic	Antalgic
Spinal curvature	N	N	N	N
Trendelenberg test	+ve	+ve	+ve	+ve
Range of movement	Restricted	Restricted	Restricted	Painful
Stiffness	Present	Present	Slightly present	Absent
Tenderness	Absent	Absent	Absent	Absent
Crepitus	Absent	Absent	Absent	Absent
SLR	Couldn't elicit due to restricted hip movement	-ve	-ve	-ve
Heel walk and toe walk	Painful	Painful	Painful	painful
Walking time for 50m	5min	3 min 30 sec	4 min	3 min 15sec

Investigation (MRI)

Table 3: Showing the investigation (MRI)

Case 1	**Case 2**	**Case 3**	**Case 4**
Avascular necrosis of Bilateral hip joint – Ficat and Arlet Stage-2 on both	Avascular necrosis of Bilateral hip joint – Ficat and Arlet Stage-2 on both	Avascular necrosis of right hip joint- Ficat and Arlet Stage 4 Avascular necrosis of left hip joint- Ficat and Arlet Stage-2	Avascular necrosis involving left femoral head with mild cortical collapse, Ficat and Arlet- Stage 3

Treatment protocol adopted

Table 4: Showing the treatment protocol adopted

Case 1	**Case 2**	**Case 3**	**Case 4**
1. *Sarvanga mahamanjishtadi kashaya Parisheka* for 7 days 2. *Manjishtadi kshara* followed by *Ksheera basti* in *Kalabasti* pattern 3. Oral medicine during the treatment and at the time of discharge- *Kaishora guggulu 1-1-1 A/f*	1. *Sarvanga mahamanjishtadi kashaya Parisheka* for 7 days 2. *Manjishtadi kshara* followed by *Ksheera basti* in *kalabasti* pattern 3. Oral medicine during the treatment and at the time of discharge- *Kaishora guggulu 1-1-1 A/f*	1. *Sarvanga mahamanjishtadi kashaya Parisheka* for 7 days 2. *Manjishtadi kshara and Ksheera basti* followed by *Panchatikta ksheera basti* in *Karma basti* pattern 3. *Sashtikashalipinda sweda* 7days 4. Oral medicine during the treatment and at the time of discharge- *Lakshadi guggulu 1-1-1 A/f*	1. *Manjishtadi kshara* and *Ksheera basti* followed by *Panchatikta ksheera basti* in *Karma basti* pattern 2. Oral medicine during the treatment and at the time of discharge- *Lakshadi guggulu 1-1-1 A/f*

RESULT (Merle d'Aubigne hip score)

Table 5: Showing the result (Merle d'Aubigne hip score)

	Case 1		**Case 2**		**Case 3**		**Case 4**	
	BT	**AT**	**BT**	**AT**	**BT**	**AT**	**BT**	**AT**
Pain	1	5	1	4	1	6	1	5
Mobility	2	5	3	6	3	6	2	5
Ability to walk	5	6	4	6	5	6	4	6
Total	8	16	8	16	9	18	7	16

MRI changes in Case 3

Table 6: Showing the MRI changes in Case 3

Before treatment (18/04/2022)	After treatment (09/11/2022)
Avascular necrosis of right hip joint- Ficat and Arlet Stage 4 Avascular necrosis of left hip joint- Ficat and Arlet Stage-2	Altered marrow signal intensity with cortical irregularity and small subchondral cysts in the anteromedial aspect of bilateral femoral head, predominantly between 11 and 1 o clock position- bilateral Avascular necrosis; Ficat and Arlet 2/3

DISCUSSION

Avascular necrosis is most common in hip joint, but can occur in other major joints too. Goal of the treatment in avascular necrosis involves,

1. Preventing further loss of the bone tissue.
2. Improving the nourishment to the bone.
3. Reducing the pain and improving the range of movement of the joint involved.

Sarvanga Parisheka

First 3 cases presented with *Kapha avarana lakshana* like stiffness and heaviness in the affected limb. According to *Acharya Vagbhata*, whenever there is *Vata prakopa* due to *Margavarana*, one should go for *Ruksha chikitsa* like, *Lepa, Seka* etc[4]. As there was involvement of *Rakta* in the *Samprapti, Mahamanjishtadi kashaya Seka* was adopted.

Basti

Acharya Sushruta considers *Basti* as prime line of management for *Vata, Pitta, Kapha* and *Rakta dosha*[5]. Even though the disease is in *Vatarakta* stage or *Asthi kshaya* stage, *Basti* plays a key role[6,7] but selection of the *Dravya* for the *Basti* differs.

Manjishtadi kshara basti

In case of avascular necrosis, blood flow to the femoral head is affected due to *Margavarodha*. Osteonecrosis or *Asthikshaya* in this case is due to *Raktavaha srotorodha*. Thus, combating the *Srotorodha* stands first while treating the case. Hence in all the four cases, 3 *Manjishtadi kshara basti* was administered for first three days of course of the *Basti*. It is *Tikta rasa pradhana* which acts as *Rakta prasadaka* and *Gomutra arka* which is added into the *Basti* as *Avapa dravya* helps in *Kapha nirharana*.

Manjishtadi ksheera basti

After three *Manjishtadi kshara basti, Manjishtadi ksheera basti* was planned for next three days in all the cases. *Ksheera* possess *Snigdha Guna, Madhura rasa* and *Vipaka*, which acts as *Vatahara* and *Brumhana*[8]. *Manjishta* being *Tikta rasa pradhana, Ushna veerya* helps in correcting the *Dhatvagni*. As the *Basti dravya* reaches the *Sarva shareera* by the virtue of its *Veerya*[9], *Manjishtadi ksheera basti* acts as *Vatahara* and *Rakta prasadaka*.

Panchatikta ksheera basti

Acharya Charaka mention, *Tikta rasa sadhita ksheera basti* in the management of *Asthi kshayaja vikara*[10]. It is believed that this treatment modality maybe beneficial in the neovascularization of the affected portion of the bone and thereby yielding bone regrowth. As the case three and four presented with grade 3 Avascular necrosis, where the patients had *Asthi kshaya lakshana*, *Karma basti* pattern was followed and *Panchatikta ksheera basti* was administered for next 6 days.

Shashtikashalipinda Sweda

It is a type of *Bahya sweda* and *Maha sweda*, which results in vasodilation and thereby increases blood flow to the affected site, thus helpful in reverting the pathology. It consists of *Go dugdha, Shashtika shali* and *Balamula qwatha Choorna*, which acts as *Vatahara* and *Brumhana* and strengthens the surrounding muscle tissue and nourishes the nervous system. In the case 4, *Shashtikashalipinda sweda* was done for 7 days, which increased tissue extensibility and thus helped in increasing the range of movement.

Shashtikashali pinda sweda works on pressure and vibratory effect on the body. While performing on the hip joint, mild pressure should be applied to avoid fracture at micro levels.

Kaishora guggulu

It is the drug of choice in the disease *Vatarakta* as it contains *Guduchi* as its main ingredient. It helps to clear the obstruction in the blood vessels and enhance the blood circulation to the bone.

Lakshadi guggulu

It is mainly indicated in the *Asthi vikara* which mainly helps in bone regrowth as it contains ingredients like *laksha, Asthishrunkhala, Arjuna* etc which has the target towards bone healing.

Among the four cases, case 1 and 2 presented with pain and stiffness and the MRI reports revealed grade 2 avascular necrosis of head of the femur. Hence *Vatarakta* line of management, like *Manjishtadi kshara* followed by *Ksheera basti* along with *Kaishora guggulu* as oral medication was given. In case of case 3 and 4, the patient presented with grade 3 to 4 avascular necrosis, where there will be destruction and complete

collapse of the head of the femur. This could be understood as *Asthi kshaya* and thus *Tikta ksheera basti* was planned after the *Manjishtadi kshara* followed by *Ksheera basti* in *Karma basti* pattern along with *Lakshadi guggulu* as oral medication.

All the four patients had the history of corticosteroidal intake prior to the appearance of the symptoms, which is one among the predisposing factor for this disease. There was noteworthy improvement in all the four cases at the end of *Panchakarma* treatment.

CONCLUSION

Avascular necrosis is a condition which has no permanent cure, rather a palliable condition. Joint replacement is the only alternative, which has its own set of limits and complications. However, set of *Panchakarma* treatments can prevent further progression of the disease and provide better living condition to the patient. These 4 cases showed significant improvement. Further research on large sample size is required to build up the *Panchakarma* treatment protocol for avascular necrosis of head of femur.

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