

# A Customized Ayurveda Treatment Protocol in the Management of *Asthimajjagata Vata* (Avascular necrosis of femoral head) - A Case Series

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## Abstract

Avascular necrosis of the femoral head is a type of osteonecrosis due to disruption of blood supply to the proximal femur. Due to similarity in its signs and symptoms, it can be correlated with *Asthimajjagata Vata*. According to *Ayurveda*, *Vata*, *Pitta* and *Rakta dosha* play an important role in etiopathogenesis of AVN along with *Asthi* and *Majja Kshaya*.

**Aim:** To assess the effectiveness of a customized Ayurveda treatment protocol for the management of *Asthimajjagata Vata*.

**Material and Method:** We present a case series of 3 patients diagnosed with avascular necrosis of femoral head, underwent *Panchakarma* procedures including *Rukshana* (dehydrating therapy) *Snehana* (oleation) *Virechana* (therapeutic purgation) *Patra Pinda Sweda* (fomentation with bolus) and *Basti Karma* (therapeutic enema) were along with *Shamana Aushadha* (internal medication)).

**Observation And Result:** As a result of the treatment protocol, there was a significant improvement in the Harris Hip Score, Oxford Hip Score, and the range of motion of the hip. The changes observed in these assessment criteria, along with reduced pain (VAS score), indicate that the patient's quality of life has improved. This is further evidenced by the patient's ability to perform daily routines, as assessed by the Short Form Health Survey-12. Given these encouraging results, it can be inferred that a customized Ayurveda treatment protocol for managing Avascular Necrosis (AVN) shows promising results.

**Keywords:** Avascular Necrosis, *Asthimajjagata Vata*, Ayurveda, *Panchakarma*

## How to cite this article

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## Introduction

Avascular necrosis of the femoral head (AVNFH) is a type of osteonecrosis due to disruption of blood supply to the proximal femur. It can occur due to a variety of causes, either traumatic or atraumatic in origin. causes include fractures, dislocations, chronic steroid use, chronic alcohol use, coagulopathy, congenital causes; among many others. (1) Avascular necrosis of the femoral head is a debilitating disease and is an important condition requiring healthcare professionals to be vigilant for its presentation. Chronic steroid use and excessive alcohol consumption represent the bulk of non-traumatic etiologies, contributing to more than 80% of them.

Steroid-associated osteonecrosis represents the second most common cause of osteonecrosis overall, after trauma. (2) Treatments are best implemented at the pre-collapse stage and include both operatives as well as non-operative options. If left untreated, femoral head necrosis may lead to subchondral fractures within only 2 to 3 years. Medical management involves pharmacological and biophysical modalities, including antiplatelets, anticoagulants, vasoactive agents, and statins to improve blood supply to compromised femoral heads. Bisphosphonates suppress osteoclast activity, while biophysical therapies like Hyper Baric Oxygen Therapy (HBOT), shockwave therapies like Extracorporeal Shock Wave Therapy (ESWT) and

electrical stimulation like Pulsed Electro Magnetic Field (PEMF) are conservative modalities. (3) Many surgical procedures, such as drilling and insertion of bone grafts, as well as hip replacement, are costly and often have poor prognoses, with no complete cure for AVN available. Additionally, surgical interventions come with a risk of complications such as infection, blood clots, and prosthetic failure, which can lead to further surgeries and prolonged recovery times. The conservative management available in modern medicine includes pharmacological interventions and lifestyle modifications aimed at slowing the progression of the disease and managing symptoms. (1) However, these approaches often fall short of providing a complete solution and may not prevent the eventual need for surgical intervention. It is crucial to consider the history of COVID-19 infection when evaluating patients with Avascular Necrosis (AVN) of the femoral head. Emerging evidence suggests that COVID-19 may influence the development and progression of AVN due to its association with hypercoagulability, endothelial dysfunction, and inflammatory responses. (4) These factors can potentially exacerbate the disruption of blood supply to the femoral head, thereby contributing to the pathogenesis of AVN. Additionally, the use of corticosteroids in the treatment of severe COVID-19 cases may further increase the risk of AVN. (5) In Ayurveda, Avascular Necrosis can be correlated with *Asthimajjagata Vata* due to its similar signs and symptoms. Wide range of treatment modalities have been mentioned in Ayurveda that are useful in such manifestation. (6)

### Patient Information

#### Case 1

A 30-year-old male patient, diagnosed case of Avascular Necrosis of femoral head (Ficat-Arlet STAGE 3 on right side and stage 2 on left side) with mild right hip joint effusion Initially took OPD based treatment for 15days and then got admitted in Panchakarma IPD of Government tertiary care hospital, New Delhi with chief complaints

of pain along with stiffness in both hip joints, difficulty in walking and raising from sitting position since last 1 & half year. He presented with a limping gait and pain aggravates on doing his daily activity. (Table 1)

#### Case 2

A 37-year-old male patient, diagnosed case of Avascular Necrosis of femoral head (Ficat-Arlet STAGE 2 on right side) with minimal edema, Initially took OPD based treatment for almost 3 weeks and got admitted in Panchakarma IPD of Government tertiary care hospital, New Delhi with chief complaints of pain along with stiffness in right hip joints, difficulty in walking and on prolonged standing since last 6 months. He presented with mild limping and pain aggravates on doing his daily activity. (Table 1)

#### Case 3

A 53-year-old female patient, diagnosed case of Avascular Necrosis of femoral head (Ficat-Arlet STAGE 3 on left side and stage 2 on right side) with mild left hip joint effusion, came to OPD and did OPD based treatment for 1 month and then got admitted in Panchakarma IPD of Government tertiary care hospital with chief complaints of pain along with stiffness in both hip joints, difficulty in walking and on prolonged sitting since last 3 months. she presented with pain which aggravates on doing her daily activity. (Table 1)

### Personal & medical history

All patients were having normal appetite & bowel habit, there was no history of alcohol & no specific medical history noted.

Table 1: Demographic data of all patients

	Patient 1	Patient 2	Patient 3
Age in years	30	37	53
Gender	Male	Male	Female
Occupation	Pvt Job	Govt employee	House wife
History of covid-19	Yes	No	Yes
Side affected	Both Hip Joint	Right Hip Joint	Both Hip Joint

### Clinical Findings

#### Examination of patient

Both systemic and general examinations were done, and it was found normal. On physical examination, range of motion was restricted and painful in all ranges in all 3

patients. Mostly pain was being felt at the time of extension and adduction. Straight leg raises produce pain in both hip with stretch in thigh region. Lower limb neurological testing revealed normal reflexes and sensory testing bilaterally. Ayurveda clinical findings are elaborated in Table 2

Table 2: Comparative chart of *Dashavidha* and *Ashtavidha Pariksha* of 3 patients

<i>Dashvidha Aatura Pariksha</i>				
		Case 1	Case 2	Case 3
1	Prakriti (body constitution)	<i>Pittapradhan Vata</i>	<i>Pittapradhana Kapha</i>	<i>Pittapradhana Vata</i>
2	<i>Vikruti</i> (disease nature)	<i>Madhyama</i>	<i>Madhyama</i>	<i>Madhyama</i>
3	<i>Sara</i> (quality of tissue)	<i>Meda and Mamsa Sara</i>	<i>Rakta and Mamsa Sara</i>	<i>Meda and Mamsa Sara</i>
4	<i>Samhanana</i> (body built)	<i>Madhyama</i>	<i>Madhyama</i>	<i>Madhyama</i>
5	<i>Pramana</i> (anthropometry)	Wt.74kg Ht.5' 8"	Wt.66kg Ht.5' 4"	Wt.74kg Ht.5' 5"
6	<i>Satmya</i> (adaptability)	<i>Madhyama</i>	<i>Madhyama</i>	<i>Madhyama</i>
7	<i>Satva</i> (mental strength)	<i>Madhyama</i>	<i>Madhyama</i>	<i>Madhyama</i>
8	<i>Aaharashakti</i> (food intake and digestive capacity)	<i>Abhyavarana Shakti-Good</i> <i>Jaranashakti-4-5hr</i>	<i>Abhyavarana Shakti-Good</i> <i>Jaranashakti- 3 To 4hr</i>	<i>Abhyavarana Shakti-Good</i> <i>Jaranashakti-4 To5hr</i>
9	<i>Vyayamashakti</i> (exercise capacity)	<i>Avara</i>	<i>Avara</i>	<i>Avara</i>
10	<i>Vaya</i> (age)	<i>Yuva</i>	<i>Yuva</i>	<i>Jara</i>
<i>Ashtavidha pariksha:(Eight fold of examinations)</i>				
		Case 1	Case 2	Case 3
1.	<i>Nadi</i> (pulse)	82/min	76/min	72/min
2.	<i>Mutra</i> (urine)	<i>Samyak</i>	<i>Samyak</i>	<i>Samyak</i>

3.	<i>Mala</i> (stool)	Irregular bowel	Unsatisfactory bowel	Irregular bowel
4.	<i>Jivha</i> (tongue)	<i>Sama</i>	<i>Sama</i>	<i>Sama</i>
5.	<i>Shabda</i> (nature of voice)	<i>Samyaka</i>	<i>Prakrit</i>	<i>Prakrit</i>
6.	<i>Sparsha</i> (touch)	<i>Samshitoshna</i>	<i>Samshitoshna</i>	<i>Samshitoshna</i>
7.	<i>Druka</i> (eyes)	<i>Prakrit</i>	<i>Prakrit</i>	<i>Prakrit</i>
8.	<i>Aakruti</i> (built)	<i>Madhyama</i>	<i>Madhyama</i>	<i>Madhyama</i>

### Timeline

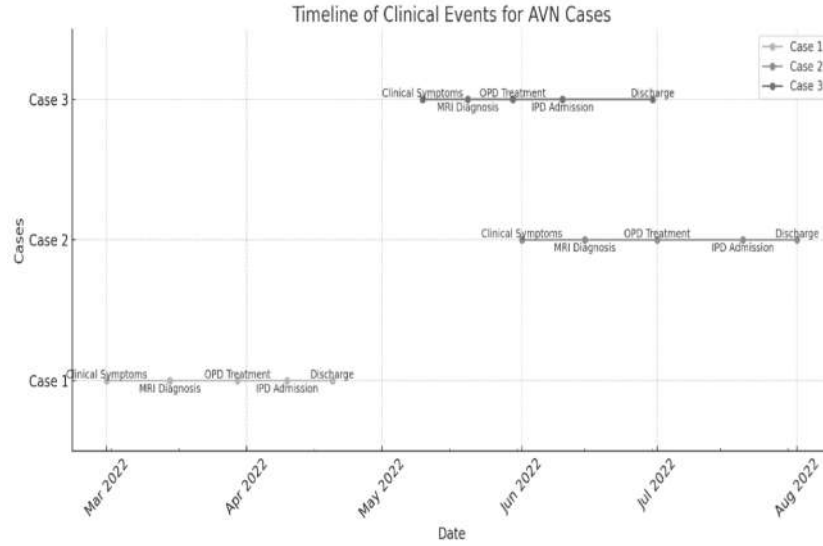


Fig 1: Timeline of Clinical events

## Panchakarma Therapies

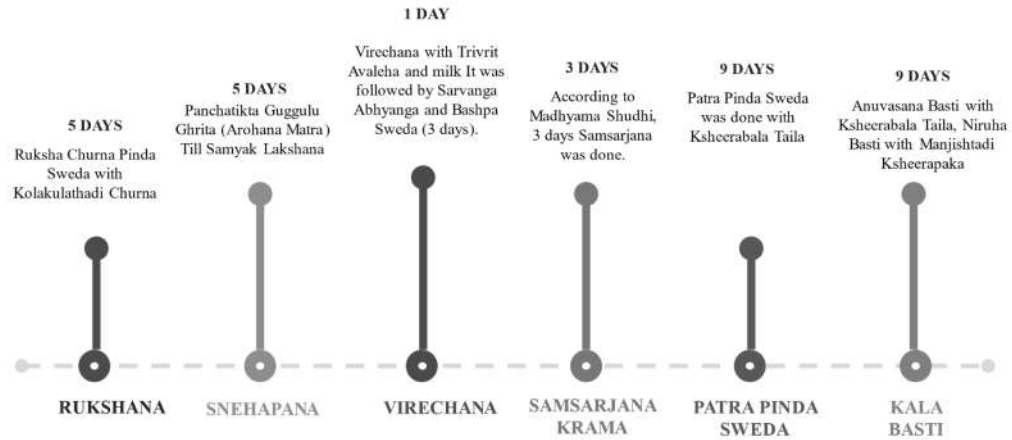


Fig: 2 Timeline of Panchakarma Therapies done

### Diagnostic Assessment-MRI

**Case 1 :** MRI finding dated on 19<sup>th</sup> Feb 2022 were suggestive of Avascular necrosis of femoral head. (Ficat-Arlet STAGE 3 on right side and stage 2 on left side) with mild right hip joint effusion.

**Case 2 :** MRI finding dated on 16<sup>th</sup> May 2022 were suggestive of Avascular necrosis of femoral head.

(Ficat-Arlet STAGE 2) with minimal edema.

**Case 3 :** MRI finding dated on 21<sup>th</sup> May 2022 were suggestive of avascular necrosis of left hip (Stage II) with diffuse edema with extensions as described above - likely post traumatic.

The protocol began with *Ruksha Churna Pinda Sweda*, a dry bolus fomentation using *Kolkulathhadi Churna*, applied for 5 days to alleviate pain and stiffness. This

was followed by *Snehapana*, the intake of *Panchatikta Guggulu Ghrita* till *Samyak Snigdha Lakshana* (proper signs and symptoms of oleation) *Sarvanga Abhyanga*, a therapeutic whole body oil massage with *Tila Taila*, and *Sarvanga Bashpa Sweda*, a steam fomentation using *Dashmoola Kwatha*, were performed for 3 days. *Virechana*, a therapeutic induced purgation using *Trivrit Avaleha* with *Ksheera*, was administered for 1 day for detoxification. The patient then followed a *Samsarjana Krama*, a diet regimen with restrictions, for 3 days post purification according to *Madhyama Shudhi*. Additionally, *Patra Pinda Sweda*, a bolus fomentation using *Ksheerbala Taila*, was conducted for 9 days. The treatment concluded along with *Kala Basti*, an enema therapy involving *Anuvasana Basti* using *Ksheerbala Taila*, *Shatpushpa*, and *Saindhava*, along with *Niruha Basti* incorporating *Madhu*, *Saindhava*, *Panchatikta Guggulu Ghrita*, *Shatpushpa Kalka*, and *Manjishthadi Ksheerpaka*, administered over 9 days. (Table 3)

**Table 3: The therapies done during the hospital stay is mentioned**

Sr.No.	Procedure	Medicine used	Duration (days)
1.	<i>Ruksha Churna Pinda Sweda</i> (Dry Bolus fomentation with medicated powder)	<i>Kolkulathhadi Churna</i>	5
2.	<i>Snehapana</i> (medicated ghee intake)	<i>Panchatikta Guggulu Ghrita</i>	5
3.	<i>Sarvanga Abhyanga</i> (whole body oil therapeutic massage)	<i>Tila Taila</i>	3
4.	<i>Sarvanga Bashpa Sweda</i> (whole body medicated steam fomentation)	<i>Dashmoola Kwatha</i>	3
5.	<i>Virechana</i> (therapeutic induced purgation)	<i>Trivrit Avaleha</i> with <i>Ksheera</i> as <i>Amupana</i>	1
6.	<i>Samsarjana Krama</i> (diet regimen following Bio-purification)	Diet restriction	3
7.	<i>Patra Pinda Sweda</i> (bolus fomentation using leaves)	<i>Ksheerbala Taila</i>	9
8.	<i>Kala Basti</i>	<i>Anuvasana- Ksheerbala taila 120ml+Shatpushpa+Saindhava</i> <i>Niruha basti:</i> <i>Madhu-80ml</i> <i>Saindhava-8gm</i> <i>Panchatikta Guggulu ghrita-80ml</i> <i>Shatpushpa Kalka-20gm</i> <i>Manjishthadi Ksheerpaka-300ml</i>	9

**Table 4: Internal medication given for 28 days after discharge**

Sr.No	Medicine	Dose, Frequency	Anupana	Time
1.	<i>Brihatmanjshthadi Kwatha</i>	40ml, twice daily	Lukewarm water	Before food
2.	<i>Kaishora Guggulu</i>	250mg, thrice daily	Lukewarm water	After food
3.	<i>Abhayarishta+Punarnavasava</i>	15ml+15ml, twice daily	Lukewarm water	After food
4.	<i>Panchatikta Guggulu Ghrita</i>	20ml	Lukewarm water	Before food

### Follow-up and Outcomes

Follow up was done after 1 month after the internal Medication, no adverse event were noticed during the course of treatment, Harris Hip score ranges from 0-100 & Oxford Hip score 0-48. Pain was assessed using visual analogue scale, there was reduction in VAS score in all 3

patients. Assessment of flexion, extension, adduction, abduction, internal rotation and external rotation were done before treatment, after the completion of treatment and after following up and improvement was observed. Harris hip score and Oxford hip score were done before treatment, after completion of treatment and follow up which showed marked improvement. (Table 5)

**Table 5 : Outcome measures of all 3 patients**

Range of Motion (Hip)	Patient		Before treatment	After treatment	Follow-up
<b>Flexion (in degrees)</b>	Patient 1	Right leg	90	95	100
		Left leg	100	110	110
	Patient 2	Right leg	86	90	105
		Left leg	86	95	100
	Patient 3	Right leg	90	110	115
		Left leg	95	110	115
<b>Extension (in degrees)</b>	Patient 1	Right leg	10	15	20
		Left leg	10	20	20
	Patient 2	Right leg	10	10	10
		Left leg	10	10	10
	Patient 3	Right leg	30	35	35
		Left leg	20	25	30
<b>Abduction (in degrees)</b>	Patient 1	Right leg	10	20	20
		Left leg	15	25	25
	Patient 2	Right leg	24	25	30
		Left leg	30	35	35
	Patient 3	Right leg	30	40	40
		Left leg	30	35	35
<b>Adduction (in degrees)</b>	Patient 1	Right leg	20	30	35
		Left leg	20	25	25
	Patient 2	Right leg	30	30	35
		Left leg	20	25	25
	Patient 3	Right leg	30	40	40
		Left leg	35	40	45

Internal rotation (in degrees)	Patient 1	Right leg	15	20	20
		Left leg	20	25	25
	Patient 2	Right leg	10	15	15
		Left leg	15	20	20
	Patient 3	Right leg	35	35	40
		Left leg	20	25	25
External rotation (in degrees)	Patient 1	Right leg	20	20	25
		Left leg	20	30	35
	Patient 2	Right leg	20	20	25
		Left leg	18	20	25
	Patient 3	Right leg	20	30	35
		Left leg	10	15	20
Visual Analogue Scale (0-10)	Patient 1		6	4	3
	Patient 2		6	4	3
	Patient 3		5	3	3
Harris Hip Score (0-100)	Patient 1		81.7	84	86
	Patient 2		82.7	85.8	88
	Patient 3		55.8	70	74
Oxford Hip Score (0-48)	Patient 1		29	36	38
	Patient 2		32	36	40
	Patient 3		28	33	38

### MRI Changes

**Case 1:** MRI finding dated on 08<sup>th</sup> Aug 2022 were suggestive of Avascular necrosis of femoral head. (Ficat-Arlet STAGE 3 on right side and stage 2 on left side) with no hip joint effusion.

**Case 2:** MRI finding dated on 20<sup>th</sup> May 2023 were suggestive of Avascular necrosis of femoral head.

(Ficat-Arlet STAGE 2). As compared to previous MRI dated on May 2022, edema was absent in follow up MRI

**Case 3:** MRI finding dated on 13<sup>th</sup> October 2023 as compared to previous MRI dated 20.05.2023, there is marrow edema like signal changes seen previously involving left femoral head and neck, acetabulum, iliac blade have significantly reduced with mild reduction in left hip joint effusion and complete resolution of soft tissue edema. No definite evidence of avascular necrosis on current scan.

### Discussion

*Rookshana* being one among *Shadupakrama* (Six types of treatment modalities) has promising results in the initial stages of *Vata Vyadhi* as *Purvakarma* (Preparatory procedures) prior to *Snehana Karma* (Therapeutic oleation). In any disease if *Kapha* dominance is there *Rukshana* must be done initially (7), symptoms are suggestive of *Kapha* dominance and considering the *Prakriti* of the all patients *Ruksha Churna Pinda Sweda* (Sweating induced by application of a poultice) was done with *Kolkulathhadi Churna* for removal of *Strotorodha* (obstructions) caused by *Kapha* and *Meda*. The overall properties of *Dravya* present in *Kolkulathhadi Churna* are acts as a *Amapachaka*. It does *Doshvilayana* and *Strotorodhnashana* and *Aampachana* which helps in removing *Margavrodha* of *Vata Dosha*, (8) this procedure might have helped in *Samprapti Vighatana* of the disease by reducing the stiffness complained by the patient was observed during initial phase of treatment.

From day 6<sup>th</sup> *Shodhanaga Snehapana* (Internal oleation) was done using *Panchatikta Guggulu Ghrita*, as it is indicated directly in *Sandhi-Asthi-Majjagata Vikara* (9) even though *Snehapana* is meant for *Utkleshana*, after attaining *Samyaka Snigdha Lakshana*, *Sarvanga Abhyanga* (massage) was done using *Tila Taila*. *Tila taila* has *Kapha Vatahara* properties (10) and *Sarvanga Bashpa Swedana* (Fomentation) was done by *Dashmoola Kwatha* which has *Tridosahara* properties. Considering *Mrudu Kostha* (Soft bowel habit) of the patients *Virechana* (Therapeutic Purgation) was done by using 60 g *Trivrit Avaleha* and *Ksheera* as *Anupana*, *Madhyama Shudhhi* were observed in all 3 patients. *Madhyama Samasrjana krama* (Post therapy dietary regimen for revival of digestion) for 3 days (in modified scheduled) for the same was advised to the patient. (11)

From 18<sup>th</sup> day *Patra Pinda Sweda* (Sweating induced by application of a poultice) was done with *Ksheerbala Taila* to obtain *Mrudu Snigdha*. *Patra* used for *Patra Pinda Sweda* are mostly having *Vatashamaka* properties. By virtue of the properties of *Swedana* as *Vata Kapha Shamaka* it helped in relieving *Shula* (pain) and *Sthambha* (stiffness) pacifies *Vata* and *Kapha Dosha*.<sup>9</sup>. Along with *Patra Pinda Sweda*, *Kala Basti* (Course of sixteen therapeutic enemas) was done. *Vata* act as predominant *dosha* among *Tridosha* as well as plays an important role in *Samprapti*. *Basti Karma* (Therapeutic enema) is an important treatment for *Asthi Majjagata Vikara*, as it is a *Tridoshajanya Vyadhi* involving *Rakta Dhatu Dushti*. (12) *Niruha Basti* (Therapeutic decoction enema) was done with *Manjishthadi Ksheerbasti* and *Anuvasana Basti* with *Ksheerbala Taila*. As AVN is caused by blockage of vessels which provides blood supply to femoral head, *Manjishthadi Ksheera Basti* was selected. Acharya Charaka has mentioned *Tikta Rasatmaka Basti* along with *ksheera* and *Sarpi* should be given in *Asthi-Majjagata Vikara* (13) as *Manjishtha* (*Rubia cordifolia*) may help in reducing signs and symptoms by virtue of its *Raktaprasadaka* and *Tridosahara* action. It is mainly used to breakdown the blockages in blood flow and remove stagnant blood. *Ksheera* was intended as it can

help in controlling *Vata Dosha* and thus causes *Brimhana* of *Rasadi Dhatu*. *Anuvasana Basti* was done by *Ksheerbala Taila* as it is *Vatapittahara* in nature. (14)

*Brihatmanjishthadi Kwatha*, *Kaishore Guggulu*, *Abhayarishta*, *Punarnavasava* & *Panchatikata Guggulu Ghrita* these were the *Shamana Aushadhi* (Internal medicine) given for 28 days. *Brihatmanjishthadi Kwatha* it contain maximum drugs having *Kapha-Pittaghna* action, act as *Raktaprasadaka*, *Strotoshodhaka* (Remove obstruction in channels) and *Vedanasthapaka*. (15) (analgesic) *Kaishore Guggulu* is a drug of choice as it may help in maintaining *Pitta* which thereby acts as *Rakta Prasadaka* in nature. It is known to have analgesic and anti-inflammatory activity also. (16) *Abhayarishta* act as *Tridosahara* and *Vatanulomaka*, and *Punarnavasava* being a *Shothaghna* (anti-inflammatory), *Shoolaghna* (analgesics) help to relieved pain, *Raktaprasadaka* (Blood purifier) and *Kapha-pittashamaka* yoga, the combination of both were used. (17)

*Panchatikta guggulu Ghrita* was used as *Shamana Sneh*. Ingredients of *Panchatiktaguggulu Ghrita* Provide nutrition and stability, particularly *Asthi-Majja Dhatu*. *Shamana Sneh* pacifies the *Swasthana Dosha* after the *Shodhana* thereby helps in reducing the clinical signs and symptoms. (18)

## Conclusion

This case series demonstrates the potential efficacy of a customized Ayurveda treatment protocol in managing Avascular Necrosis (AVN) of the femoral head, correlating with *Asthimajjagata Vata*. The comprehensive approach, incorporating various *Panchakarma* therapies such as *Ruksha Churna Pinda Sweda*, *Snehapana*, *Sarvanga Abhyanga*, *Sarvanga Bashpa Sweda*, *Virechana*, *Samsarjana Krama*, *Patra Pinda Sweda*, and *Kala Basti*, along with internal medications like *Brihatmanjishthadi Kwatha* and *Panchatikta Guggulu Ghrita*, showed significant improvements in the clinical outcomes of the patients. The marked improvement in Harris Hip Score, Oxford Hip Score, range of motion,



and pain reduction (VAS score) indicates an enhanced quality of life for the patients. Additionally, follow-up MRI scans showed positive changes, reinforcing the therapeutic benefits of the Ayurvedic interventions. The absence of significant side effects and the high level of patient satisfaction further support the potential of this traditional approach as an effective alternative or complementary treatment for AVN. These findings warrant further research with larger sample sizes, addition of Control group and with longer follow-up duration to validate and optimize the protocol, contributing to integrative healthcare solutions for AVN.

### Patient perspective

All 3 patients feels better after the completion of treatment having relief in pain, there is relief in pain in both hip joint, and raising from sitting position, after treatment, overall they were happy and satisfied after the treatment.

**Authors contribution:** All authors involved has contributed equally.

### Informed consent:

Patients had given informed consent for the case series to be published. And they were made aware that the personal details will remains anonymous.

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