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Case Study

ROLE OF *PANCHAKARMA* IN THE MANAGEMENT OF OSTEONECROSIS OF FEMORAL HEAD

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ABSTRACT

Osteonecrosis refers to skeletal infarction, occurs when the blood supply to a segment of bone is affected. Apart from trauma, it is usually associated with excessive alcohol intake, cigarette smoking, and injudicious use of steroid therapy. In Ayurveda a correlation can be made with *Asthi-majja gata vata* on the basis of clinical presentation. Treatment modalities offered for *Asthi-majja gata vata* according to Ayurvedic classic are internal and external application of *Sneha* which comes under *Brimhana karma* of *Shadvidh upkarama.* **Aim**: The aim is to consider the *Panchakarma* therapy as first line of treatment for the osteonecrosis of femoral head. **Case presentation:** In this study, a 44yrs old chain smoker and chronic alcoholic male patient of osteonecrosis of femoral head is treated by *Brimhana Chikitsa* in the form of *Sarvang abhyanga, Shashti shali pinda swedana*, *Tikta ksheerasarpi basti* as vitiated *Vata dosha* residing in *Asthi & Majja dhatu*. **Conclusion:** After the administration of *Tiktaksheer sarpi basti* in *Karma basti* regimen along with *Shastika shali pinda swedana* remarked improvement as well as amplification in quality of life was noticed.

INTRODUCTION

Osteonecrosis is also known as aseptic necrosis, avascular necrosis or ischemic necrosis. It is a progressive disorder. Pathogenesis behind osteonecrosis of femoral head is not fully understood but the most common track for pathogenesis is microcirculation obstruction. Various factors responsible for this obstruction are mainly divided into 3 categories. These are alcohol abuse, intensive corticosteroid therapy, coagulopathies (Gaucher's disease, Caisson disease, Burns, Renal failure and Protein C/ Protein S deficiency). Along with these mutations in various genes like hypoxia-inducible factor V Leiden also has a remarkable role in the pathogenesis of osteonecrosis of the femoral head.[1] But maximum number of cases of osteonecrosis occurs due to over use of corticosteroid among all possible etiologies.

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Approximately 5-25% of those undergoing intensive corticosteroid therapy (over 1 month) could grow osteonecrosis.[2] Decreased blood flow due to above reasons causes ischemia among osteocytes and ultimately leads to hypoxic death of bone and marrow. After this reabsorption of dead bone tissue (demineralization) starts; and results in decreasing bone strength which leads to diseased bone segment collapse. Signs and symptoms depend upon the different stages of osteonecrosis of the femur head. During the initial stage osteonecrosis of the femur head remains asymptomatic. As the disease progresses there is a noticeable increment in the intensity of pain. But it is usually associated with normal range of motion. In the later stage pain is constant in nature and remains same even at rest. Movements of the hip joint are seriously hampered at this stage of disease. Furthermore, day by day pain becomes more and more severe along with loss of movement of joints. So, joint replacement is the ultimate treatment of osteonecrosis. Approx. 10,000-20,000 new cases are diagnosed with osteonecrosis of femoral head annually only in the United States.[3] Furthermore, approx. 5-18% of 500,000 total hip arthroplasties performed annually are only because of osteonecrosis of the femoral head. [4] Diagnosis made in Ayurveda as *Asthi-majja gata vata*

that is vitiated *Vata* associated in bone and bone marrow considered as *Vata vyadhi.* Clinical presentation explained in Ayurvedic texts includes *Bhedo -asthiparvanam (*cracking of bones and bony joints*), Sandhishula* (joint pain*), Mansakshya (*muscle wasting*), Balakshya (*diminution of body strength*) Aswapna (*insomnia*)* and *Santataruk (*constant pain*).*[5] Treatment protocol for *Ashtimajjagata vata* given in *Ayurveda* is *Bahya* and *Abyantra Sneha.* [6] So, *Vata shamak* and *Brimham* treatment procedures should be done.

Case Report

A 44 years old male patient visited the OPD of *Panchakarma* Department of Rajiv Gandhi Govt. Post Graduate Ayurvedic College & Hospital Paprola with the complaint of pain in the left hip region from last 1 year. Initially pain was insidious in onset, dull in character and gradually progressive in nature and exacerbated by weight bearing with no radiation. For which he consulted a private clinic that treated him with analgesic for 10 days and got temporary relief. After a few months his pain increased along with restricted hip movements to an extent where he could not walk without support. Then he consulted an orthopedic surgeon at TMC and got his X-ray and MRI done. MRI report shows left femoral head osteonecrosis stage 2 (Arlet and Ficat's) for which he was suggested for surgical intervention. As the patient was not willing for surgical intervention, he approached the department of *Panchakarma* for conservative treatment.

Past History

History of cigarette smoking, alcoholism * > 30 years

History of hospitalization for COVID - 19 * 1.5 years back

There was no history of Hypertension, Diabetes Mellitus, Pulmonary Tuberculosis or any surgical intervention.

Personal History

Appetite - Normal

Thirst - Normal

Urine - Normal (5-6 times/day, 1-2 times/night)

Stool - Constipated on & off

Sleep - Disturbed

Family History

No relevant family history found.

Examinations

General Examination

Particular	Result
Temperature	98.4°F
Respiratory Rate	20/min
Pulse Rate	80/min
Blood Pressure	128/82mm of Hg

Systematic Examination

- Respiratory System/Cardiovascular System - NAD
- Central Nervous System- Conscious, Oriented, Cooperative.
- Locomotor system
  1. Gait - Antalgic (left side tilted)
  2. Inspection
     - Attitude - left patella and medial malleolus at higher level
     - Exaggerated lumbar lordosis
     - Left ASIS at higher level
  3. Palpation
     - Tenderness - anterior joint line tenderness on left side
     - GT at higher level on left side
  4. Measure of lower limbs
     - Apparent length- 37.5cm (right leg), 35.5cm (left leg)
     - True length - 36cm (right leg), 35cm (left leg)

Table 1: Showing Range of Motion of hip joint

Movement	Left	Right
Flexion	10° - 70°	0 - 110
Extension	Not possible	0 - 10
Adduction	0 - 10	0 - 40
Abduction	Not possible	0 - 30
Internal Rotation (on knee extension)	0 - 10	0 - 30
Internal Rotation (on knee flexion)	0 - 20	0- 30
External Rotation	Fixed at 30	0 - 40

Ashtavidha Pariksha

Parameter	Result
Nadi	*Samanya*
Mala	Constipation on and off
Mutra	Three to four times per day; one to two times per night
Jihva	*Anavritta*
Shabda	*Spaht*
Sparsh	*Samsheetoshna*
Druka	*Samanya*
Akriti	*Madhyam*

Investigation

Hematological

Hb	14.3 gm%
ESR	39 mm/hr
T.L.C.	9200 /Cu mm
Platelets	2.99 Lac/Cu mm
R.B.C	4.5 Mil/Cu mm

Serological

RA Factor	NR
CRP	2.9

Blood Chemistry

Sugar (R)	97.29 mg/dl
S. Uric Acid	5.9 mg/dl
S. Calcium	10.0 mg/dl

X- Ray

X- ray (Left Hip Joint) - Shows decreased joint space, protrusio acetabuli, subchondral sclerosis along with femoral head cyst.

MRI

MRI (Hip Joint) - suggestive of left sided (avascular necrosis) osteonecrosis of femoral head (Ficat & Arlet stages 2) with decreased joint space with synovitis with e/o marrow edema in acetabulum with past contrast enhancement.

Diagnosis - Diagnosed as Osteonecrosis of Femoral Head made on the basis of clinical findings, physical examination, X-ray & MRI reports.

Assessment Criteria

Improvement obtained through *Brimham chikitsa* was accessed on the basis of Visual Analog Scale (for pain), Goniometer (to measure range of movement of hip joints) and Harris Hip Score.

Treatment Method

In *Asthi Majja gata Vata*, due to predominance of *Vata dosha* in the *Asthi* and *Majja dhatus. Basti karma* was selected as the main treatment modality along with *Sarvanga abhyanga, Shashti shali pinda swedana (Snigdha sweda) & Shaman chikitsa. Tikta ksheersarpi basti* was administered in *Karma basti* regimen and *Anuvasana basti* was administered with *Ksheerabala taila. Sarvanga abhyanga, Shashti shali pinda swedana (Snigdha swedana)* was done for 30 days along with *Basti karma.*

Table 2: *Panchakarma* Procedure done

S.No.	Procedure	Drug used	Days
1.	*Sarvanga abhyanga*	*Ksheerabala tail*	30 days
2.	*Shashti shali pind swedana*	*Bala moola, Shashti shali, Go dugdh*	30 days
3.	*Tikta ksheerasarpi basti*	*Madhu* -80ml *Saindhav* - 5gm *Panchatikta ghrita* - 1120ml *Shatapushpa* - 40ml *Tikta dravya siddha ksheera* - 400ml	12

4.	*Anuvasana basti*	*Ksheerabala taila* - 50ml *Panchatikta ghrita* - 70ml *Shatapushpa kalka* - 10gm *Saindhav* - 5gm	18

Table 3: Following medicines were orally given along with *Panchakarma* procedures

S.No.	Drug	Dose
1.	*Maha yograj guggulu* (125mg)	2 tabs twice a day after meal with *Rasnadi kwath* (15ml)
2.	Tab Boswelya plus (250mg)	1 tab thrice a day after meal with lukewarm water
3.	Tab Rheumorax GSR (250mg)	1 tab twice a day after meal with lukewarm water
4.	*Dashmoolarishta*	20ml thrice a day after food with equal amount of lukewarm water
5.	*Mukta shukti bhasma* (125mg) + *Shankh bhasma* (125mg)	With honey twice a day

OBSERVATIONS

Pain

Pain was assessed by using Pain Vas Score (range from 0 to 10) where value 0 denotes no pain and value 10 denotes worst pain. Before treatment it was 8 in the left leg and came down up to 1 after completion of treatment.

ROM

Assessment of ROM of left hip joint including flexion, extension, abduction, adduction, internal rotation, external rotation was done with the help of goniometer before treatment and after completion of treatment are shown in following table.

Table 4: Observation in Range of motion of hip joint (left)

Movement (left hip joint)	ROM BT (in degree)	ROM AT (in degree)	Normal range
Flexion	10-70	0-110	110-120
Extension	Not possible	0-10	10-15
Internal rotation	0-10	0-30	30-40
External rotation	Fixed at 30	0-40	40-50
Abduction	Not possible	0-10	30-40
Adduction	0-10	0-15	30-50

HHS (Harris Hip Score)

Harris hip score was done before treatment & after completion of treatment for the evaluation of improvement obtained through selected treatment shown in the table.

Table 5: Harris Hip Score

S. No.	Criteria	Assessment	Left leg		Right Leg	
			BT	AT	BT	AT
1	Pain	1. None or ignores it (44) 2. Slight, occasional, no compromise in activities (40) 3. Mild pain, no effect on average activities, rarely moderate pain with unusual activity; may take aspirin (30) 2. Moderate Pain, tolerable but makes concession to pain. Some limitations of ordinary activity or work. May require Occasional pain medication stronger than aspirin (20) 3. Marked pain, serious limitation of activities (10) 4. 6. Totally disabled, crippled, pain in bed, bedridden (0)	10	30	30	40
2	Limp	1. None (11) 2. Slight (8) 3. Moderate (5)	5	8	5	11

		4. Severe (0)				
3	Support	1. None (11) 2. Cane for long walks (7) 3. Cane most of time (5) 4. One crutch (3) 5. Two canes (2) 6. Two crutches or not able to walk (0)	5	11	11	11
4	Distance Walked	1. Unlimited (11) 2. Six blocks (8) 3. Two or three blocks (5) 4. Indoors only (2) 5. Bed and chair only (0)	5	8	11	11
5	Sitting	1. Comfortably in ordinary chair for one hour (5) 2. On a high chair for 30 minutes (3) 3. Unable to sit comfortably in any chair (0)	3	5	5	5
6	Enter public transportation	1. Yes (1) 2. No (0)	0	0	0	0
7	Stairs	1. Normally without using a railing (4) 2. Normally using a railing (2) 3. In any manner (1) 4. Unable to do stairs (0)	2	2	2	2
8	Put on Shoes and Socks	1. With ease (4) 2. With difficulty (2) 3. Unable (0)	2	4	4	4
9	Absence of Deformity (All yes = 4; Less than 4 =0)	1. Less than 30° fixed flexion contracture □Yes □ No 2. Less than 10° fixed abduction □Yes □No 3. Less than 10° fixed internal rotation in extension □Yes □ No 4. Limb length discrepancy less than 3.2cm □Yes □No	0	0	0	0
10	Range of Motion	1. Flexion (*140°) 2. Abduction (*40°) 3. Adduction (*40°) 4. External Rotation (*40°) 5. Internal Rotation (*40°)	2 0 0 0 0	3 0 0 0 0	3 0 0 0 0	3 0 0 0 0
11	Range of Motion Scale	1. 211° -300° (5) 2. 161° -210° (4) 3. 101° -160° (3) 4. 61° - 100° (2) 5. 31° - 60° (1) 6. 0° - 30° (0)				
	Total	100	34	71	71	87

Scoring of Harris Hip Score

If the Harris Hip Score is less than 70= poor condition

If the Harris Hip Score is between 70-79= fair condition

If the Harris Hip Score is between 80-89= good condition

In current study, HHS is improved from 34 (BT)- 71 (AT)

DISCUSSION

Osteonecrosis most commonly occurs in the hip joint (femoral head). Other common sites are the shoulder, knee, and ankle joint. It is a death of a blood segment developed due to occlusion of microcirculation. Initially it is asymptomatic followed by vague pain. As disease progresses, there is progression in pain along with limitation of activities of daily living. In advanced stages, fusion of joints may

also occur. According to Ayurveda, *Vata* is the main *Dosha* in the *Asthi-majja gata vata*. Because of this, external and internal oleation is the treatment given in Ayurveda classics for *Asthi-majja gata vata*. Oil is considered best for *Vata* (vitiated) due to its opposite properties. [7] On that basis external oleation was done in the form of *Sarvang abhayang, Shastika shali pinda swedana* whereas internal oleation was done in the form of *Anuvasan & Tikta ksheerasarpi basti*.

Tikta Ksheera Sarpi Basti: *Asthi* is considered as the main *Dhatu* involved in osteonecrosis. *Acharya Charaka* mentioned that *Asthi dhatu* and *Vata dosha* share an *Ashraya- Ashrayi* relation. *Basti karma* is the best line of treatment for *Vata dosha* and is called as Ardha *Chikitsa.*[8] *Acharya Charaka* also specified that in the disease related to *Asthi,* we should use *Tikta dravyas* along with *Ghruta* and *Ksheera* in the form of *Basti* that is *Tikta ksheersarpi basti.*[9] *As*, *Akash* and *Vayu mahabhutas* are predominant elements in *Tikta rasa. [10]* Due to this, it comprises properties like *Laghu, Ruksha, Shuksham* and *Lekhan* in itself. It acts on *Medha dhatwaagni* and helps in correction of *Margavrodha* due to this *Uttarotar dhatu (Asthi* and *Majja)* formation occurs in the proper fashion. So, *Tikta dravya*s are used in *Niruha basti as* decoction and also as *Basti sneha dravya* in the form of *Panchatikta Ghrita.* For *Anuvasana basti Ksheer bala taila* was used *[11]*. The contents of *Ksheer bala taila* are *Snigdha, Guru,* and *Ushna* which also pacify *Vata dosha.*

Shastik Shali Pinda Swedana: *Shastika shali pinda swedana* is a type of *Sagni swedana.* It contains properties like *Vatahara, Brimham* and *Balaya.* Ingredients of *Shastika shali pinda swedana* are *Go Doogdha, Shasthik shali* and *Bala moola.* Due to these drugs, it provides nourishment and improve strength of muscles. Due to *Swedana* effect, it causes vasodilation due to which microcirculation of osteocytes increases. Because of an increase in microcirculation, osteocytes receive more oxygen, nutrition and also remove the waste products which promote healing. *Shastika shali pinda swedana* also decreases pain, stiffness and increases tissue extensibility. Thus, facilitating ease of motion and increase in range of motion. Therefore, *Shastika shali pinda swedana* improves the strength of tissues which in turns increase movements and flexibility. [12]

Outcomes: After the administration of *Tiktaksheer sarpi basti* in *Karma basti* regimen along with *Shastika shali pinda swedana* significant improvement was noticed in the patient. There was marked improvement in joint pain, gait and range of motion of hip flexion, extension, internal and external rotation after full course treatment. X-rays of the hip joint also didn't show any further progression of disease.

CONCLUSION

Osteonecrosis of Femoral Head is now becoming a burden on the health system due to non-availability of treatment protocol except surgery in modern medicines which have their own complications. With present study an effort was made to find better treatment modality. In present work Osteonecrosis of Femoral Head was treated by using the *Panchakarma* procedures like *Basti karma* and *Shastika shali pinda swedana* along with *Sarvanga abhyanga* which shows remarked result for stage 2 Osteonecrosis of Femoral Head. So, it is recommended to conduct such studies on large number of samples to achieve more concrete conclusions.

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