



## MULTI-MODAL AYURVEDIC MANAGEMENT OF AVASCULAR NECROSIS OF HEAD OF FEMUR: A CASE REPORT

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Article Received on 28/11/2023

Article Revised on 17/12/2023

Article Accepted on 07/01/2024

### ABSTRACT

Avascular necrosis (AVN) of the bone is due to loss of vascularity in a part of the bone and occurs commonly after trauma and head of femur is the most affected site. Main symptom is constantly increasing pain which affects the patient's quality of life. It can be correlated with *Asthikshaya* (~bone depletion) in Ayurveda. Analgesics, core decompression, bone grafting and total joint arthroplasty are the treatment currently available which have limited effect with costly affair and addition of adverse effects. A 24-year-old patient came to the hospital with stage 3 AVN in both head of femurs (right side more than left) with constant pain and difficulty in walking. Various panchakarma procedures i.e., *Virechana* (~purgation therapy), *Basti* (~therapeutic enema), *Jalaukavcharana* (~bloodletting using leech) and *Agnikarma* (~thermal cauterization) were performed along with oral treatments. VAS for pain was found 3 after the one month of treatment which was 7 on baseline. Positive result in present case highlights the potential of multi-modal Ayurveda treatment in managing the AVN of head of femur and will helpful to generate the hypothesis for further research.

**KEYWORDS:** Avascular Necrosis, AVN, *Asthikshaya*, *Panchakarma* (~five internal bio-cleansing therapies).

### INTRODUCTION

Avascular necrosis (AVN) is a condition affecting different bones as a result of transient/permanent loss of blood supply to the bones. Eventual collapse of the bone tissue and its death is the result of the ischemia along with its overlying joint surface. The head of the femur is a common site of AVN. It can be primary or secondary to other pathology i.e., alcoholism, steroid therapy, sickle cell disease, etc.<sup>[1]</sup> Symptoms of AVN of the femoral head are presented by groin or hip pain radiating to buttocks, anteromedial thigh or knee that is aggravated by weight-bearing and sometimes by coughing. Progressive increase of the pain worsens with time and use, patient experiences pain on rest which may be worse during the night and may have an association with morning stiffness.<sup>[2]</sup> MRI is the most specific modality to diagnose AVN.<sup>[3]</sup> Pathology of AVN is not clearly defined yet but it is assumed that osteonecrosis/aseptic necrosis occurs due to various traumatic and non-traumatic causes which interrupt blood supply to the bone. Analgesics, core decompression, bone grafting and total joint arthroplasty are the treatment currently available that have limited effects with costly affair and addition of adverse effects.

According to the involvement of *Dosha* (~regulatory functional factors of the body) and *Dushya* (~which gets vitiated), it may be correlated with *Asthikshaya* and treatment modality of this disease should be according to that. *Charaka Samhita* has mentioned *Panchakarma* therapy and *Basti* of *Kshira* (~milk) and *Ghrita* (~Clarified butter) prepared with the medicine having *Tikta Rasa* (~bitter taste) as treatment of choice in the management of the diseases of *Asthi Dhatu* (~bone tissue).<sup>[4]</sup>

### CASE REPORT

#### Patient information

A 24-year-old male patient working as computer data operator with a diagnosis of avascular necrosis of bilateral femoral head came to our hospital on 14<sup>th</sup> of October, 2021. He was complaining of Pain in both hip joints (right side > left side) and pain in right leg for three months along with back pain and difficulty in walking since last one month. He had a history of lifting heavy weights during exercise and twisted his right leg while playing football. After that, he started complaining of pain in right hip and difficulty in movement. His MRI of pelvis showed bilateral avascular necrosis of head of the femur. He consulted an orthopaedist and was suggested

total hip replacement surgery. He is aware that the same surgery may be required once again after some years as his age is only 24. He took aceclofenac for seven days and found some relief but pain worst after the discontinuation. He was taking analgesic occasionally when he has unbearable pain or felt disturbances in routine work. He has decided to take some alternatives and came to this hospital for Ayurveda treatment. No history of AVN was found in his family. He takes veg-nonveg mixed type of food but the time of taking of food was not fixed. Sometimes he skips lunch due to over work at job place. He has to work with sitting in a chair for 3 to 4 hours continuously. He has hobby of playing football. He has no history of addiction.

## CLINICAL FINDINGS

### 1) Physical examination

Antalgic gait with decreased medial and lateral rotation of both hip joints. Pain in the hip region and leg on movement of the lower limb such as flexion, extension, and rotation. Didn't find any abnormality in *Astavidha Pariksha* (~eight folds examination of patient). He has *Pittadhika Vata Prakriti* (~pitta predominant vata normalcy) with good *Rakta Sara* (~excellence of blood). All other findings of *Atura Bala Pramana* (~patient's strength and anthropometry) are suggesting medium *Bala* (~strength) of patient. He has normal *Agni* (~metabolic factor) and *Kostha* (~nature of bowel).

### 2) MRI of both hip joints (26/08/2021)

The extent of the lesion is considerably more on the right side, Geographic sharp demarcation is maintained by a hypointense margin which suggests neovascularity and new bone formation. Minimal articular surface irregularity seen in the right femoral head. Evidence of articular surface flattening is seen on the left side. Findings are suggestive of avascular necrosis of head of femur on both sides with stage III on the right side and stage II on the left side.

**Timeline:** It is given below. (Table 1)

## TABLES

**Table 1: Timeline.**

July 2021	Lifted heavyweight during exercise in gym. Started having pain in the right leg and back region.
August 2021	Twisted his right leg while playing football. The pain increased in the right hip region and had pain while sitting.
25/8/2021	Started having difficulty walking. Consulted orthopaedic doctor -took aceclofenac, didn't get much relief.
26/8/2021	MRI of hip joint- Diagnosed with stage 2 and stage 3 AVN in left and right side of head of femur.
14/10/2021	The patient came to P D Patel Ayurveda Hospital with complaints of Increased pain in right leg, Difficulty in walking, Pain in back and was admitted here in hospital for further treatment.

## Diagnostic focus

Patient came for Ayurveda treatment with confirmed diagnosis of AVN by MRI of the hip joint which performed on 26<sup>th</sup> of August 2021. The report was mentioned below (see figure 1).

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## Therapeutic intervention

Patient was hospitalized for 6 weeks period and treated for *Shodhana* and *Shamana* as follows.

(Table 2 and table 3) After the 6 weeks of hospitalized treatment, all oral medicaments were also continued for next six months period at out-door level.

## Follow up and outcomes

Patient was instructed to take oral medicaments regularly at out-door setup and come for follow-up at every month. Patient was assessed 3 times i.e., at baseline (before starting the Ayurveda treatment), after the completion of 6 weeks of hospitalized treatment and then after the 5 months of follow-up period. Reduction of pain, increase in the range of hip joint movement and improvement in walking was observed. Pain was assessed with VAS numerical pain distress scale (Table 4). Range of hip joint movements was measured by goniometry (Table 5).

**Table 2: treatment schedule.**

Date	Procedure/ Treatment	Other details
14/10/21 to 18/10/21	<i>Snehapana -Panchatikta Ghrita</i>	40 ml twice daily with warm water in increasing dose (70-85 ml was the last dose)
19/10/21 - 20/10/21	<i>Sarvanga Abhyanga – Narayana taila</i> <i>Sarvanga Bashpa Svedana- Nirgundi patrena</i>	-
21/10/21	<i>Virechana Karma-</i> <i>Eranda Sneha – 50 ml, Dindayala Churna – 5 gm with warm water</i>	19 Vega was observed
22/10/21 – 23/10/21	<i>Sansarjana Karma</i>	Diet on 22- mung bean soup Diet on 23- boiled mung and vegetables
From 24/10/21	<i>Sarvanga Abhyanga – Narayana taila</i> <i>Sarvanga Bashpa Svedana- Nirgundi patrena</i>	-
From 24/10/21	<i>Niruha Basti</i> <i>Pathyadi kustha dravyen– 320 ml</i> <i>Matra Basti</i> <i>panchatikta grita – 40 ml</i>	<i>Niruha basti</i> and <i>matra basti</i> were given on alternate day. <i>Niruha basti</i> (prepared according to classics with <i>Pathyadi kvatha</i> , honey, Sesame oil, <i>Putoyavanyadi kalka</i> and <i>Saindhava lavana</i> )
From 26/10/21	<i>Agnikarma</i> was started	<i>Agnikarma</i> is done in back region and in inguinal region
9/11/21	<i>Raktamoskhan</i> was done	<i>Jalaukavcharan</i> was done at bilateral inguinal region

**Table 3: Shamana aushadha during hospitalization.**

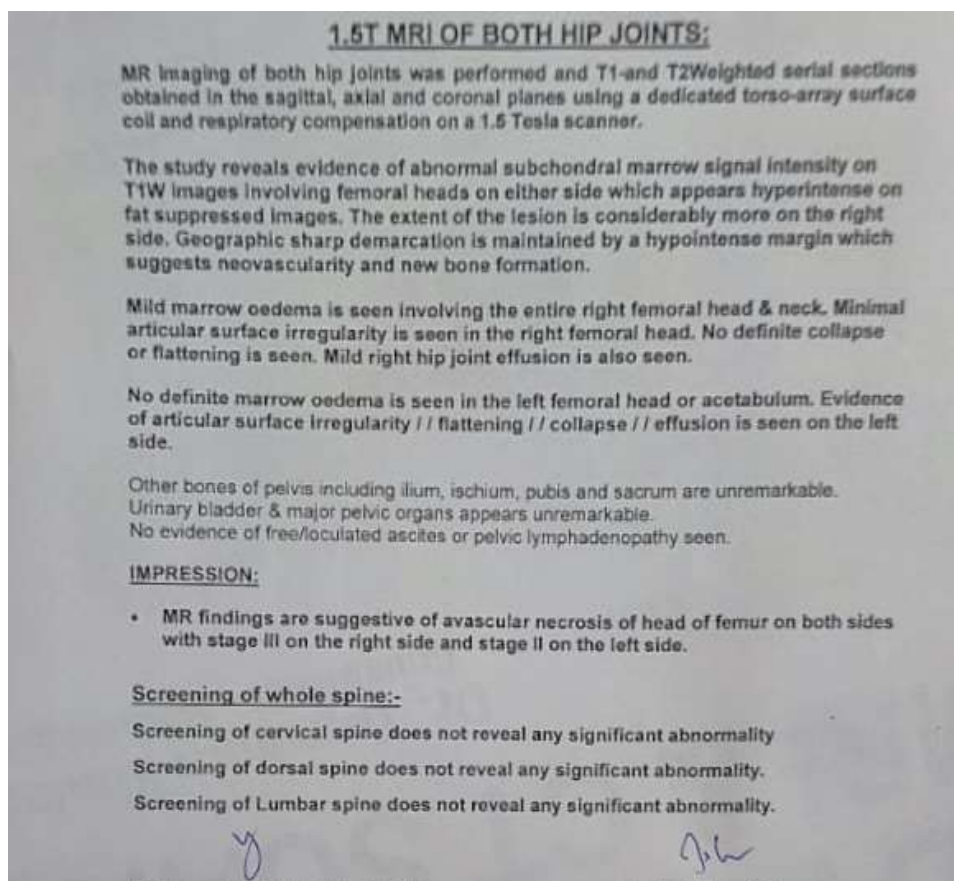
Sr. no.	Medicine	Dose	Anupan
1	<i>Kaishor guggulu</i>	300 mg/ 3-tab 3 time a day	Warm water
2	<i>Manjishthadi kvatha</i>	40 ml twice a day	-
3	<i>Panchatikta grita</i>	20 ml twice a day	Warm water

**Table 4: Improvement in pain and its related symptoms.**

Symptoms	Before treatment	After 6 weeks	After 6 months
Pain in right hip and leg	Severe pain, occurred at rest and impaired routine activities	Moderate pain, not occurred at rest and not impaired routine work	Occurred occasionally and only during heavy routine work
Pain in left hip and leg	Severe pain, occurred at rest and impaired routine activities	Occurred occasionally and only during heavy routine work	absent
Difficulty in walking	Severely impaired walking due to pain	occasional	absent
Back pain	Felt mostly every time in a day	Occasional, mostly after walking	absent
Gait	Antalgic gait	Normal gait	Normal gait
VAS Score	7	4	3

**Table 5: Improvement in Range of Motion (RoM) of hip joint.**

Action of hip joint	Normal RoM (In Degree)	Right hip joint			Left hip joint		
		RoM (Degree) Before treatment	RoM (Degree) After 6 weeks of treatment	RoM (Degree) After 6 months of treatment	RoM (Degree) Before treatment	RoM (Degree) After 6 weeks of treatment	RoM (Degree) After 6 months of treatment
Flexion	110-120	40	60	90	50	60	100
Extension	10-15	0	5	10	5	10	15
Abduction	30-50	20	30	35	25	35	40
Adduction	20-30	10	10	20	10	15	25
Medial Rotation	30-40	10	15	25	20	25	35
Lateral Rotation	40-60	25	30	45	30	35	50



**Figure 1: MRI of both hip joints (August 2021).**

## DISCUSSION

According to symptoms and signs, avascular necrosis can be correlated with *Asthikshaya*. Due to the aggravated *Vata* traversing along *Sandhi* (~joint), *Asthi*, *Majja* (~bone marrow) gives rise to *Khanja* (~limping) & *Pangulya* (~lameness).<sup>[7]</sup> Signs and Symptoms of *Asthikshaya* involve breaking type of continuous pain in bone and joint as well as loss of muscle strength.<sup>[6]</sup> *Asthikshaya* is a state where *Kshaya* (~emaciation) of *Asthi dhatu* takes place. The '*Ashrayashrayi bhava*' of *Asthi dhatu* and *Vata dosha* helps in understanding the etiology of osteonecrosis. Whenever *Vata dosha* accumulates, *Asthi dhatu* dissipates, because *Vata* and *Asthi* are conversely proportional to each other as per the *Ashrayashrayi bhava*.<sup>[5]</sup> Hence, Ayurveda treatment of avascular necrosis should be according to the treatment modalities of *Asthikshaya*. In AVN, the supply of *Rakta dhatu* to the femoral head is interrupted due to any type of *Margavrodha* (~occlusion) ultimately leading to necrosis. *Margavrodha* is also responsible to aggravate *Vata dosha*.<sup>[8]</sup> In the advanced stage, due to continuous *Vata dosha* (due to necrosis) imbalance it is further responsible for causing vitiation of *Pitta* and *Kapha*. In the treatment of *Vata*; *Snehana*, *Svedana*, *Mrudu Virechana*, and *Basti* are considered as line of treatment.<sup>[9]</sup>

*Panchakarma* procedures like *Snehapana* (~internal oleation) with *Panchatikta ghrta*, *Abhyanga* (~therapeutic massage), *Svedana* (~sudation therapy),

*Virechana* as well as alternate *Niruha basti* (~therapeutic decoction enema) with *Tikta aushadha* (~bitter medicine) and *Matra basti* (~a form of unctuous enema) with *Panchatikta ghrta* were performed in this patient. *Shamanartha snehapana* (~palliative oleation) with *Panchatikta ghrta*, *Raktamoksan* (~bloodletting) with *Jalaukavcharana*, *Agnikarma* as well as oral medicaments including *Kaishor guggulu* and *Manjishthadi Kvatha* were also given to the patient after *Virechana karma*.

*Virechana karma* has an action of *Sroto-vishodhana* (~clearing the passage)<sup>[10]</sup> and thus helps in removal of obstruction of vessels and necrosis of bone tissue in the femur head. *Basti* is mentioned as *Ardha* (~half) or *Sampurna chikitsa* (~complete treatment) in *Vatavyadhi* (~ diseases caused by *Vata*).<sup>[11]</sup> Hence *Niruha basti* with *Pathyadi Kvatha* will help to eliminate *Doshas* accumulated in entire body through its *Shodhana* (~major purification) and *Lekhana* (~scratching) action.<sup>[12]</sup> *Panchatikta gana*- *Guduchi* (*Tinospora cordifolia*), *Patola* (*Trichosanthes cucumerina L.*), *Nimba* (*Azadirachta indica A. Juss.*), *Vasa* (*Justicia adhatoda*), *Kantakari* (*Solanum virginianum L.*) have *Tikta rasa*, *Katu vipaka*, *Laghu* (~light) and *Ruksha* (~dryness) properties. So, *Ghrta* prepared with it will help to enhance the *Dhatvagni* (~metabolic factors located in dhatu) level at *Asthidhatu* and *Majjadhatu* thus helping in new bone formation. *Ghrta* have *Madhura rasa* (~sweet taste), *Guru* (~heaviness) and *Snigdha guna*

(~sliminess) that help to pacify *Vata* and stop the process of bone necrosis & degeneration through its *Jeevaniya* properties.<sup>[13]</sup> *Manjishta* and other drugs in the *Manjishthadi Kvatha* have *Rakta prasadaka* property due to its virtue of *Tikta* and *Katu rasa* and *Ushna guna* (~hot properties) and indicated in *Rakta dusti* (~vitiation of blood) conditions and help to correct the obstruction of *Sira* which is *Upadhatu* (~minor structural components) of *Rakta*.<sup>[14]</sup> *Kaishor guggulu* is a drug of choice in *Vatarakta* in which obstruction in blood vessels is the main pathology. So, in this condition also it might have helped to improve the blood circulation of head of the femur.<sup>[15]</sup>

The *Agnikarma* relieves *Shula* (~pain), *Stambha* (~stiffness), *Gaurav* (~heaviness) and *Sheeta* (~cold) by its *Ushna* (hot), *Tikshna* (~sharpness), *Sukshma* (~minuteness) and *Laghu* properties. *Agnikarma* treatment increases circulation of local blood vessels and drains the accumulated fluid and reduces the swelling. It also soothes nerve endings and relieves pain.<sup>[16]</sup> *Jalaukavcharana* is used in treatment of *Rakta dusti* (~vitiated blood). *Jalaukavcharana* removes Vitiated *Rakta* from the body and also helps to improve blood circulation to correct bone necrosis.

## CONCLUSION

AVN is a challenging condition today, especially after the COVID-19 pandemic due to the non-availability of treatment plans except surgery in modern medicine. In this single case study, patient got excellent relief in signs and symptoms without any complications till date. This multi-modal Ayurveda study show positive result in the stage 3 AVN of head of femur. Result obtained from this study will help to generate the hypothesis on further research for Avascular necrosis in Ayurveda.

## Declaration of patient consent

Written permission for publication of this case study has been obtained from the patient.

## Financial support and sponsorship: Nil.

**Conflicts of interest:** There are no conflicts of interest.

## REFERENCES

- Maheshwari J, Mhaskar VA, Essential orthopedics, The Health Science Publication, 5th edition, 2015.
- Aiello MR. Avascular necrosis of the femoral head. Available from: <https://emedicine.medscape.com/article/386808-overview?reg=1>
- Longo, Fauci, Kasper et al., Hand book of Harrison's Principles of General Medicine, 18th Edition, 1550.
- Acharya YT, editor. Charka Samhita of Agnivesha, Sutra sthana; Vividhashitapitiya Adhyaya: chapter 28, verse 27-28. Varanasi: Chaukhamba Surbharati Prakashan, 2020; 180. Reprint 2020.
- Acharya YT, editor. Charka Samhita of Agnivesha, Chikitsa sthana; Vatashonita chikitsa: chapter 29, verse 21-23. Varanasi: Chaukhamba Surbharati Prakashan, 2020; 628. Reprint 2020.
- Acharya YT, editor. Charka Samhita of Agnivesha, Chikitsasthana; Vatavyadhi Chikitsa: chapter 28, verse 27-28. Varanasi: Chaukhamba Surbharati Prakashan, 2020; 180. Reprint 2020.
- Tripathi B, editor. Astangahridayam of Vagbhata, Sutrasthana; Doshadi vignaniya adhyaya: chapter 11, verse 27. Varanasi: Chaukhamba Sanskrit Samsthan, 2017; 160.
- Acharya YT, editor. Charka Samhita of Agnivesha, Chikitsasthana; Vatavyadhi Chikitsa: chapter 28, verse 59. Varanasi: Chaukhamba Surbharati Prakashan, 2020; 619. Reprint 2020.
- Acharya YT, editor. Charka Samhita of Agnivesha, Chikitsasthana; Vatavyadhi Chikitsa: chapter 28, verse 76-88. Varanasi: Chaukhamba Surbharati Prakashan, 2020; 620. Reprint 2020.
- Acharya YT, editor. Charka Samhita of Agnivesha, Siddhsthana; Kalpanasiddhi Adhyaya: chapter 1, verse 17. Varanasi: Chaukhamba Surbharati Prakashan, 2020; 680. Reprint 2020.
- Acharya YT, editor. Charka Samhita of Agnivesha, Siddhsthana; Kalpanasiddhi Adhyaya: chapter 1, verse 39. Varanasi: Chaukhamba Surbharati Prakashan, 2020; 683. Reprint 2020.
- Acharya YT, editor. Charka Samhita of Agnivesha, Siddhsthana; Kalpanasiddhi Adhyaya: chapter 1, verse 40. Varanasi: Chaukhamba Surbharati Prakashan, 2020; 684. Reprint, 2020.
- Acharya YT, editor. Charka Samhita of Agnivesha, Sutrasthana; Sneha Adhyaya: chapter 13, verse 14-17. Varanasi: Chaukhamba Surbharati Prakashan, 2020; 82. Reprint, 2020.
- Tripathi B, Editor. Sarangadhara Samhita of Sarangadhara, Madhyama Khanda; Kwathadi kalpana adhyaya: chapter 2, verse 136-142. Varanasi: Chaukhamba Surbharati Prakashana, 2019; 102.
- Tripathi B, Editor. Sarangadhara Samhita of Sarangadhara, Madhyama Khanda; Kwathadi kalpana adhyaya: chapter 2, verse 70-81. Varanasi: Chaukhamba Surbharati Prakashana, 2019; 136.
- Bhatt CJ, Patel KB, Gupta S N, Modified method of Agnikarma, joinsysmed, 2016; 4(4): 223-225.