

## A Critical Analysis on Action of Various *Basti* on Avascular Necrosis of Femoral Head-Case Series

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### ABSTRACT:

One of the disorders that has been on the rise in recent years is AVN (Avascular necrosis) of the femoral head. The patients diagnosed with avascular necrosis of the femoral head have a variety of etiologies such as trauma/ joint injury, high dose of corticosteroid, high alcohol intake, increased pressure inside the bone, radiation, etc. In this case series, three male patients aged between 20-40 years were diagnosed with avascular necrosis of the femoral head with X-ray, MRI findings and clinical correlations- examinations as positive Thomas test, faber test, antalgic gait and restricted range of movement of the hip joint. In this case series, despite correlating and treating all the cases of AVN as *Asthimajjagata vata*, three distinct *Basti* i.e., *Yastyadi Basti*, *Vaitarana Basti* and *Panchatikta Ksheera Basti* were given for 16 days to treat the three cases of AVN patients' diverse symptoms. Patients with AVN are given *Basti Chikitsa* (Therapeutic enema) since these disorders are linked to *Vatarakta*, *Amavata* and *Asthimajjagata Vata*, amid others. Above all diseases has symptoms of AVN and *Basti* is the first line of treatment for *Asthimajjagata Vata*, *Amavata* and *Vatarakta*. *Basti Chikitsa* has several modalities since it performs not only *Shodhana* (cleansing measures) but also *Brumhana* (Nourishing therapy), *Lekhana* (Therapeutic scraping), *Shamana* (Palliative procedure) etc. There is marked improvement in all the symptoms of AVN and an increased range of movement after *Basti*, thus the study concluded that *Basti Karma* is one of the potential treatment options in AVN management.

**KEYWORDS:** Avascular necrosis, AVN, *Panchatikta Ksheer Basti*, *Vaitarana basti*, *Yastyadi Kala Basti*.

Received: 04.07.2023 Revised: 24.09.2023 Accepted: 30.09.2023 Published: 02.10.2023

### Quick Response code



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### INTRODUCTION:

Avascular necrosis of the femoral head (AVN-FH) refers to hip avascular necrosis, that causes the death (necrosis) of bone cells due to loss of blood supply.

AVN usually affects the epiphysial part (end part) of long bones, such as the femoral and humeral heads and the femoral condyles, but

small bones may also get involved. In practice AVN is most experienced in the hip. [1-2]

It is seen in children and young adults of age gap 35 to 45 years. [3] It can happen later in life as a result of alcohol or drug addiction (corticosteroids or osteoporotic drugs), trauma, radiation therapy, due to chronic diseases and increased internal bone

pressure. Certain medical conditions, including sickle cell anemia or Gaucher's disease, haemoglobinopathies, Caisson disease, hyperlipidemia, SLE, chronic liver disease, Antiphospholipid antibody syndrome, HIV, and hypercoagulable states (Protein C & Protein S deficiency) etc. Pathophysiology of avascular necrosis is as per Flow Chart no. 1.

It is typically diagnosed after a person complains of hip pain and restricted motion and radiating pain at groin region where the pain is exacerbated by activity and relieved by rest and difficulty in floor activity etc. AVN is diagnosed with X-Rays, (Osteopenia, Patchy Sclerosis, Scattered cyst, Crescent Sign, Degenerative arthritis, flattening of femoral head are the probable findings.).<sup>[4]</sup> Bone scan, Magnetic resonance imaging (MRI) etc. Progressive diagnostic stages are as per Steinberg staging of osteonecrosis of the femoral head.<sup>[5]</sup>

In early stages, AVN is easily managed by rest, exercises, and electrical stimulation etc. In later stages surgical management is required as Core decompression, Bone transplant, (Graft), Bone Reshaping (Osteotomy), Joint replacement etc. In addition to managing pain, allopathic medications like NSAIDS also have limited efficacy and having adverse effects too, and some patients are unwilling to consider surgery in early stage.

*Basti* is considered by Ayurveda to be the most specialised *Panchakarma* treatment for *Vata dosha*. In this case series AVN patients were diagnosed as per classical *Lakshana* of *Vatarakta*, *Aamvata* and *Asthimajjagata vikara*. In above all three diseases *Basti chikitsa* is given as primary treatment. *Yastyadi Niruha Basti*, *Vaitarana Basti*, and *Panchatikta Ksheera Basti* provide remarkable results by considerably lowering all symptoms and enhancing the patient's quality of life by increasing daily

activity, range of motion, gait, and pain management.

#### PATIENT INFORMATION:

This case series included participants who visited the panchakarma OPD of ITRA, Jamnagar, with presenting complaints of pain at both hip joints and difficulty in floor activity. Cases that were evaluated includes the history, physical examination, MRI reports and Harris hip score. Demographic data collected includes age, gender, personal and medical history with duration since the onset of the condition. Pre- and post-assessment was done by the Harris hip score.

Demographic data that include affected site of hip and durations of all 3 patients are described in [Table 2].

#### Patient 1

A 29-year-old Hindu, unmarried, male patient visited ITRA OPD on 15/06/2022, with a complaint of pricking type of pain in both hip joints, difficulty in walking and floor activity for 7 months. He was having associated complaints of eczema over both thigh region since last 5 years. The patient was under conventional medication, which included steroid (Hydrocortisone (10 mg/day) and analgesic drugs as tab Diclophenac (500 mg once a day) for 2.5 years. He had history of COVID in December 2020 but not taken steroid medication at that time. He had not any traumatic history. He had history of chewing tobacco for 6 years. After seeing all the clinical presentation of AVN, he was suggested to do MRI of both hip joints and diagnosed as AVN on 30/06/2022.

#### Patient 2

A 37-year-old, married, male patient, who was diagnosed with bilateral avascular necrosis of the femoral head visited ITRA

hospital on 26/04/2022. His chief complaints were pain at the anterior region of the thigh radiating to both groin areas with radiating pain in both knee joint and right shoulder joint for 6 months. He had COVID-19 positive in March 2021 and received steroids (Dexamethasone 1.5 mg/day for 10 days, Remdesivir (100 mg IV) for 3 days and other conservative medication (Tablet Zincovit and Aceclophenac 500 mg once a day for 1 month) for management of his symptoms. He also had a history of allergic rhinitis since childhood and occasionally taking medication for that.

### Patient 3

A 23-year-old male patient was diagnosed as AVN of both Hip joint on 26/09/2022. His presenting complaints were of pain in right hip joint and difficulty in floor activity since last 3 months. He had history of positive COVID-19 on September 2021, for which the patient was admitted in intensive care at another hospital because of dropping oxygen saturation. During his hospitalization, the patient was administered intravenous and oral steroids for (IV and oral dexamethasone) 1 month. In July 2022 he had an accident by falling from a bike and had injury to his lower back and left hip joint. After 1 month of rest, he gradually started pain in both hip joints and difficulty in walking. He underwent surgery for core decompression for the left hip joint in October 2022.

### CLINICAL FINDINGS:

MRI reports, clinical examinations include Thomas test, Faber test, Femoral stretch test, and range of movement of hip joint is mentioned in [Table no 3].

### THERAPEUTIC INTERVENTION:

Three of the patients had received the same treatment protocol of *Abhyanga* and *Swedana* as a part of *Purvakarma of Basti*. *Sthanika Abhyanga* (*Katipradesha* (lower back), *Prustha* (Upper back), *Pashrva* (flanks), *Ubhayapada* (both lower limbs) with *Sahachara taila*. *Sthanika Nadi Sweda* (Hot Fomentation). Three of the patients received different basti as *Yastyadi Kala basti*, *Vaitarana basti*, and *Panchatikta ksheera basti*.

The timeline of events is as depicted in [Table no. 4]

Details of the *Basti* are given with the contents in [Table no. 5]

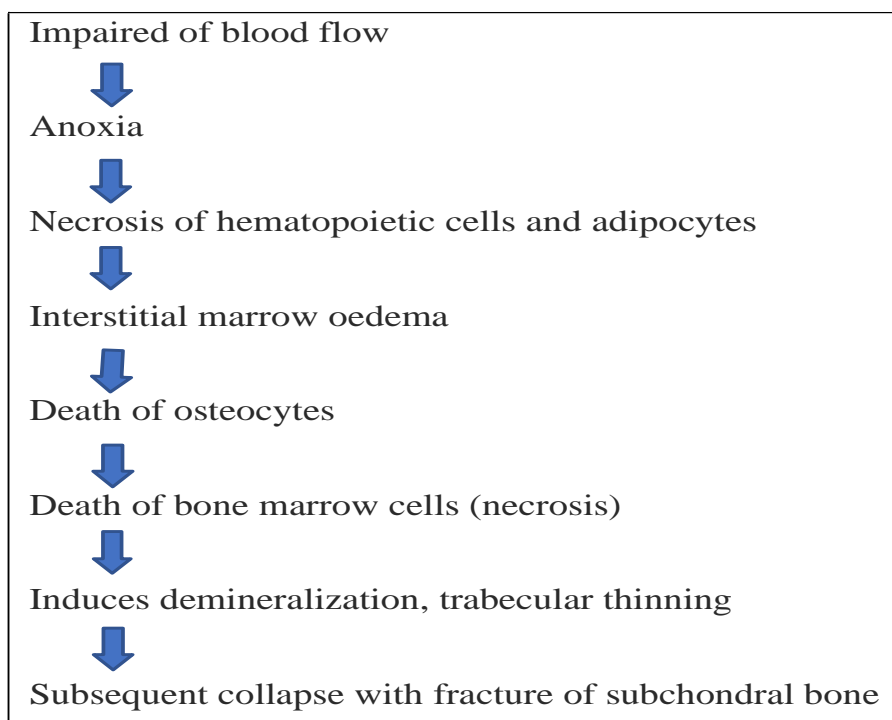
### FOLLOW UP AND OUTCOMES:

From the above three cases of AVN show that, *Basti Karma* is giving markable results in patients by subsiding all the symptoms and increasing the range of movement of the hip joint, improvised gait, posture, etc.

Symptomatic analysis of three patients is given in [Table no. 3].

However, MRI changes after 3 month of treatment was not significant enough.

Changes in VAS scale and Harris hip score is as per [Table no. 6,7,8].



**Flow chart no. 1: [Pathophysiology of AVN:]**

**Table-1: Stages of AVN**

Stage	Clinical and Laboratory Findings
Stage 0	<ul style="list-style-type: none"> <li>• Patient is asymptomatic.</li> <li>• Radiography findings are normal.</li> <li>• Histology findings demonstrate osteonecrosis.</li> </ul>
Stage I	<ul style="list-style-type: none"> <li>• Patient may or may not be symptomatic.</li> <li>• Radiography and CT scan findings are unremarkable.</li> <li>• AVN is considered likely based on MRI and bone scan results (may be subclassified by extent of involvement).</li> <li>• Histology findings are abnormal.</li> </ul>
Stage II	<ul style="list-style-type: none"> <li>• Patient is symptomatic.</li> <li>• Plain radiography findings are abnormal and include osteopenia, osteosclerosis, or cysts.</li> <li>• Subchondral radiolucency is absent.</li> <li>• MRI findings are diagnostic.</li> </ul>

Stage III	<ul style="list-style-type: none"> <li>• Patient is symptomatic.</li> <li>• Radiographic findings include subchondral lucency (crescent sign) and subchondral collapse.</li> <li>• Shape of the femoral head is generally preserved on radiographs and CT scans.</li> <li>• Subclassification depends on the extent of crescent, as follows: <ol style="list-style-type: none"> <li>1. Stage IIIa: Crescent is less than 15% of the articular surface.</li> <li>2. Stage IIIb: Crescent is 15-30% of the articular surface.</li> <li>3. Stage IIIc: Crescent is more than 30% of the articular surface.</li> </ol> </li> </ul>
Stage IV	<ul style="list-style-type: none"> <li>• Flattening or collapse of femoral head is present.</li> <li>• Joint space may be irregular.</li> <li>• CT scanning is more sensitive than radiography.</li> <li>• Subclassification depends on the extent of collapsed surface, as follows: <ol style="list-style-type: none"> <li>1. Stage IVa: Less than 15% of surface is collapsed.</li> <li>2. Stage IVb: Approximately 15-30% of surface is collapsed.</li> <li>3. Stage IVc: More than 30% of surface is collapsed.</li> </ol> </li> </ul>
Stage V	<ul style="list-style-type: none"> <li>• Radiography findings include narrowing of the joint space, osteoarthritis with sclerosis of acetabulum, and marginal osteophytes.</li> </ul>
Stage VI	<ul style="list-style-type: none"> <li>• Findings include extensive destruction of the femoral head and joint.</li> </ul>

**Table-2: Symptoms of all cases :**

	1 <sup>st</sup> Patient	2 <sup>nd</sup> Patient	3 <sup>rd</sup> Patient
<b>Side affected</b>	Both (left>right)	Both (right>left)	Both (right>left)
<b>Duration since onset of symptoms in days</b>	7 months	6 months	3 months

**Table-3:Physical Examination before and after treatment:**

Examination		1 <sup>st</sup> Pt		2 <sup>nd</sup> Pt		3 <sup>rd</sup> Pt	
		BT	AT	BT	AT	BT	AT
<b>MRI</b>	<b>Left</b>	Grade 3	Grade 3	Grade 3	Grade 2	Grade 2	Grade 2
	<b>Right</b>	Grade 3	Grade 3	Grade 3	Grade 3	Grade 3	Grade 3
<b>Thomas test</b>	<b>Left</b>	Positive	Mild positive	Positive	Mild positive	Negative	Negative

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	Right	Positive		Mild positive		Positive		Mild positive		Positive		Negative	
Faber test	Left	Positive		Negative		Positive		Negative		Positive		Negative	
	Right	Positive		Negative		Positive		Negative		Positive		Negative	
Femoral stretch test	Left	Positive		Negative		Positive		Negative		Negative		Negative	
	Right	Positive		Negative		Positive		Negative		Negative		Negative	
Range of movement of hip joint		Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right
Flexion		80°	110°	110°	120°	110°	90°	120°	115°	120°	100°	120°	115°
Extension		5°	10°	15°	20°	10°	10°	20°	20°	15°	5°	20°	15°
Internal rotation		20°	30°	30°	30°	20°	10°	30°	30°	20°	10°	30°	15°
External rotation		30°	40°	40°	60°	30°	15°	40°	40°	30°	20°	40°	30°
Adduction		20°	30°	30°	30°	20°	10°	30°	30°	20°	10°	30°	20°
Abduction		20°	30°	30°	40°	20°	15°	30°	30°	15°	15°	20°	30°

**Table- 4:Timeline:**

<b>Patient 1</b>		<b>Patient 2</b>		<b>Patient 3</b>	
<b>Date</b>	<b>Specification</b>	<b>Date</b>	<b>Specification</b>	<b>Date</b>	<b>Specification</b>
Since 2017	H/o Eczema at both thigh	March 2021	COVID 19	September, 2021	COVID 19
December 2020	COVID 19				
December, 2021	Gradual pain and stiffness in B/L hip joint.	December, 2022	Gradual pain and stiffness in B/L hip joint.	June, 2022	Gradual pain and stiffness in B/L hip joint.
15/6/2022	Visit to OPD	26/04/2022	Visit to OPD	July, 2022.	Accident from bike
30/06/2022	Diagnosed as AVN.	10/05/2022	Admission in IPD.	October, 2022.	Surgical history of core-decompression at left hip joint

1/7/2022	Admission in IPD.	11/5/2022	Vaitaran Basti	27/9/2022	Visit to OPD
1/7/2022	Mridu Virechana with Eranda Taila+ Triphala Kwath.	13/7/2022	Follow up	27/9/2022	Admission in IPD.
3/7/2022	Yasyadi Basti			28/9/2022	Panchatikta ksheera Basti
5/9/2022	Follow up			17/12/2022	Follow up

Table-5: Details of Basti:

	1 <sup>st</sup> Patient	2 <sup>nd</sup> Patient	3 <sup>rd</sup> Patient
<b>Basti name</b>	<i>Yastyadi Basti</i>	<i>Vaitarana</i> <sup>[11]</sup>	<i>Panchatikta Ksheera</i> <sup>[12]</sup>
<b>Contents-</b>	Honey - 60 gram	Jaggery- 40 gram	Honey - 60 gram
	Saidhava (Rock salt)- 12 gram	Saidhava- 12 gram	Saidhava- 12 gram
	Balaguduchyadi taila- 60 ml	Kalka- Amlika kalka (Tamarind paste)- 40 gram	Sneha- Panchatikta Ghrita- 60 ml
	Kalka- Yasti+ Guduchi+ Hribera+ Majistha+ Sariva = 25 grams	Milk - 200 ml	Kalka- Panchatikta kalka (Medicated paste)- 20 gram
	Kwath- Erandamula Kwath (Medicated decoction)- 450 ml		Kwath- Panchatikta kwatha (Medicated decoction)- 450 ml Ksheera – 100 ml
<b>Time for treatment received</b>	16 days (7 Niruha Basti+ 9 Anuvasana with Balaguduchyadi Taila- 90 ml)	16 days (7 days Basti + 2 days gap + 7 days Basti)	16 days (7 days Basti + 2 days gap + 7 days Basti)

Table-6: VAS scale in all cases:

Patients	BT	AT
<b>Pt 1</b>	7	1
<b>Pt 2</b>	6	2
<b>Pt 3</b>	3	0



Table-7: Harris hip score chart:

Criteria	Patient 1			Patient 2			Patient 3		
	BT	AT	Follow-up of 1 month	BT	AT	Follow-up of 1 month	BT	AT	Follow-up of 1 month
Pain	20	44	44	20	40	44	40	44	44
Limp	5	8	11	5	8	11	8	11	11
Support	7	11	11	5	7	11	7	11	11
Distance walked	5	11	11	5	11	11	11	11	11
Sitting	3	5	5	3	5	5	5	5	5
Enters public transportation	0	0	0	0	0	0	1	1	1
Climbing stairs	1	4	4	1	4	4	4	4	4
Put on shoes & socks	0	4	4	2	4	4	2	4	4
Absence of Deformity (All yes =4; Less than 4 =0)	0	0	0	0	0	0	0	0	0
Range of Motion (flexion, extension, internal rotation, external rotation, abduction, adduction)	80 20 20 30 20	120 30 30 40 30	140 30 30 40 30	90 15 10 15 10	115 30 30 40 30	125 30 30 40 30	110 20 20 30 20	120 30 20 40 30	140 40 30 40 30
Range of Motion Scale	4	5	5	3	5	5	4	5	5

Table-8: Scoring of Harris Hip Score:

Patient	BT	AT	Follow-up of 1 month
1 <sup>st</sup>	45	92	95
2 <sup>nd</sup>	44	84	95
3 <sup>rd</sup>	82	96	96

## DISCUSSION:

Patient 1 experienced vitiation of *Rakta dhatu*, an eczema, Suppression of disease by various medications lead to depletion of *Asthi* and *Majja dhatu*, resulting in *Vata prakopa avastha*. Simultaneous vitiation of *Vata dosha* and *Rakta Dhatu* showed pricking pain (~*Toda*) in all Joints (~*Sandhi*, *Asthi* and *Majja*) with discoloration of skin

color (~*Shyava* and *Tamra*), hence this patient was diagnosed as *Gambheera Vatarakta* and treated with Acharya Charaka's *Virechana* and *Basti*.<sup>[6]</sup>

*Virechana* was given with *Eranda taila*- 50 ml and *Triphala kwath*- 50ml because for elimination of *Pitta dosha*. The *Basti*, prepared using hospital medications, primarily works for *Vata dosha* and



*Balaguduchyadi Taila*, which is beneficial for *Rakta Dhatu gata Vikara*.<sup>[7]</sup>

*Kalka* and *Kwath* used in *Yastyadi Basti*, to balance *Vata dosha* and have anti-inflammatory and analgesic effects.<sup>[8]</sup> The *Basti* works as *Vatashamaka* and *Raktaprasadaka*, providing relief for the symptoms and signs. The *Basti* is effective in treating both acute and chronic *Vatarakta*.

Patient 2 experienced joint pain, stiffness, and abdominal heaviness, indicating *Amavata*. The *Vaitarana Basti*, with qualities like *Laghu*, *Ruksha*, *Ushna*, and *Tikshna*, mainly acts as *Vata Kapha Shamaka* due to antagonism with *Kapha* and *Ama*. To avoid *Gomutra*, a mild *Godugdha Yukta Vitarana basti* was selected. The *Godugdhayukta Vaitarana Basti* has more lipid content, allowing rapid absorption from the rectum.<sup>[9-10]</sup>

Patient 3's clinical presentation shows *Vata Dosha* dominance and *Vikruti* of *Asthi Dhatu* (bony tissue) due to *Abhigata*. Traumatic injuries cause blood vessel occlusion, leading to aggravated *Vayu* in joints and causing *Raktavaha strotas* obstruction)

*Tikta Dravya Sadhita Ksheera Basti* is indicated for *Asthikshayaja Vikara* disorders caused by decreased *Asthi Dhatu*. It contains *Tikta Rasa*, dominance of *Vayu* & *Akasha Mahabhuta* resembles as *Asthi*, and possesses *Vataghna*, *Rasayana*, *Pachan Karma* (by removing *Margavrodha*) and *Kshira* balancing *Vata dosha* and acting as *Brimhana*.

These factors-the probable mode of action may be responsible for the relief of the signs and symptoms of the disease.

## CONCLUSION:

Instead of treating every patient with AVN as *Asthimajjagata Kshaya*, the primary etiological factors must be screened out. In *Raktadushtikara Nidana*, *Yastyadi Niruha* appear to have an effect in AVN patients.

Working in posttraumatic situations *Panchatikta Ksheera Basti* is impactful.

*Vaitarana Basti* may influence the AVN patient in *Vata- Kaphaja* disease.

## Consent of patients:

The written informed consent has been taken from all three patients before the procedure and for publication without disclosing their identity.

## REFERENCES:

1. Matthews AH, Davis DD, Fish MJ, Stitson D. Avascular Necrosis. In: StatPearls. Treasure Island (FL): StatPearls Publishing; November 14, 2022.
2. Bose VC, Baruah BD. Resurfacing arthroplasty of the hip for avascular necrosis of the femoral head: a minimum follow-up of four years. *J Bone Joint Surg Br.* 2010 Jul. 92(7):922-8.
3. Bailey & Loves, short Practice of Surgery, Hodder Arnold (London) publication, 2008, 25th edition, Part 5, Chapter 35, p. 515.
4. <https://calgaryguide.ucalgary.ca/vascular-necrosis-avn-of-the-femoral-head-findings-on-x-ray/> (Last Accessed on April 2023)
5. Rezaee A, Yap J, Luong D, et al. Steinberg staging of osteonecrosis of the femoral head. Reference article, Radiopaedia.org (Accessed on 24 Sep 2023) <https://doi.org/10.53347/rID-44537>
6. Dr Ram Karan Sharma and Vaidya Bhagvan Dash, translated, Charak Samhita of Agnivesha, Chikitsasthana, Vol5 Ch.29, Ver. 10,11, Reprint 2016 edition, Varanasi: Chowkhamba Sanskrit Series Office; p.88
7. R. Vidyanath, Sahastrayogam, Choukhambha Sanskrit Series office publication, second edition 2008, Taila prakarana, page no. 117, ISBN-8170801729

8. Kesar N. Kshirsagar et al: A Case Study to Evaluate The Efficacy Of Kal Basti Followed By *Panchatikta Ksheer Sarpi Basti* In The Management Of *Asthimajjagat Vata* With Special Reference To Hla-B27 (Ankylosing Spondylitis). International Ayurvedic Medical Journal {online} 2020 {cited August, 2020}
9. Mukherjee, Amit. (2018). Efficacy of Vaitarana Basti with respective to Ayurveda. Journal of Drug Delivery and Therapeutics. 8. 246-250. 10.22270/jddt.v8i6-s.2122.
10. Thesis of Dr. Pooja Soni entitled Efficacy of *Panchatikta Ksheera Basti* and *Panchatikta Ghrita Matra Basti* after *Virechana karma* in the management of Avascular necrosis of femoral head w.s.r. To *Asthimajjagata Vata*. – an open labelled randomized comparative clinical trial. (2021) ITRA, Jamnagar.
11. Nirmal Saxena, Vangasena samhita or chikitsa sara sangraha, Published by Chaukhambha sanskrit series office, Varanasi, Chapter number 83, Bastikarmadhikara vol II, Verse number 186 to 190, Page number: 1164
12. Tripathi Brahmanand, editor. Charakasamhita of Agnivesha, Charaka-Chandrika Hindi Commentary, Vol. 1, Sutrasthana, chapter 28, verse 27, Chaukhambha Surbharti Prakashan; Varanasi: reprint ed. 2006. p. 550.

**Conflict of interest:** Author declares that there is no conflict of interest.

**Guarantor:** Corresponding author is guarantor of this article and its contents.

**Source of support:** None

**How to cite this article:**

Marsoniya SS. Gandhi RS. A Critical Analysis on Action of Various *Basti* on Avascular Necrosis of Femoral Head-Case Series. Int. J. AYUSH CaRe. 2023;7(3):346-355.