

## **Ayurvedic Management of Avascular Necrosis (*Asthikshay*)- A Case Report**

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### **ABSTRACT**

Avascular necrosis (AVN) is a state where there is osteonecrosis due to lack of or interrupted blood supply to the bone. It is also termed as ischemic bone necrosis or aseptic necrosis. If unobstructed this process will eventually cause the bone to collapse. This is a backbreaking state in today's times for Orthopaedists. In *Ayurveda* it can be corresponded to "*Asthikshay*". This paper highlights a case study of *Asthikshay* (AVN) treated with *Ayurvedic* oral medications with *Panchakarma Shodhan* procedures. "*Asthi* is the site of *Vata dosha*". *Ashrayashrayee Bhava* plays an essential role here. *Vata-Kapha Dosha* cause *Srotodushti*. *Panchatikta Ksheera Basti* along with other *Ayurvedic* medicines predominant in *Tikta, Katu Rasa, Ushna Virya* were used. Patient showed remarkable improvement in the condition in course of 60 days of treatment.

**KEY WORDS:** *Panchakarma, Ashrayashrayee Bhava, Srotoshodhan, Panchatikta Ghrut Guggulu, Aampachan, Panchatikta Ksheera Basti.*

### **INTRODUCTION**

Avascular Necrosis (AVN) is also called as bone infarction. Here, the bone "dies" due to loss of blood circulation to a portion of bone tissue. In Latin "Bone death" is perceived for Osteonecrosis. Even, collapse of a section of bone, may occur in complex cases. When, surface of the joint gets involved, it may arise to "rapidly progressive arthritis". Avascular necrosis is an outcome of an injury that interferes the supply of blood. Certain inflammatory diseases like Vasculitis, Systemic Lupus Erythematosus<sup>1</sup>, etc. and even Systemic steroids might cause Avascular necrosis. Avascular necrosis of bone in addition to infection most likely have acute onset with constant pain with or without inflammation of single or multiple joints. More often involved is 'Hip joint'. Bilateral involvement is seen more often. In AVN of the hip cases, its crucial to diagnose, and treat untimely, to avert any further intricacies. Relying on the, 'location and graveness', treatment remarkably varies. However, the primary goal is to prevent collapse of the joint surface (of initial treatment). In the complex stages that lead to painful arthritis, the only choice remains is "hip replacement". This state, can be corresponded with "*Asthikshaya*" as per the signs and symptoms described in *Ayurveda*.

From the *Dhatus*, “*Asthi* does the function of *Shareera Dharana*”.<sup>2</sup> Hence, it is the “*Asthi*” which gives this shape to our body, and, it also protects the vital organs.

*Asthi Kshaya*, is a state where “*Kshaya* (decrement) of *Asthi Dhatu* (bone tissue)” takes place. “*Asthi Dhatu* is the main site of *Vata Dosha*”. Whenever, “*Vata Dosha* accumulates, *Asthi Dhatu* dissipates, because ‘*Vata*’ and ‘*Asthi*’ are conversely proportional to each other” as per the principal of *Ashrayashrayee Bhava*.<sup>4</sup> Hence, the “etiological factors responsible for *Vata vridhii*, are only the etiological factors responsible for *Asthi Kshaya*”. Also, the “etiological factors” responsible for annihilation of ‘*Medovaha*’ (*Adipose tissue*), ‘*Asthivaha*’ (*Skeleton*), ‘*Majjāvaha*’ (*Bone marrow*) and ‘*Purishvaha*’ (*Excretory system*) *Srotas* (*channels*) can be taken as causative factors causing *Asthi Kshaya*. “*Kshaya*” means decline, loss, decay, waning or diminution. *Chakrapānidatta* describes it as “*Nyuntvam*” or “*Rahasaha*”,<sup>5</sup> whereas *Dalhan*, has aptly defined “*Kshaya as Swapramānhaani*”.<sup>6</sup> Various terms such as “*Asthishunyatā*”, “*Asthisaushirya*”, “*Asthidaurbalya*”, “*Riktata*”, “*Asthishieeran*”, “*Ashitlāghav*”, “*Asthishunyatā*” and “*Asthimārdav*” appear in *Ayurveda* texts to describe *Asthi Kshaya*.

*Lakshan* (Signs and Symptoms) of “*Asthi-Majjagata Vata and Asthi Kshya*”<sup>3</sup>

- *Bhedoasthiparvanam* (breaking sort of pain in bones)
- *Sandhi Shula* (pain in joints)
- *Mamsakshaya* (wasting of muscle)
- *Balakshaya* (weak)
- *Aswapnasantataruka* (continuous pain resulting into disturbed sleep)
- *Sandhi Shaithilyam* (joint laxity)
- *Shiryantiva Cha Asthinidurbalani* (generalized weakness due to destruction of bony tissue)

## MATERIALS AND METHODS

- Study design: Single arm clinical study
- Informed consent taken from patient in his language before treatment.
- For the present study, 32 year old male patient, having signs and symptoms of *Asthikshaya* (AVN) since 5 months is been discussed in detail manner.
- Assessment Criteria: Based on “signs and symptoms” patient had, before and after treatment
- Patient was treated with “*Panchakarma*” therapy along with “Oral medications”.

**Case Report :-** A young, 32 year old, male patient, with moderate build, from Moshi, Pune came to OPD with following complaints

- B/L Hip joint pain
- B/L Lower Limb Oedema
- Difficulty in walking, climbing stairs since 5 month
- Difficulty in doing normal activities.
- B/L Ankle joint pain(R>L)
- Painful internal rotation of lower limbs(L>R)

Patient was apparently fine 5 months back and gradually started suffering from above complaints. He consulted various Orthopaedic Surgeons for the same and was diagnosed Avascular Necrosis of B/L Femoral Heads (Stage II) with the aid of MRI. He was advised Analgesics, Calcium supplements along with surgical intervention, but the patient was unwilling for surgery, and approached us for *Ayurvedic* treatment.

## Investigations Done

1. CBC- NAD

2. Urine Routine Microscopic- NAD
3. BSL Random- NAD
4. ECG- NAD
5. MRI of Both Hip Joints
  - Findings are s/o of Stage II AVN of B/L femoral heads.
  - Moderate marrow oedema in Left femoral head extending to Left femoral neck and intertrochanteric region. Minimal marrow oedema in Right femoral head.
  - Mild B/L hip joint effusion(L>R)
  - Oedema at the insertions of B/L gluteus medius muscles adjacent to the greater trochanters s/o gluteus medius tendonitis.
6. USG(A+P)- NAD

**Personal History**

- Diet- Mixed
- Appetite- Normal
- Bowel- Normal
- Bladder- Normal
- Sleep- Disturbed
- Addiction- No any
- Occupation- Maintenance (standing + lifting heavy objects)
- Past illness- Not K/C/O any major illness
- Family History- Nil
- Surgical History- Nil
- Allergy- Ibuprofen, Diclofenac

**Local Examination-**

- Tenderness present on B/L hip region(L>R).
- Significant loss in range of movement.
- Painful internal rotation (L>R).
- Gait- Trendelenburg sign positive.
- No any changes in dimensions of both the legs was observed.
- Nutrition- moderate
- Crepitus- Absent
- Tone- No Hypotonia present
- Power- Right LL- normal ; Left LL-Grade 4
- Involuntary Movement- Absent

Table 1: *Ashtavidha Pariksha* (General Examination)

1	<i>Nadi</i>	<i>Vata-Kaphaj, 72/minute, regular</i>
2	<i>Mala</i>	<i>Prakrut</i>
3	<i>Mutra</i>	<i>Prakrut</i>
4	<i>Jivha</i>	<i>Ishat Saam</i>
5	<i>Shabda</i>	<i>Spashta</i>
6	<i>Sparsha</i>	<i>Samsheetoshna</i>
7	<i>Drika</i>	<i>Prakrut</i>
8	<i>Aakriti</i>	<i>Madhyam</i>

O/E-

BP-120/90 mm of Hg

RR-16/Minute

P/A-Soft, non-tender

Table 2 : SAMPRAPTI GHATAK

1	<i>Dosha</i>	<i>Vata, Kapha</i>
2	<i>Dushya</i>	<i>Vyan Vayu, Shleshaka Kapha, Asthi, Majja, Sandhi, Rakta, Sira, Snayu</i>
3	<i>Srotas</i>	<i>Medovaha, Asthivaha, Majjavaha, Purishavaha</i>
4	<i>Srotodushti</i>	<i>Sanga</i>
5	<i>Roga marga</i>	<i>Marmasthi Sandhi</i>
6	<i>Adhistan</i>	<i>Asthi, Sandhi</i>
7	<i>Udbhavasthana</i>	<i>Ama-Pakwasaya (Kostha)</i>
8	<i>Vyakta sthana</i>	<i>Asthi, Sandhi</i>
9	<i>Agni</i>	<i>Mandya (Jatharagni:- Mandya) (Bhutagni : Parthiva, Tejasa, Vayavagni :- Mandya)</i>
10	<i>Ama</i>	<i>Jatharagni ; Bhutagni ; Dhatwagni Mandya Janya Ama</i>
11	<i>Roga Prakrti</i>	<i>Chirkari</i>
12	<i>Sthanasamshraya</i>	<i>Vankshanapradesha</i>

*Samprapti* (Pathology):

“Lack of blood supply to the head of the femur, causes weakness in the head and neck of the femur, and hip joint”. Due to indulgence in “Vata aggravating food and habits” the aggravated *Vata* assembles in the “hip joint” promoting further degeneration causing severe pain and difficulty in the movement of hip joint.<sup>11</sup>

**Diagnosis-** *Asthi kshaya* (Avascular Necrosis)

### Management

Principle of Management:

1. *Vata Shaman*
2. *Kapha Shaman*

The *Dravya* (substances) which have same *Mahabhuta* predominance (*Swayoni*), or which are similar in properties of that particular *Dhatu* are used for increase of that *Dhatu*<sup>7</sup> is the *Chikitsa Sutra* for *Asthi Kshaya* told by Charaka Acharya. According to Vagbhata Acharya<sup>8</sup> *Basti* containing *Ksheer*, *Ghrta* and *Tikta Rasa* should be given in *Asthi Kshaya*.

Table 3 : Oral Ayurvedic Medicines (*Shaman Chikitsa*)

Sr. No.	Drugs	Dose	Time	Anupana	Duration (Days)
1	<i>Panchatikta Ghrut Guggulu</i>	250mg each -2 TDS	Before Food	Lukewarm water	60
2	<i>Asthirakshak Vati</i>	250mg each -2 BD	Before Food	Lukewarm water	60
3	<i>Ekangveer Rasa</i>	125 mg each 1 TDS	Before Food	Lukewarm water	30
4	<i>Guduchi Ghana</i>	250mg each	Before Food	Lukewarm	60

	<i>Vati</i>	-2 TDS		water	
5	<i>Cap Rasayana</i>	500mg each 2 BD	After Food	Lukewarm water	60
6	<i>Tiktaka Kashayam</i>	4 tsp BD	After food	Equal quantity of luke warm water	60

Table 4 : Purification Therapy ( *Shodhan Chikitsa* )

Sr. No.	Procedure	Dravya	Duration (Days)
1	<i>Sarvang Snehana</i>	<i>Ksheerabala Taila</i>	30
2	<i>Sarvanga Swedana (Peti Sweda)</i>		30
3	<b>Basti</b> a) <i>Matra Basti</i>	Ksheerabala Taila (60 ml)	30 (Every 6 <sup>th</sup> Day)
	b) <i>Panchatikta Ksheera Basti</i>	400 ml	24

Table 5 : Other treatments

<b>Physiotherapy</b>	<b>60 days</b>
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Table 6 : Comparison of symptoms

Sr. No.	Symptoms	Before Treatment (Day 0)	During Treatment (Day 30)	After Treatment (Day 60)
1	Stiffness	++++	++	Nil
2	Tenderness	++++	++	Nil
3	Pain	++++++	+++	Nil
4	Muscle power	Grade 3	Grade 4	Grade 5
5	Raising Of Lower Limbs (Degrees)	10	40	70
6	Gait	Trendelenberg	Improving	Normal

Table 7 : Observations (Before and After Treatment)

Sr. No.	SIGNS	RANGE(Normal) (In Degrees)	Before Treatment(In Degrees)	After Treatment(In Degrees)
1.	Medial Rotation	30 to 40	10	30
2.	Lateral Rotation	40 to 60	20	40
3.	Flexion (of Hip Joint)	110 to 120	25	90
4.	Extension (of Hip Joint)	10 to 15	0	10
5.	Abduction (of Hip Joint)	30 to 50	10	40

6.	Adduction(of Hip Joint)	20 to 30	10	20
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### DISCUSSION-

Avascular necrosis (AVN), also called “bone infarction” or “osteonecrosis”, is a death of bone tissue, due to interruption of the blood supply. In early phase there may be no symptoms<sup>13</sup>. Gradually pain in joint may develop which may limit the ability to do movement. Fusion of the bone or near by joint surface like complications may arise. “*Basti*” is the first line of treatment told for *Vata Dosha*. It is also told for *Pitta*, *Kapha Dosha* along with *Rakta*.<sup>10</sup> It acts as ‘*Amapachak*’ as it has *Tikta*, *Katu Rasa* dominantly, *Laghu*, *Ruksha Guna*, *Ushna Virya*, *Katu Vipaka*. *Dosha vilayana* occurs along with *Srotoshodhana* that helps in alleviating *Margavarana* of *Vata*. It reaches *Sukshma Srotas* resulting in appeasing *Vata Dosha*. *Ushna Ruksha* and *Tikshna* properties help in appeasing *Sheeta* and *Snigdha* properties of *Kapha* effortlessly<sup>12</sup>.

### MODE OF ACTION-

- 1) **Panchatikta Ghrut Guggulu**- it is having *Tikta* ( Bitter), *Katu* ( Pungent) taste; *Laghu* (Light to digest), *Rooksh* (Dry), *Vishada* ( Brings clarity), *Sookshma* (Minute), *Sara* (Brings about movement), *Katu* ( Pungent) *Vipak* ( Post Digestive Effect), and Hot in Potency; whereas *Guggulu* is having *Lekhana* ( Scraping and Clearing the channels), it balances *Tridosha* and increase in digestive fire. It acts as a “*Srotoshodhak*” and is very beneficial in diseases like *Asthi Kashaya*, *Asthi-Majjagat Vata* etc.
- 2) **Asthirakshak Vati**- it is composed of all calcium rich drugs and hence is used in fracture, osteoporosis, AVN etc.
- 3) **Ekangveer Rasa**- is *atyanta teekshna* (stong), *brumhana* (nourishing), *rasayana* (rejuvenating), *vishaghna* (anti toxic).
- 4) **Guduchi Ghana Vati**- As *Guduchi* is having bitter Taste; Light (*laghu*), Unctousness (*Snigdha*) properties which will help to increase indigestive capacity, anti-inflammatory, gives strength to muscles, relieves muscular and joint pain.
- 5) **Cap Rasavana**- Proprietary medicine of our college (*Sudhatatva* pharmacy) containing *Gokshur*, *Amlaki* and *Guduchi*. It acts as a *rasayana*.
- 6) **Tiktak kashavam**- It is *pittahara*, does *deepana* and *rakta shodhan*.
- 7) **Snehan** (oil massage)- *Acharya Sushrut* has described in *Chikitsa sthan* that massage helps to pacify both *Vata* and *Kapha dosha*. As *Asthi Kashaya* is having mainly *Vata* and *Kapha* predominant *dosha*, oil massage will help to pacify *doshas*.
- 8) **Swedan** (Fomentation)- Fomentation has qualities to pacify *Vata dosha*. Fomentation helps to balance digestive fire, cleanses the channels and help to pacify the pain.
- 9) **Matra Basti with Ksheera Bala Taila** 60ml- *Basti* is the *chikitsa* told for *Vataj rogas*. *Bala* is the main ingredient of *Kshira bala taila* which is a potent neuroprotective herb, alleviates pain and nerve irritation, relieves muscular stiffness so proven very beneficial in *Asthi Kashaya*.
- 10) **Pancha tikta ksheera basti**- *Charak Aacharya* said that “in the diseases of *asthi*, *Basti* should be given using *Tikta Rasatmaka Aushadhi Dravya* along with *Ghrut* and *Ksheer* that is *Saghrat Tikta Ksheer Basti*”. *Akash* and *Vayu Mahabhuta* are predominant in *Tikta rasa*. It contains *Tikta rasa Pradhan dravyas* which also has *Prithvi mahabhuta* that help in bone formation and nourishment. It is *snigdha*, *balya* and does *brumhan* hence proven beneficial in *Asthi Kashaya*.<sup>9</sup>

Table 8 : Pancha tikta ksheera basti Ingredients

Ksheerapaka	Guduchi, Vasa, Nimba, Patola, Kantakari ( each 40 grams)
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Dravya	Godugdha (Cow milk-300 ml) ; Water (1280 ml) (Ksheeravashesha -300 ml)
Other Ingredients	Madhu (50 ml) ; Saindhava (10 grams) ; Sneha- Panchatikta Ghruta (50 ml) Kalka- Shatapushpa + Yashtimadhu ( 10 gram each)

## CONCLUSION

This, is a single case study, where patient got 80% relief in signs and symptoms without any complications till date. Further rejuvenation was done by using the *Panchakarma* procedures along with treatment of avascular necrosis of head of femur. AVN is a challenging condition today due to the non-availability of treatment plan except surgery in modern medicine. The case study reveals victorious management of the stage 2 AVN of head of femur. Patient started having relief in symptoms from day 7 itself. The primary goal is to slow down or stop the progress of avascular necrosis. "*Pancha tikta ksheera basti*" has played a key role in treating AVN. Similar more studies should be done to get more accurate conclusions.

**CONFLICT OF INTEREST-** None

**SOURCE OF FUNDING-** None declared

## REFERENCES

- 1.YP Munjal, editor in chief, API Textbook of Medicine, systemic Lupus erythematosus, chapter 9,jaypee brothers medical publishers(p) LTD.,10 th edition, page 2527
2. Pt Bhisagacharya Hari sastri edited Astangahridaya Sutrasthana 11 sloka 4 reprint 2000, pub: Krishnadas Academy Varanasi pg no 183
- 3.Acharya YT, editor, Shri Chakrapanidatta, commentator, Agnivesha, Charka Samhita, Chikitsasthana; Vatavyadhichikitsa Adhyaya, 28/33, Chaukhamba Surbharati Prakashan, Varanasi,2014; page 617.
4. Vagbhata, Ashthanga Hridaya with Sarvaanga Sundara of Arunadatta and AAyurvedarasaayana of Hemadri - Dr. Anna Moreshwar Kunte and Krishna Ramachandra Shastri reprint of 6th edt. 1935 Choukamba Surabhaarati Prakashana Varanasi Su.11/26.
5. Agnivesha, "Charaka Samhitā", revised by Charaka and Dridhbala with "Ayurveda Deepika" commentary, by Chakrapanidatta, edited by Vd. Yadavaji Trikamaji Acharya, Chaukhambha Surabharati Publications,Varanasi-221001, reprint 2002, Sutrasthan 17/4
6. Shastri, Ambikadutta, Ayurvedatatvasandeepekā vyākhyā, Sushruta Samhitā, Sutra Sthāna Dosha Dhatu Mala Kshayavridhivijaniyam Adyāya 15/24, chaukhanba sanskrita Sansthāna
7. Agnivesha, "Charaka Samhitā", revised by Charaka and Dridhbala with "Ayurveda Deepika" commentary, by Chakrapanidatta, edited by Vd. Yadavaji Trikamaji Acharya, Chaukhambha Surabharati Publications, Varanasi-221001, reprint 2002, Sutrasthana 28/27.
8. Vagbhata, Ashthanga Hridaya with Sarvaanga Sundara of Arunadatta and AAyurvedarasaayana of Hemadri - Dr. Anna Moreshwar Kunte and Krishna Ramachandra Shastri reprint of 6th edt. 1935 Choukamba Surabhaarati Prakashana

Varanasi Su.11/31.

9. Ibidem (5) Charaka Samhita, Sutra Sthana Vividhashitapitiyadyaya (28/27-28), with 'Ayurved Dipika' sanskrit commentary, Chakrapani Dutt, edited by Yadavji Trikamji Acharya, Choukhamba Orientalia Varanasi; edition, 2011; 180.

10. Agnivesa, Caraka, Drdhabala, Carakasamhita, Ayurvedadipika commentary of Cakrapanidatta, Vatashonita Chikitsa Adhayaya, Chikitsasthana, chapter 29, verse 88, Edited by Vaidya Yadavji Trikamji Acharya, Varanasi: Chaukhambha Surbharati Prakashan; 2016, p.631

11. Meena, Ram & Bhatted, Santhosh & Dharmarajan, Prasanth & Meena, Nilam & Kumar, Jitender & Nirmal, Hanumant & Scholar, Pg. (2017). Management of Avascular Necrosis through Ayurveda-A Case Study. Journal of Research in Traditional Medicine. 3. 123-128.

12. Jitendra Gauttam, Aosemba Jamir, Poonam Verma, Prasanth Dharmarajan, Santoshkumar Bhatted. Management of Asthi-Majjagata Vata w.s.r. to Avascular Necrosis (AVN) of Femoral Head Stage 3 By Panchakarma - A Case Study. International Journal of Ayurveda and Pharma Research. 2019;7(8):21-28.

13. NIAMS. October 2015. Archived from the original on 9 August 2017. This article incorporates text from this source, which is in the public domain.