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Evaluation of *Rasnadi Kwatha Sadhita Ksheera Basti* (Modified *Kala Basti* Schedule) in *Asthimajjagata Vata* (Avascular Necrosis of Hip Joint)

Pankaj Singh¹, Shivani Mahajan², Praphull Goyal³, Ketan Mahajan⁴

¹Post Graduate Scholar, Dept. of Panchakarma, Patanjali Bhartiya Ayurvedigyan Evum Anusandhan Sansthan, Haridwar, Uttarakhand, India.

²Professor, Dept. of Panchakarma, Patanjali Bhartiya Ayurvedigyan Evum Anusandhan Sansthan, Haridwar, Uttarakhand, India.

³Assistant Professor, Dept. of Panchakarma, Patanjali Bhartiya Ayurvedigyan Evum Anusandhan Sansthan, Haridwar, Uttarakhand, India.

⁴Professor & HOD, Dept. of Panchakarma, Patanjali Bhartiya Ayurvedigyan Evum Anusandhan Sansthan, Haridwar, Uttarakhand, India.

ABSTRACT

Asthimajjagata Vata (Avascular necrosis of the hip joint) is a progressively common cause of musculoskeletal debility and it's bearing a major diagnostic and therapeutic challenge, although patients are initially asymptomatic or with mild symptoms, avascular necrosis of the femoral head usually progresses to joint destruction, requiring total hip replacement, usually before the fifth stage. If the disease is untreated then the pain progressively increases and worsens with time and use of join. In the later stage pain increases on rest which may be worse during night and may be associated with morning stiffness also. The preventative, promotive, rejuvenating, and radical treatment qualities of *Panchakarma* make it a very special therapeutic process. In present study, 40 patients diagnosed with *Asthimajjagata Vata* (Avascular necrosis of the hip joint) were administered with 768 ml. *Rasnadi Kwatha Sadhita Ksheera Basti* with 96ml. of *Dhanvantara Taila* in modified *Kala Basti* schedule. Assessment was done on subjective parameters and obtained data was analysed using appropriated statistical tests and conclusion was made that the *Rasnadi Kwatha Sadhita Ksheera Basti* is significant in the cases of *Asthimajjagata Vata* (Avascular necrosis of the hip joint). The therapy provided Mild improvement in 77.50% and 20.00% of the patients were showed moderate improvement, no improvement was found in 2.50% patient. By this we can conclude that the drug is effective in controlling the *Asthimajjagata Vata* (Avascular necrosis of the hip joint), in short duration of therapy.

Key words: *Asthimajjagata Vata*, *Avascular necrosis*, *Ksheera Basti*, *Kala Basti*

INTRODUCTION

The human being is the most valuable species in the universe, and *Ayurveda* is the traditional medicinal knowledge that is still used today. In *Ayurveda*, being free from illness does not simply mean being well; it also means that one should be content in physical,

mental, social, and spiritual aspects.

The basic concepts of *Ayurveda* were developed during the *Vedic* period. *Acharya Charaka*, *Sushruta* and *Vagbhata* later developed the position of *Ayurveda* in the *Samhita* period. Various *Ayurvedic* concepts like *Pancha Mahabhuta Siddhanta*, *Tridosha Siddhanta*, *Samanya Vishesh Siddhanta* have been described with its practical utility. Various *Chikitsa Siddhanta* were also discussed. Imbalance of *Doshas* is called *Roga*.^[1]

The clinical characteristics of *Asthimajjagata Vata* are *Bhedoasthiparvanam* (breaking type of pain in bones), *Sandhishoola* (joint pain), *Satata Ruk* (continuous pain), *Mamsabalaksaya* (loss of strength and muscle weakness), and *Aswapna* (disturbed sleep due to pain).^[2] Here in *Asthimajjagata Vata*, it seems that the predominant *Dosha* is *Vata* and *Dushya* is *Asthi*, in the chronic stage there is *Tridosha* involvement.

Address for correspondence:

Dr. Pankaj Singh

Post Graduate Scholar, Dept. of Panchakarma, Patanjali Bhartiya Ayurvedigyan Evum Anusandhan Sansthan, Haridwar, Uttarakhand, India.

E-mail: ps758367@gmail.com

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The symptoms of *Asthimajjagata Vata* in a patient are comparable with the symptoms of avascular necrosis.

Avascular necrosis (AVN) also known aseptic necrosis, ischemic bone necrosis, bone infarction and osteonecrosis, is cellular death of bone components due to interference of blood supply because of which the bone tissue dies leading to bone collapse.

The most frequent traumatic causes are hip dislocations, which include dislocation of femoral head from the acetabulum, and femur neck fractures. Many non-traumatic causes, such as radiation therapy, organ transplants, smoking, sickle cell disease, high corticosteroid dosages, excessive alcohol consumption, infections like meningococcal infections, HIV and tuberculosis, can also contribute to it.

Other causes - vascular occlusion, altered lipid metabolism, intravascular coagulation, healing process, mechanical stress.

The disease prevalence rate is 0.135% per thousand population.^[3] It usually affects people between 30-50 years of age.

Avascular necrosis often manifests no symptoms are seen in the primary stages in many persons. As things become worse, stress may cause damage to the afflicted joint. If AVN affects the hip, pain location tends to be most specific in the anterior hip and lower pelvis. Pain can also be limited to the groin, thigh, or buttock. Pain can be slight or severe, localized, and develops gradually.

The prognosis for AVN also depends on the likelihood of comorbidities, etc. Pain alleviation and the preservation of structure and function are two of the treatment's goals; management is not an easy feat.

In modern medicine administration of muscle relaxants, NSAIDS, physiotherapy etc give temporary relief from the pain and last option seems to be surgery which is quite expensive and has several complications. Degeneration of *Asthi & Majja* which is the most important event in the *Samprapti* of *Asthi-Majjagata vata* denotes craving for *Brihana* therapy especially of *Asthi*.

Tiktaksheer basti is the basic line of treatment mentioned in *Charka Shamhita*.^[4] Hence *Anuvasana*

with *Dhanvantara Taila* and *Niruha Basti* with *Rasnadi Kwatha Sadhita Ksheera Basti* was selected in the management of *Asthimajjagata Vata* (avascular necrosis of hip joint).

The study was aimed at finding out a suitable mode of treatment for the disease.

AIM AND OBJECTIVES

1. To study in detail about *Niruha* and *Anuvasana Basti*
2. To study the aetiopathogenesis, symptomatology and progress of *Asthimajjagata Vata* and Avascular necrosis as per diagnostic parameters of Ayurvedic and modern medical literature.
3. To evaluate the efficacy of *Rasnadi Kwatha Sadhita Ksheera Basti* (modified *Kala Basti* schedule) in *Asthimajjagata Vata* (Avascular necrosis of hip joint).

MATERIALS AND METHODS

40 Patients of *Asthimajjagata Vata* from Patanjali Bhartiya Ayurvigyan Avum Anusandhan Sansthan, Haridwar, Uttarakhand, were included in the study's sample. Every one of them were made to comprehend about the review and the educated assent was gotten. They were not included in the study until they gave their informed consent.

Inclusion Criteria

1. Patient with classical features of avascular necrosis.
2. Patient of any socio-economic status, all genders and all ethnic origins.
3. Patient with age group of 18-60 year.
4. Any of two or more symptoms described in the context of avascular necrosis.
5. Both fresh and treated cases were selected.
6. Patients fit for the *Basti Karma* were selected.
7. Patient with classical features of *Asthimajjagata Vata*.

Exclusion Criteria

1. Below the age of 18 years and above the age of 60 years.
2. Patients with uncontrolled metabolic and other systemic disorders like diabetes, spinal carcinoma, Caries spine, Pott's spine, Necrosis of other joints.
3. Psychiatric illness and pregnant women.
4. Patients with acute traumatic injury to spine and ano-rectal disorders.
5. Patients not fit for *Basti Karma*.
6. Those patients who have surgical intervention earlier.

Criteria for selection of drug**1. Ingredients of Rasnadi Kwatha Sadhita Ksheera Basti**

Dravya	Quantity
Makshika (Honey)	125 ml
Saindhava Lavana	8 gms
Dhanvantara Taila	190 ml
Immunogrit Churna Kalka	65 gms
Rasnadi Ksheera Paka	380 ml
Total quantity	768 ml

Kwatha Dravya:^[5] Rasna (*Pluchea lanceolata*), Punarnava (*Boerhavia diffusa*), Shunthi (*Zingiber officinale*), Guduchi (*Tinospora cardifolia*), Eranda (*Ricinus communis*).

Kalka Dravya: Ashwagandha (*Withania somnifera*), Riddhi (*Habenaria intermedia*), Vidharikanda (*Pueraria tuberosa*), Kshirkakoli (*Lilium polyphyllum*), Meda (*Polygonatum airrhifolium*), Safed Musli (*Chlorophytum borivillianum*), Shatavar (*Asparagus racemosus*), Kakoli (*Roscoca procera*), Varahikand (*Dioscorea bulbifera*), Bala (*Sida cardifolia*), Shuddh Konch (*Mucuna pruriens*), (Immunogrit Churna Kalka) Taken from Divya Pharmacy.

2. Anuvasana Basti - Dhanvantara Taila^[6] : 96ml.

Because of its medicinal effect, particularly in its *Brumhana* action, *Basti* is a *Panchakarma* that has

demonstrated its effectiveness in treating chronic illnesses. *Tiktakhseera Basti* is the basic line of treatment mentioned in *Charaka Samhita*

Diagnostic Criteria

An elaborate patient case format including the points of physical examination and history taking was prepared. It mainly emphasized on sign and symptoms of *Asthimajjagata Vata* (Avascular necrosis). Routine laboratory investigations CBC, ESR, CRP (Quantitative), FBS was made to rule out other pathological conditions. Radiological investigations X-ray of hip joint AP View was done to confirm the diagnosis.

Research Design

It was a randomized open label, clinical study. Patients were assigned in single group consisting of 40 patients excluding dropouts with pre, mid and post-test study design. All subjects were administered with *Rasnadi Kwatha Sadhita Ksheera Basti* 768 ml. And *Anuvasana Basti* with *Dhanvantara Taila* 96 ml. in modified *Kala Basti* schedule.

Procedure - Niruha Basti^[7]**Poorva Karma**

After passing faeces, urine and flatus, the patient on empty stomach should be ready with *Abhyang* and *Swedana* However, patient should not be hungry.

Pradhana Karma

Patient were asked to lie down restfully on their left side to keep their head on arms in the form of cushion while keeping the body straight and relaxed. Then the patients were asked to flex their right leg over fully extended left leg. Thereafter anus and enema nozzle were lubricated with oil. After removing air bubble, appropriate quantity of prepared *Niruha Basti* was administered.

Paschat Karma

Patient was advised to lie on his back i.e., in supine position comfortably on the bed. Patient was advised to empty his bowel after getting urge for defecation in squatting position.

Anuvasana Basti**Poorva Karma^[8]**

Patient was given *Abhyanga* and *Swedana* followed and then patient was advised to take food less by $\frac{1}{4}$ of the usual quantity. Ask him to eliminate faeces, urine or flatus if present.

Pradhana Karma^[9]

Patient was enquired to lie down comfortably on his left side to keep his head on his arms in the form of pillow while keeping the body straight and relaxed. Then the patient was enquired to flex his right leg over his fully extended left leg. Thereafter anus and enema nozzle were lubricated with oil. After removing air bubble, appropriate quantity of prepared *Anuvasana Basti* was administered.

Paschata Karma

Buttocks of the patient was patted with palms for 3 times and was advised to relax in supine position. Patient was advised to empty his bowel after getting urge for defecation.

Duration of treatment

- 1- 8th day: *Rasnadi Kwatha Sadhita Ksheera Basti* in modified *Kala Basti* schedule.
- 9th day onwards *Parihara Kala* for 16 days.^[10]

Assessment Criteria

- Improvement in signs and symptoms of *Asthimajjagata Vata* was assessed at the end of treatment course.
- Assessment was based on Subjective and Objective parameters of *Asthimajjagata Vata*.

Subjective Parameters

The symptoms of *Asthimajjagata Vata* in classical text are:-

- Bhedo Asthi Parvanam*
- Sandhi Shula*
- Bala Kshaya*
- Aswapna Santatruk*

1. Grading of *Bhedo Asthi Parvanam, Aswapna Santatruk* (visual analogous scale)

Scale		Score
No Pain	Pain Free	0
Minor Pain	Very Mild	1
	Discomforting	2
	Tolerable	3
Moderate Pain	Distressing	4
	Very Distressing	5
	Intense	6
Severe Pain	Very Intense	7
	Utteribile Horrible	8
	Excruciating Unbearable	9
	Unimaginable, Unspakable	10

2. Grading of *Sandhi Shula* (Difficulty in Walking)

Scale	Score
No pain, normal movements	0
Mild pain with restriction of movements	1
Moderate pain with restriction of movements	2
Severe pain with restricting movements	3
Complete restriction of movements	4

3. *Bala Kshaya of Sandhi* (walking time)

Walking time - Time taken to cover 50 meters: Gr 0, Gr 1, Gr 2, Gr 3

Scale	Score
0 min to 1 min: 20 sec	0
1 min: 21 sec to 2 min: 40 sec	1

2 min: 41 sec to 4 min	2
More than 4 min	3

Objective Parameters

1. X-Ray of hip region - AP view
2. Trendelenburg sign - Present or Absent
3. Changes In Range of Movement of Hip Joint

Movement of Hip Joint	Normal range
Flexion	110° - 120°
Extension	10° - 15°
Abduction	45°
Adduction	15° - 25°
Internal rotation	30° - 45°
External rotation	40° - 60°

Observations and Results

Table 1: Showing the effect of therapy on Subjective parameters.

Subjective	Mean		Median		SD		Wilcoxon W	P	% Effect	Result
	BT	AT	BT	AT	BT	AT				
Bhedoasthi parvanam & Aswapnasantat Ruka	4.58	2.63	5.00	2.50	1.08	1.19	-5.655 ^b	0.00156	42.62	Sig
Sandhi Shoola	2.15	1.25	2.00	1.00	0.53	0.44	-5.555 ^b	0.00278	41.86	Sig
Bala Kshaya of Sandhi	1.15	2.18	1.00	2.00	0.74	0.71	-6.105 ^c	0.0010	89.13	HS

Since observations are on ordinal scale (gradations), we have used Wilcoxon Signed Rank Test is carried out to test efficacy in subjective parameters. From above table, we can observe that, effect observed in

Bhedoasthiparvanam & Aswapnasantat ruka and sandhishoola was significant (P-Value < 0.05) while effect observed in Bala Kshaya of Sandhi was highly significant (P-Value < 0.001).

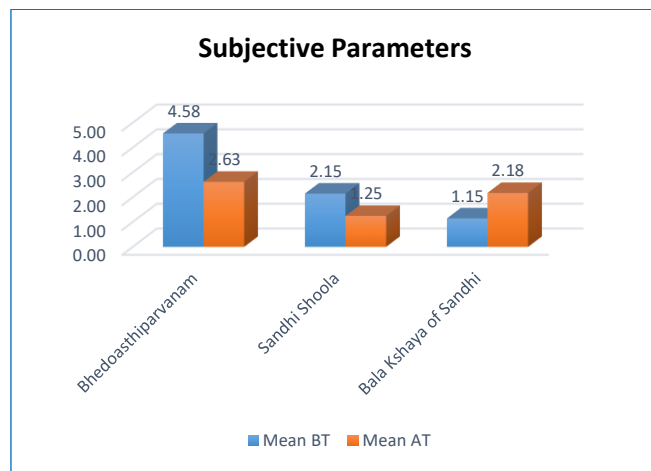


Table 2: Showing Range of Movement of Hip Joint

Range of Movement of Hip Joint	Mean	N	SD	SE	t-Value	P-Value	% Effect	Result
Flexion	BT 108.55	40	6.70	1.06	-4.811	0.0000227179	1.66	Sig
	AT 110.35	40	4.93	0.78				
Extension	BT 11.05	40	2.41	0.38	-4.714	0.0000307543	6.33	Sig
	AT 11.75	40	2.05	0.32				
Abduction	BT 40.83	40	3.05	0.48	-6.828	0.0000000369	4.41	Sig
	AT 42.63	40	1.86	0.29				
Adduction	BT 13.80	40	3.37	0.53	-7.817	0.0000000017	12.50	Sig
	AT 15.53	40	3.10	0.49				
Internal Rotation	BT 25.83	40	3.32	0.52	-12.820	0.0000000000	11.04	Sig
	AT 28.68	40	3.32	0.52				

External Rotation	BT	36.38	40	4.14	0.65	-9.239	0.0000000000	7.35	Sig
	AT	39.05	40	3.93	0.62				

Since observations are quantitative, paired t-test is carried out to test efficacy in objective parameters. From above table, we can observe that P-Value for all parameters is less than 0.05. Hence, we can conclude that effect observed in objective parameters is significant.

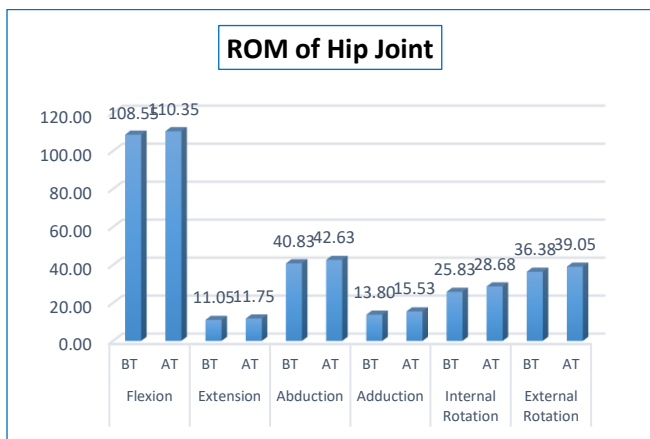


Table 3: Showing Trendelenburg sign observed.

Trendelenburg sign	BT		AT	
	N	%	N	%
No	24	60.00%	26	65.00%
Yes	16	40.00%	14	35.00%
Total	40	100.00%	40	100.00%

Before treatment Trendelenburg sign was observed in 16 (40%) patients and after treatment it was observed in 14 (35%) patients.

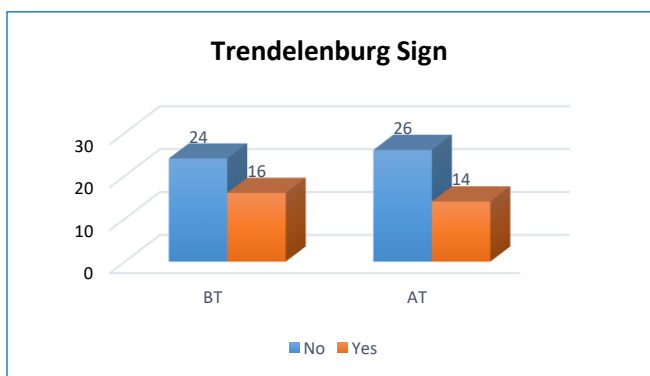
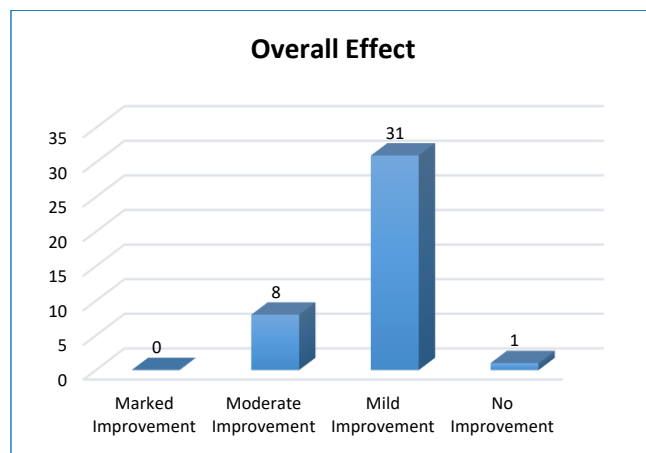


Table 4: Showing overall effect of therapy

Overall Effect	Frequency	Percentage
Marked Improvement	0	0.00%
Moderate Improvement	8	20.00%
Mild Improvement	31	77.50%
No Improvement	1	2.50%
Total	40	100.00%

Overall effect of therapy given marked Improvement in 0.00%, 20.00% patients were showed moderate improvement, 77.50% patients were showed mild improvement, and there was 2.50% showed no improvement.



DISCUSSION

Ayurveda has shown to be helpful in managing and preventing chronic illnesses. Its concept has also been useful in treating new diseases caused by changes in lifestyle and the environment. This study aimed to understand disease from an Ayurvedic perspective and find effective ways to prevent it.

Basti therapy, considered a prime treatment modality within Panchakarma, offers not only curative effects, also promotive and preventive actions.

Among all therapeutic measures, Basti is regarded as Chikitsa Ardha, and some Acharyas even deem it a complete therapeutic approach due to its extensive range of benefits. Basti is renowned as the most effective therapy for treating Vata-related disorders,

addressing not only *Vatika* ailments but also aiding in balancing *Doshas* and managing various disorders such as *Kaphaja*, *Pittaja*, *Shakhagata* and *Koshtagata Rogas* through the use of different types of *Basti Dravya*. When administered correctly, *Basti* primarily acts on the *Pakvashaya*, *Kshroni* and areas below the *Nabhi*, with its effects spreading throughout the entire body similar to the moisture absorbed by plant roots reaching all parts of the plant.

The basic principle of *Ayurveda* is *Tridosha*. These three *Doshas* however travels all through body, have explicit destination where they predominantly reside, by the drugs administration to these specific sites leads to faster recovery. *Vata* being the most influential *Dosha* as all tissues (*Dhatus*) and *Doshas* rely on *Vayu* for their functionality. *Vata's* primary location is *Pakvashaya*, *Basti* which directly targets the *Pakvashaya*, is essential for *Vata* -related issues.

Vata is chiefly implicated in the onset of diseases in the *Shakha*, *Koshtha*, and *Rogmargas*. It regulates vital functions such as the collection, regulation and elimination of substances such as stool, semen, urine etc. Additionally, *Vata* is also responsible for the *Samhanana* and *Samvahana* (transportation) of *Pitta*, *Kapha*, *Rasa*, *Rakta*, *Sweda*, *Mala*, *Mutra*, etc. Therefore, when *Vata* becomes disturbed, *Basti* therapy is often the most effective remedy. *Basti* enriches *Shukra* and provides firmness to the body by expelling vitiated *Doshas* from the whole body.

Due to its administration in every age group this therapy is considered better than other ones. Being inserted through the anal canal there is no involvement of digestive processes. *Basti* has to be hold in the body for few moments for spreading of its *Virya* (potency) whole body by the help of microchannels of body. *Basti* removes all the morbid *Doshas* from toe to head by its own potency. Proper administration of *Basti* leads to the nourishment of body, enhancement of the complexion, life span and the overall increased vitality of the body.

Action of Basti Dravya

Saindhava: *Saindhava* plays a significant role in the absorption of *Basti*. In most of the drug absorption Na channels are used.

Madhu: *Rasa* of *Makshika* is *Madhura* and *Kashaya*, *Laghu*, *Ruksha*, *Sheeta*, in *Guna* and the *Karma* of *Makshika* is *Swarya*, *Varnya*, *Deepana* *Hridya*, *Lekhana*, *Vajikaran*, *Sandhankar*, *Ropanaand* *Prasadna* etc. its action on *Kapha* is due to its *Laghu Guna*. By the *Pichhila Guna* and *Madhura* and *Kashaya Rasa* it supresses the *Vata* and *Pitta Dosha*. Thus, it is *Tridosha Hara* in nature.

Honey is sweet and astringent in *Rasa*, *Chhedana* and *Ruksha* in *Guna*, *Ushna* in *Virya*. It is *Kaphahara* and *Vrana Shodhana* in nature the most important properties of *Makshika* in the context of *Basti* are the *Sukshma Marga Anusari* and *Yogavahi*, meaning of *Yogavahi* catalyst in nature.

Sneha: By using *Sneha*, the fat-soluble fraction of the drug easily absorbed from the colon. Lipids and Lipid soluble substance can easily enter the cell. In this way *Sneha* helps the *Basti Dravya* to reach at cellular level.

Kalka: It gives essential thickness to the *Basti Dravya* & that helps in retention of *Basti*. many drugs having volatile property which can be used in the form of paste.

Paste of drugs enhances the action of decoction.

Kwatha: It is use to get water soluble portion.

Avapa Dravya: These are used in order to make the *Basti* either strong or soft and to increase the quantity of *Basti*.

Mode of Action (Ayurveda)

- The *Basti* when administered does the churning of *Doshas* situated in *Nabhi Pradesha*, *Kati*, *Parshva* comes in *Kukshi* and expels it from the body.
- Through the systemic action *Basti*, is capable of removing the *Doshas* from whole of the body. Though *Basti* is given in the *Pakvashaya* its active ingredients i.e. "*Virya of the Basti*" spreads in the whole body.
- *Parashara* had highlighted the importance of *Guda*, by saying that *Guda* is *Mula* for all the *Siras* in the body. Hence the nourishment of the *Guda* by administration of *Bastis* causes nourishment of entire *Shareera*.

- This *Basti Virya* is also capable of removing the morbid *Doshas* from the body.

Rasnadi Kwatha Sadhita Ksheera Basti

Most ingredients of *Rasnadi Kwatha* that is used for *Basti* have *Tikta Rasa*, *Ushna Veerya* and *Madhura, Katu Vipaka*, which Favor's normal functioning of *Dhatvagni*, helping increased nutrition of the *Asthi Dhatu*.

Tiktaksheera Basti was planned for strengthening of *Asthi Dhatu*. *Tikta Rasa* is predominance of *Vayu* and *Akash Mahabhuta*. Hence, it has got affinity toward the body elements like *Asthi* which has same *Mahabhauta*, which works on the principle of *Samanya* and *Vishesh*. As a result, degeneration of *Asthi* and *Majja Dhatu* reduced helping its rejuvenation. *Godughadha* have *Vata-Pitta Shamaka, Balya, Brihmana, Madhura, Sheeta Veerya* property. Thus, it pacifies *Vata*; improves the *Dhatu Upacaya* and acts as a rejuvenator of the body.

It also contains vitamin D which plays an important role to utilize calcium and phosphorous from blood and helps in bone formation. Thus, helps in the *Samprapti Vighatana* of the *Ashtimajjagatavata*. *Niruha Basti* containing *Ksheera* the main ingredient is called as *Ksheera Basti*. *Kalka* of *Basti* contains *Drvyas* of *Ashtavarga* which is having healing properties.

CONCLUSION

The treatment was more effective in the subjective parameters *Bala Kshaya* of *Sandhi, Bhedoasthiparvanama* & *Aswapnasantat ruka, Sandhishoola*. The total effect of treatment provided statistically significant result in *Bala Kshaya* of *Sandhi*. *Rasnadi Kwatha Sadhita Ksheera Basti* favours normal functioning of *Dhatvagni*, facilitating increased nutrition of the *Asthi Dhatu*. As a result, degeneration of *Asthi Dhatu* reduced helping its regeneration. The treatment *Rasnadi Kwatha Sadhita Ksheera Basti* provided mild improvement in 77.50% and 20.00% of the patients were showed moderate improvement and 2.50% patient shows no improvement. In *Ayurveda, Panchakarma* treatments and herbal remedies are frequently less costly than surgery and drugs. There is

no adverse drug reaction and other toxic effect were observed during and after treatment.

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