ISSN: 2322 - 0902 (P)
ISSN: 2322 - 0910 (O)

International Journal of Ayurveda and Pharma Research

Case Study

MANAGEMENT OF *ASTHI-MAJJAGATA VATA* W.S.R. TO AVASCULAR NECROSIS (AVN) OF FEMORAL HEAD STAGE 3 BY *PANCHAKARMA* - A CASE STUDY

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ABSTRACT

Avascular necrosis (AVN), also called osteonecrosis, aseptic necrosis, or ischemic bone necrosis, is a condition that occurs when there is loss of blood supply to the bone, an interruption to the blood supply causes bone to die. If not stopped this process eventually cause the bone to collapse. It is the most challenging condition of the present era in orthopedics. In Ayurveda it can be co-related with the *Asthi Majja Gata Vata* due to similar sign and symptoms of Avascular necrosis of neck of femur. **Aim and objectives:** To assess the efficacy of *Manjisthadi Kshara Basti, Rooksha Choorna Pinda Swedana, Pizhichil* and *Shastikashali Pinda Swedana* in the management of AVN. Objective was to stop the further deterioration of the hip joint and to reduce the chances of surgical intervention in managing AVN. **Materials and methods:** A diagnosed and non operated case of Avascular necrosis of stage 3 with complaints of pain of bilateral hip joint, restricted movements and limping gait approached the out-patient division of the hospital and was managed by *Rooksha Choorna Pinda Swedana, Manjisthadi Kshara Basti, Pizhichil* and *Shastikashali Pinda Swedana*. **Observation and Result:** Significant improvement was noticed after the treatment. Pain was reduced significantly with improvement in range of movement. Patient was able to walk and climb stairs after the treatment without pain and stiffness. There was reduction in VAS scale, marked improvement was noticed in Harris Hip Score.

KEYWORDS: Avascular necrosis (AVN), *Asthi-Majjagata Vata*, *Manjisthadi Kshara Basti, Rooksha Choorna Pinda Swedana, Pizhichil*, *Shastikashali Pinda Swedana.*

INTRODUCTION

Avascular Necrosis (AVN) additionally referred to as osteonecrosis, bone necrosis, bone infarction, aseptic necrosis, and ischaemic necrosis. It is a condition in which the bone "dies" as a result of loss of blood circulation to an area of bone tissue. In Latin, Osteonecrosis is understood for "bone death". Within the extreme cases, it may result in the collapse of a section of bone. Once the joint surface is involved, it may result to rapidly progressive arthritis. Avascular necrosis will occur as a result of an injury that interrupts the blood supply.[1] Systemic steroids as well as certain inflammatory diseases, like systemic lupus erythematosus, Vasculitis etc. might cause avascular necrosis. Avascular necrosis bone and infection usually have acute onset with persistent pain and/or swelling of 1 or more joints. Hip is involved commonly. Involvement is mainly bilateral. In cases of AVN of the hip, it's important to diagnose and treat early to prevent any further complications. Treatment varies significantly, depending on the location and severity, however the goal of initial treatment is to prevent collapse of the joint surface. In the advanced stages that lead to painful arthritis, a hip replacement may become necessary.

This condition can be correlated to *Asthi-Majjagata Vata* according to the sign and symptoms described in Ayurveda as shown in Table no 1. Wide range of treatment modalities have been mentioned in Ayurveda that are effective in such manifestations.

Table 1: Sign and Symptoms of *Asthi-Majjagata Vata* and *Asthi Kshya* [2]

S. No.	Symptoms
1.	*Bhedoasthiparvanam* (breaking type of pain in bones)
2.	*Sandhi Shula* (joint pain)
3.	*Mamsakshaya* (muscular wasting)
4.	*Balakshaya* (weakness)
5.	*Aswapnasantataruka* (disturbed sleep due to continuous pain)
6.	*Sandhi Shaithilyam* (laxity of joints)
7.	*Shiryantiva Cha Asthinidurbalani* (destruction of bony tissue causing generalized weakness)

MATERIALS AND METHODS

Case report

A female patient age 29 yrs, diagnosed and non operated case of Avascular Necrosis of head of femur (Rt>Lt) came to Panchakarma OPD of All India Institute of Ayurveda, New Delhi admitted with chief complaints of severe pain in both right and left hip joint, Groin region, difficulty in standing from sitting position and slight pain in bilateral knee joints since 1.5 years with aggravation of pain in the night and stiffness in the morning. She had also abnormal walking with limping gait. The Pain also aggravated on doing her daily routine work like walking or even in prolonged sitting position.

Investigations

MRI

MRI report shows that Avascular necrosis of Bilateral femoral head - stage 3 (Arlet and Ficat's staging) and in addition subchondral mild collapse of the right femoral head and minimal collapse of the left femoral head.

Past History

She was apparently well 2 years ago, and then she developed typhoid associated with neck pain and headache. After some time, she developed swelling of the eyes and diminished vision. For which she took treatment from allopathic hospital in which Steroids were given according to their line of treatment for approx 1 year. From this treatment she got significant relief in swelling of eyes & improvement in vision, but few months later she started to feel pain in the bilateral knee joints and then in right hip joint. Pain was mild in the beginning but later on the severity of pain increased day by day. After few months, pain developed in both the hip joint which led to difficulty in walking and she also noted that during walking, she was limping to the right side of body with pain in the inner side of groin area and in hip joint. Pain was associated with morning stiffness, so she had to do light warm up or some exercise to get rid of the stiffness. When the pain was intense she consulted an orthopedic doctor.MRI was done which suggested the Avascular Necrosis of head of femur (Right>Left) and subchondral mild collapse of the right femoral head and minimal collapse of the left femoral head, for which she was advised for surgical intervention. As she was not willing for surgical interventions, she approached AIIA hospital for further conventional management. Patient was then admitted in AIIA hospital after being thoroughly examined with UHID number 234338.

Personal History

She is vegetarian having regular bowel, disturbed sleep (due to pain), nonalcoholic and also non-smoker.

Local Examination

Slight Tenderness was present at hip region. There was significant loss in range of movements. She had limping gait due to shortening of the right leg by 1cm.

Measurements of lower limb:-

1. Apparent length
    A. Right leg-35.5cm
    B. Left leg- 36.5cm
2. True length
    A. Right leg- 34cm
    B. Left leg- 35cm

Dosha Dushya Lakshana: Predominant *Dosha* in the disease was *Vata* in association with *Kapha. Avarana* of *Kapha* over *Vata* may also be considered to play an important role in the manifestation of symptoms like stiffness and restricted movements of hip joint in the patient.

Table 2: Showing *Asthavidha Pariksha* (Eight fold examination)

1	*Nadi* (pulse)	80/Minute, Regular
2	*Mutra* (urine)	*Samyaka*
3	*Mala* (stool)	*Samyaka*
4	*Jivha* (tongue)	*Nirama*
5	*Shabda* (sound)	*Spashta*
6	*Sparsha* (touch)	*Samsheetoshna*
7	*Drika* (eye)	*Samanya*
8	*Aakriti* (built)	*Madhayama*

Assessment Criteria: Range of movement of hip joint i.e. Abduction, Adduction, Extension, Flexion, Internal rotation, external rotation was measured by Goniometer. Visual Analogue Scale (VAS) is used for pain; overall improvement in quality of life was assessed by Harris Hip Score.

VAS Pain Score – In VAS Score "0" denoting No Pain and "10" denoting Worst Pain.

Treatment Plan

Management of the condition

The treatment was planned according to involved *Dosha* and *Dushya. Karma Basti* was planned in which *Manjishthadi Kshara Basti* was administered as *Niruha Basti* and *Anuvasana Basti* was administered with *Guggulu Tiktakam Ghritam* and *Sahacharadi Taila*. *Rooksha Choorna Pinda Swedana* was done for 7 days, followed by *Patra Pinda Swedana* for 7 days, *Pizhichil* for 7 days and *Shastikashali Pinda Swedana* for 9 day along with *Basti*.

Table 3: Following Oral medications were given along with Panchakarma procedure

S.No.	Drug	Dose
1	*Sahacharadi Kasayam* [3]	15 ml thrice a day before food with Luke warm water
2	*Kaishor Guggulu* [4]	2 tab (250 mg each) thrice a day before food with Luke warm water
4	*Punarnavadi Kasayam* [5]	15 ml thrice a day After food with Luke warm water
3	*Garli zn cap*	1 Tab twice a day with Luke warm water
4	*Gandharvahastadi Taila* [6]	10 ml in night with milk

Table 4: Panchakarma Procedures

S. no	Procedure	Drug used	Quantity	Days
1.	*Rooksha Choorna Pinda Swedana*	*Kottumchukadi Choorna*	Q.S	7 days
2.	*Manjisthadi Kshara Basti*	***Anuvasana Basti*** *Guggulu Tiktakam Ghritam* *Sahacharadi Oil* *Shatpuspa Kalka* *Saindhava*	 80ml 50ml 20gm 5gm	*Anuvasana Basti* -18
		Nirooha Basti *Gud* (jaggery) *Imli* *Shatpuspa* *Saindhava* *Gomutra* *Manjisthadi Kwath*	 100gm 100gm 10gm 10gm 200ml 200ml	*Nirooha Basti*- 12
		***Patra* used** *Eranda Patra, Shigru Patra Ark Patra.*		

3.	*Patra Pinda Swedana*	Lemon, *Harida,* Coconut *Karpasasthayadi Taila* used for *Abhyanga*	Q.S	7 days
4.	*Pizhichil*	*Ksheerbala Taila* and *Tila Taila*		7days
5.	*Shastikashali Pinda Swedana*	*Abhyanga* with *Ksheerbala Taila* and *Tila Taila*		9 days

OBSERVATIONS

Pain was assessed using Pain VAS Score from 0 to 10. Visual Analogue Scale (VAS) was 8 in right leg before treatment and it came down to 1 after the treatment. In left leg it was 5 in beginning i.e. before treatment and it came down to 0 after treatment.

Assessments of flexion, extension, adduction, abduction, internal rotation and external rotation were made before treatment, after *Patra Pinda Swedana*, after *Pizhichil* and after completion of both *Shastikashali Pinda Swedana* and *Manjisthadi Kshara Basti*. Improvements in Range of Movement of hip joint are shown in table 5.

Harris Hip Score was done before treatment and after the completion of treatment. Significantly improvement found in Harris hip score from 41 (poor) before treatment to 71 (fair) after treatment in right leg, 71 (fair) before treatment to 87 (good) after treatment in left leg shown in Table 6.

Table 5: Observation in Range of Movement of Hip joint

Range of Movement		**Before Treatment (In Degree)**	**AT1 After *Patra Pinda Swedana* (In Degree)**	**AT2 After *Pizhichil* (In Degree)**	**AT3 After SSPS & Completion of *Manjishtadi Kshara Basti* (In Degree)**
Abduction (30°- 50°)	Right Leg	15	15	20	20
	Left Leg	25	25	30	30
Adduction (20° - 50°)	Right Leg	10	10	15	15
	Left Leg	20	20	25	30
Flexion (110° -120°)	Right Leg	105	105	110	110
	Left Leg	110	110	115	120
Extension (10° - 15°)	Right Leg	5	5	10	10
	Left Leg	10	10	10	15
Internal rotation (30° -40°)	Right Leg	15	15	20	20
	Left Leg	25	25	35	35
External Rotation (40°-60°)	Right Leg	10	10	20	25
	Left Leg	20	25	25	35

Table 6: Showing Harris Hip Score [7]

S.No.	**Criteria**	**Assessment**	**Right Leg**		**Left Leg**	
			BT	**AT**	**BT**	**AT**
1.	Pain	• None or ignores it (44) • Slight, occasional, no compromise in activities (40) • Mild pain, no effect on average activities, rarely moderate pain with unusual activity; may take aspirin (30) • Moderate Pain, tolerable but makes concession to pain. Some limitation of ordinary activity or work. May require	10	30	30	40

		Occasional pain medication stronger than aspirin (20) • Marked pain, serious limitation of activities (10) • Totally disabled, crippled, pain in bed, bedridden (0)				
2.	Limp	• None (11) • Slight (8) • Moderate (5) • Severe (0)	5	8	5	11
3.	Support	• None (11) • Cane for long walks (7) • Cane most of time (5) • One crutch (3) • Two canes (2) • Two crutches or not able to walk (0)	11	11	11	11
4.	Distance Walked	• Unlimited (11) • Six blocks (8) • Two or three blocks (5) • Indoors only (2) • Bed and chair only (0)	5	8	11	11
5.	Sitting	• Comfortably in ordinary chair for one hour (5) • On a high chair for 30 minutes (3) • Unable to sit comfortably in any chair (0)	3	5	5	5
6.	Enter public transportation	• Yes (1) • No (0)	0	0	0	0
7.	Stairs	• Normally without using a railing (4) • Normally using a railing (2) • In any manner (1) • Unable to do stairs (0)	2	2	2	2
8.	Put on Shoes and Socks	• With ease (4) • With difficulty (2) • Unable (0)	2	4	4	4
9.	Absence of Deformity (All yes = 4; Less than 4 =0)	• Less than 30° fixed flexion contracture Yes No • Less than 10°fixedabduction Yes No • Less than 10° fixed internal rotation in extension Yes No • Limb length discrepancy less than 3.2cm Yes No	0	0	0	0
10.	Range of Motion	• Flexion (*140°) • Abduction (*40°) • Adduction (*40°)	3 0 0	3 0 0	3 0 0	3 0 0

		• External Rotation (*40°) • Internal Rotation (*40°)	0 0	0 0	0 0	0 0
11.	Range of Motion Scale	• 211° -300°(5) • 161° -210° (4) • 101° -160°(3) • 61° - 100(2) • 31° - 60°(1) • 0° - 30°(0)				
	Total	100	41 (Poor)	71 (Fair)	71 (Fair)	87 (Good)

Scoring of Harris Hip Score

- < 70 - poor condition of Hip
- 70-79 - Fair condition of Hip
- 80-89 – Good condition of Hip

DISCUSSION

Avascular necrosis (AVN), also called osteonecrosis or bone infarction, is a death of bone tissue due to interruption of the blood supply. Early on there may be no symptoms. Gradually joint pain may develop which may limit the ability to movement. Complication may include fusion of the bone or nearby joint surface.

Rooksha Choorna Pinda Swedana with *Kottumchukkadi Choorna*[8] was planned for *Rukshana*. *Rukshana* would be the procedure of choice to remove *Avarana* caused by *Kapha* and *Meda* and for reduction of morning stiffness and also for better action and bio availability of subsequent therapies. The ingredients of *Kottamchukkadi Churna* are mainly *Kushtha*, *Shunthi*, *Vacha*, *Shigru*, *Lashuna*, *Kartotti*, *Devadaru*, *Sarshapa* and *Rasna*. The overall properties of the drugs are *Tikta*, *Katu* dominant *Rasa*, *Laghu*, *Ruksha Guna*, *Ushna Virya*, *Katu Vipaka*. Due to these properties it acts as *Amapachaka*. It does *Doshavilayana* and *Srotoshodhana* which helps in relieving *Margavarana* of *Vata*. It will reach to *Sukshma Srotas* and thus help in pacifying *Vata Dosha. Ushna Ruksha* and *Tikshna* properties help in pacifying *Sheeta* and *Snigdha* properties of *Kapha* efficiently.

Basti was administered along with the *Rooksha Choorna Pinda Swedana* considering *Vata* as main *Dosha*. *Sahacharadi* oil and *Guggulu Tiktaka Ghrita* was used in *Anuvasana Basti*. *Asthi* is the main involved *Dhatu* in AVN*; Tikta Dravya Siddha Basti* was selected in the *Anuvasana Basti* in which *Gugglu Tiktaka Ghrita*[9] was used because *Tikta Siddha Basti* are indicated in *Asthi Majja Gata Vata*[10]. Contents of *Sahacharadi* oil are *Snigdha*, *Guru*, and *Ushna* which pacify *Vata Dosha*.

AVN of hip joint develops due to obstruction of small blood vessels supplying to femoral head. Thus, *Raktavaha Srotorodha* becomes prime cause leading to *Asthi Dhatu Kshaya* in the hip joint. To counter this *Rakta Dushti, Manjishthadi Kshara Basti* was administered*. Manjishthadi Kwatha*[11] is *Tikta, Katu Rasa Pradhana* and *Ushna Virya* which acts as *Raktaprasadaka & Tridoshahara*. Due to the presence of *Gomutra* in *Basti,* it pacifies the *Kapha* and helps in removal of *Avarana*. *Manjishthadi Kshara Basti* has got antagonistic qualities towards *Kapha* and to *Pitta* as well as *Rakta* due to presence of *Manjishthadi Kwatha*.

Patra Pinda Swedana: Once *Samayaka Rukshana Lakshana*[12] observed *Patra Pinda Swedana* was planned to obtain the *Mridu Snigdhata* in the body. *Patras* used for the *Patra Pinda Swedana* is mentioned in the *Swedopaga Gana* [13] of *Acharya Charaka*. The drugs used are having *Vatahara* property and all the drugs used here have *Ushna Virya, Snigdha* and *Sukshma Guna*. So drugs act on the *Vata* directly. *Patra Pinda Swedan* relieves pain, stiffness and swelling associated with arthritis and other painful conditions, pacifies the morbidity of *Vata, Pitta* and *Kapha* in the affected joints, muscles and soft tissues, causes sweating and brings about lightness and a feeling of health in the affected joints, muscles and soft tissues.

Pizhichil: It is a *Brihmana* type of *Snigdha Swedana* indicated in *Asthanam Bhangama* (Helps in joining of fractures) and do *Dhatunam Dhridatam* (Strengthen the *Dhatus*) [14]. In *Pizhichil*, massaging the body with medicated oil and pouring down warm oil on the skin distresses the nerves and provides a soothing effect to the body. By *Pizhichil Snehana* and *Swedana* occurs simultaneously. *Ksheerbala Taila* and *Tila Taila* were used in the procedure. Main content of *Ksheerbala*

Taila [15] is *Bala* [16]. *Bala* having *Madhura Rasa*, *Guru*, *Snigha Guna*, *Sheeta Veerya* and *Madhura Vipaka*. It posses *Vata Pitta Hara* property and is *Balya* in nature. Also by having Anti inflammatory property it calms nerves and helps in muscle strengthening.

Shashtikashali Pinda Swedana: It is a kind of *Brimhana, Vatahara, Balya Sweda*. By virtue of its ingredients like *Godugdha* and *Shashtikashali*, it nourishes and gives strength to muscle tissues and *Balamoola* it nourishes nervous tissues. Consequent application of therapeutic heat causes vasodialation, because of this the blood circulation improve and remove the waste products. Anabolism increases as tissue receives the oxygen and nutrition occur properly. Heating can decrease stiffness and increased tissue extensibility, thus facilitating ease of motion and gain in range of movements. *Shashtikashali Pinda Sweda* improves the strength of tissues which in turns increase movements and flexibility. [17]

Internal medicines were given on the *Avastha* of Disease. Main content of *Sahacharadi Kasayam* is *sahachara*, *Suradaru* or *Devadaru* and *Sunthi*. *Sahachara* possesses *Tikta madhura Rasa* and *Usha Virya*. *Devadaru* has *Tikta Rasa* and *Ushna Virya* and *Nagara* has *Katu Rasa* and *Ushna Virya*. So *Sahacharadi Kasyam* has *Vatakaphahara, Vedanashamaka* and *Avaranahara* properties. *Kaishore Guggulu* is a drug of choice in *Vatarakta* in which obstruction in blood vessels is main pathology. So, in this condition also it might have helped to improve blood circulation of head of the femur.

Punarnavadi Kasayam comprises *Punarnava* as main content. It has *Madhura, Tikta* and *Kasaya Ras* and *Ushna Virya* and thus balances the *Vata* and *Kapha*. *Gandharvahastadi Taila* was given for *Vata Anulomana*. Garli-Zn-Co capsule comprises *Lashun*, *Yashad Bhasma, Amla* etc. it brings normal elasticity in physiological activity of blood vessels and nerve supply of arteries and veins.

After completion of treatment, patient was prescribed with *Shamana* drugs. *Pathya* and *Apathya* were advised during full course of treatment. Patient was advised to consume warm water and easily digestible food items. Exposure to cold air, maintaining one particular posture for a longer duration, frequent jerky movements and lifting weights were advised to be avoided.

CONCLUSION

Avascular necrosis of head of femur was treated and further deterioration was also checked by using the Panchakarma procedures. AVN in present era is becoming a health status burden due to the non availability of treatment plan except surgery in modern medicine. The case study shows successful management of the stage 3 AVN of head of femur. The treatment should be aiming at the cause of this disease, thus slowing down or even stopping the evolution of avascular necrosis and thus delaying the process as much as possible. It is advisable to conduct such studies on a larger number of samples to draw more concrete conclusions.

REFERENCES

1. YP Munjal, editor in chief, API Textbook of Medicine, systemic Lupus erythematous, chapter 9, jaypee brothers medical publishers (p) LTD., 10th edition, page 2527.
2. Acharya YT, editor, Shri Chakrapanidatta, commentator, Agnivesha, Charka Samhita, Chikitsasthana; Vatavyadhichikitsa Adhyaya, 28/33, Chaukhamba Surbharati Prakashan, Varanasi, 2014; page 617.
3. Harishastri P, editor, Ashtanga Hridayam of Vagbhata, Chikitsasthana; Vatavyadhichikitsa Adhyaya, 21/67, Chowkhambha Surbharati Prakashan; Varanasi, reprint 2016; 727.
4. Smt.Shailaja Srivastava, commentator, Sharangadhara, Sharangadhara samhita, Madhayam Khanda; Vatakakalpana Adhyaya, 7/70, Chaukhamba Orientalia Varanasi; Reprint 2015, page 204.
5. K.Nishteswar & Dr.R.Vidyanath translator, Sahasrayogam, Parisistha Prakarana, 10/79, Varanasi Chaukhamba Sanskrit series office, 2014, Page 391.
6. Prof.Jyotir Mitra, Astangasamgraha of Vahata or Vrddha Vagbhata, Chikitsa Sthan, 15/25, Vidradichikitsa Adhayaya, Varansi, Chowkhabha Sanskrit series office, 3rd edition, page 521.
7. Harris WH. Traumatic arthritis of the hip after dislocation and acetabular fractures: treatment by mold arthroplasty. An end-result study using a new method of result evaluation. J Bone Joint Surg Am. 1969 Jun;51(4):737-55.
8. K.Nishteswar & Dr.R.Vidyanath translator, Sahasrayogam, Taila Prakarana, 9/2, Varanasi Chaukhamba Sanskrit series office, 2017, page 405.
9. Acharya Vagbhatta, Astangahridaya, Shri Arunadatta & Hemadri, editor Chikitsa Sthana 21/58-59, Varanasi, Chaukhambha surbharti prakashan; 2017. Page 811.
10. Acharya YT, editor, Shri Chakrapanidatta, commentator, Agnivesha, Charka Samhita, Sutrasasthana; Vividhasitapitiya Adhyaya, 28/27, Chaukhamba Surbharati Prakashan, Varanasi, 2014;page 180.
11. Dr. Bulusuitaram, editor, Bhavprakasha Nighantu of Acharya Bhavamishra, Madhyamkhanda, chapter 54, Kushtharogadhikar, verse 104-106, page 539.
12. Acharya YT, editor, Shri Chakrapanidatta, commentator, Agnivesha, Charka Samhita,

Chikitsasthana; Langhanbrihmaniya Adhyaya, 22/34, Chaukhamba Surbharati Prakashan, Varanasi, 2014, page 121.

13. Acharya YT, editor, Shri Chakrapanidatta, commentator, Agnivesha, Charka Samhita, Chikitsasthana; Shadavirechanashatashritiya Adhyaya, 4/22, Chaukhamba Surbharati Prakashan, Varanasi, 2014, page 33.
14. Dr.vasantpatil, editor, Principle and practice of panchakarma, chapter 9, swedana Karma, Varanasi, Chaukhambha Publication, 2016, Page 224.
15. K.Nishteswar & Dr.R.Vidyanath translator, Sahasrayogam, Taila Prakarana, 3/3, Varanasi Chaukhamba Sanskrit series office, 2014, Page 110.
16. Pt. Kashinathsastri, editor Agnivesh charak Samhita, Sutra sthana, Chapter 25, yajjahpurushioadhyaya, verse 40, chaukhamba publication Varanasi, 2013, Page 468.
17. Dr.Vipin Kumar and Dr. Sonu, A Case Study on the Effect of Shashtik Shali Pinda Sweda and Mahamasha Taila Nasya Karma in the Management of Ekanga Vata with Mamsakshaya w.s.r. Demyelination of nerve, WJPP, Volume 6, Issue 10, 1291-1296.

Cite this article as:
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.

Source of support: Nil, Conflict of interest: None Declared

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