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 Erythematosus1, 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, it’s 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”. 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. Hence, the “etiological factors responsible for Vata vridhii, are only the etiological factors responsible for Asthi Kshaya”. Also, the “etiological factors” responsible foranniilation 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”, whereas Dalhan, has aptly defined “Kshaya as Swapramānhaani”. Various terms such as “Astishunyatā”, “Asthisaushirya”, “Asthidaurbalya”, “Riktata”, “Asthishieeran”, “Ashitlāghav”, “Astishunyatā” and “Asthimārdav” appear in Ayurveda texts to describe Asthi Kshaya.

Lakshan (Signs and Symptoms) of “Asthi-Majjagata Vata and Asthi Kshya”

- Bhedaosthiparvanam (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>
<thead>
<tr>
<th>Table 1: Ashtavidha Pariksha (General Examination)</th>
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<tbody>
<tr>
<td>1</td>
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<td>4</td>
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<td>6</td>
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<tr>
<td>7</td>
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<td>8</td>
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</tbody>
</table>

O/E-
BP-120/90 mm of Hg
RR-16/Minute
P/A-Soft, non-tender

Table 2 : SAMPRAPTI GHATAK

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Dosha</th>
<th>Vata, Kapha</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Dushta</td>
<td>Vyan Vayu, Shleshaka Kapha, Asthi, Majja, Sandhi, Rakta, Sira, Snayu</td>
</tr>
<tr>
<td>2</td>
<td>Srotas</td>
<td>Medovaha, Asthivaha, Majjavaha, Purishavaha</td>
</tr>
<tr>
<td>3</td>
<td>Srotodushti</td>
<td>Sanga</td>
</tr>
<tr>
<td>4</td>
<td>Roga marga</td>
<td>Marmasthi Sandhi</td>
</tr>
<tr>
<td>5</td>
<td>Adhisthan</td>
<td>Asthi, Sandhi</td>
</tr>
<tr>
<td>6</td>
<td>Udbhavasthana</td>
<td>Ama-Pakwasaya (Kostha)</td>
</tr>
<tr>
<td>7</td>
<td>Vyakta sthana</td>
<td>Asthi, Sandhi</td>
</tr>
<tr>
<td>8</td>
<td>Agni</td>
<td>Mandya (Jatharagni:- Mandya)</td>
</tr>
<tr>
<td>9</td>
<td>Roga Prakrti</td>
<td>Chirkari</td>
</tr>
<tr>
<td>10</td>
<td>Ama</td>
<td>Jatharagni : Bhutagni : Dhatwagni Mandya Janya Ama</td>
</tr>
<tr>
<td>11</td>
<td>Sthanasamshraya</td>
<td>Vankshanapradesha</td>
</tr>
</tbody>
</table>

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.11

Diagnosis- Asthikshay (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 Dhatu7 is the Chikitsa Sutra for Asthi Kshaya told by Charaka Acharya. According to Vagbhatta Acharya8 Basti containing Ksheer, Ghrita and Tikta Rasa should be given in Asthi Kshaya.

Table 3 : Oral Ayurvedic Medicines (Shaman Chikitsa)

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Drugs</th>
<th>Dose</th>
<th>Time</th>
<th>Anupana</th>
<th>Duration (Days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Panchatikta Ghrit Guggulu</td>
<td>250mg each -2 TDS</td>
<td>Before Food</td>
<td>Lukewarm water</td>
<td>60</td>
</tr>
<tr>
<td>2</td>
<td>Asthirakshak Vati</td>
<td>250mg each -2 BD</td>
<td>Before Food</td>
<td>Lukewarm water</td>
<td>60</td>
</tr>
<tr>
<td>3</td>
<td>Ekangveer Rasa</td>
<td>125 mg each 1 TDS</td>
<td>Before Food</td>
<td>Lukewarm water</td>
<td>30</td>
</tr>
<tr>
<td>4</td>
<td>Guduchi Ghana</td>
<td>250mg each</td>
<td>Before Food</td>
<td>Lukewarm</td>
<td>60</td>
</tr>
</tbody>
</table>
Table 4: Purification Therapy (Shodhan Chikitsa)

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

Table 5: Other treatments

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Duration (Days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physiotherapy</td>
<td>60 days</td>
</tr>
</tbody>
</table>

Table 6: Comparison of symptoms

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

Table 7: Observations (Before and After Treatment)

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>SIGNS</th>
<th>RANGE(Normal) (In Degrees)</th>
<th>Before Treatment(In Degrees)</th>
<th>After Treatment(In Degrees)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Medial Rotation</td>
<td>30 to 40</td>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td>2.</td>
<td>Lateral Rotation</td>
<td>40 to 60</td>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>3.</td>
<td>Flexion (of Hip Joint)</td>
<td>110 to 120</td>
<td>25</td>
<td>90</td>
</tr>
<tr>
<td>4.</td>
<td>Extension (of Hip Joint)</td>
<td>10 to 15</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>5.</td>
<td>Abduction (of Hip Joint)</td>
<td>30 to 50</td>
<td>10</td>
<td>40</td>
</tr>
</tbody>
</table>
6. Adduction (of Hip Joint) | 20 to 30 | 10 | 20

**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. 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. It acts as ‘Amapachak’ as it has Tikta, 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.

**MODE OF ACTION**

1) **Panchatikta Ghrut Guggulu**- it is having Tikta (Bitter), Katu (Pungent) taste; Laghu (Light to digest), Rooksh (Dry), Vishada (Brings clearity), 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 Asthikashaya, 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 (strong), 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-inflamatory, gives strength to muscles, relieves muscular and joint pain.

5) **Cap Rasayana**- Proprietary medicine of our college (Sudhatatva pharmacy) containing Gokshur, Amlaki and Guduchi. It acts as a rasayana.

6) **Tiktak kashayam**- It is pittahara, does deepana and rakta shodhan.

7) **Snehan** (oil massage) has described in Chikitsa sthan that massage helps to pacify both Vata and Kapha dosha. As Asthikashay 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 Asthikshay.

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 Saghrit Tikta Ksheer Basti”. Akash and Vayu Mahabhuta are predominant in Tikta rasa. It contains Tikta rasa Pradhan dravyas which also has Prthvi mahabhuta that help in bone formation and nourishment. It is snigdha, balya and does brumhan hence proven beneficial in Asthikshay.

**Table 8 : Pancha tikta ksheera basti Ingredients**

| Ksheerapaka | Guduchi, Vasa, Nimba, Patola, Kantakari (each 40 grams) |
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

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