



JANUBASTI: A NON INVASIVE TREATMENT MODALITY IN OSTEOARTHRITIS KNEE JOINT

Dr. Sindhura A. S.^{1*} and Dr. Abdul Khader²

¹Assistant Professor and Ph.D. Scholar, Department of Ph.D. and P.G. Studies in Kayachikitsa, Shree Kalabyraveswaramy Ayurveda Medical College, Hospital and Research Centre, Bangalore, Karnataka, India.

²Professor and Guide Department of Ph.D. and P.G. Studies in Kayachikitsa, Shree Kalabyraveswaramy Ayurveda Medical College, Hospital and Research Centre, Bangalore, Karnataka, India.

***Corresponding Author: Dr. Sindhura A. S.**

Assistant Professor and Ph.D. Scholar, Department of Ph.D. and P.G. Studies in Kayachikitsa, Shree Kalabyraveswaramy Ayurveda Medical College, Hospital and Research Centre, Bangalore, Karnataka, India.

Article Received on 05/02/2021

Article Revised on 25/02/2021

Article Accepted on 15/03/2021

ABSTRACT

Janu basti is a procedure in which the warm medicated oil is retained over the painful knee joint for certain period. *Janu basti* is a type of *sneha poorvaka swedana chikitsa* practiced in *janu sandhigata vata* (Osteoarthritis knee joint) where in the *vyadhi desha* (site of manifestation) is treated. *Sushruta Samhita* in *Chikitsasthana* mentions that *swedana* quickly restores the movement in stiff joint.

It is a non-invasive local treatment methodology practised in Osteoarthritis knee joint. Drugs used in *Janu basti* procedure get absorbed through and produce action according to the property of the medicine. Application of medicaments, heat and massage helps in eliminating the number of noxious elements through skin. The application of heat in different forms of *Swedana* promotes local circulation and metabolic activities and also opens the pores of the skin to permit transfer of medicaments and nutrients towards to needed sites and elimination of vitiated *dosha* and *mala* through skin and perspiration. Long term local heat treatment will improve the blood flow in periarticular tissue, resulting in pain relief in the knee. In addition, the effects of local heat treatment include an increase in collagen fibre extensibility, analgesic effects due to an increase in the pain threshold, and effects on muscle metabolism. Thermal stimulation alone or in combination with mild exercise has increases the muscle mass and strength. Effects of heat treatment associated with increased cartilage temperature, and the effects on cartilage metabolism due to promotion of blood circulation in the surrounding tissues have been considered for the mode of action of *janubasti*.

KEYWORDS: *Janu sandhigata vata*, Osteoarthritis, *Janubasti*.

INTRODUCTION

Janubasti is a form of *Sneha poorvaka Sweda* and is achieved by pouring warm oil into a frame prepared on the surface of the knee joint. *Charaka Samhita* has classified *Chikitsa* as *Antarparimarjana*, *Bahirparimarjana* and *Shastrapranidana*. *Janubasti* is one of the *bahirparimajrna* modalities of treatment commonly adopted in the management of *Janu sandhigata vata*. *Janubasti* is a type of *sneha poorvaka swedana chikitsa* practiced in *janu sandhigata vata* where in the *vyadhi desha* (site of manifestation) is treated.^[1] *Sushruta Samhita* in *Chikitsasthana* mentions that *swedana* quickly restores the movement in stiff joint.^[2] *Janubasti* relieves the symptoms like *Shoola*, *Stabdhatata*, and *Atopa*. The procedure acts on various properties of *Vata* that are instrumental in the pathology of *Janu Sandhigata Vata* mainly due to *Snehana* and *Swedana*. Also medicines used in the procedure help in

alleviating *Vata*. It is a very safe procedure and cost effective. The materials required for *Janu Basti* are easily available. *Janu Basti* can be done in an outpatient set up also. This review is done to study the concept of *Janu basti*, and to understand its mode of action.

MATERIALS AND METHODS

References regarding *Janu basti* were collected from various text books, published research papers and previous works. Concept of *Janu basti*, its procedure and mode of action was studied in detail.

REVIEW OF JANU BASTI

Janu Basti: The term 'Basti' is derived from the root word 'vasti', in this context is understood as to retain or to reside, as the medicine is made to retain over the *janu sandhi* for 45 minutes.

Janu Basti yantra/ alavala^[3]: This term is described in *Chakradutta* and *Bhaishajya Rathnavali*. The firm suitable circular cavity or pit, which is constructed by using *Amalaki kalka* to retain the *ardraka swarasa* over the *nabhi* is called *alavala*.

The description of *Janu Basti* is not found in *Samhita* and other subsequent *Samhita grantha*. But the following procedures described in the various contexts can be taken as the base for the development of *Janu Basti*, because of the similarity found in the following procedures in one or the other way.

They are as follows:

1. The procedure of *Shirovasti*
2. The procedure of *Netra Tarpana*
3. The procedure similar to *Nabhivasti* described in *Chakradutta* and *Bhaishajya Rathnavali*.

The recent authors have developed this procedure depending on the analogy of *Shirobasti*. *Astanga Hrudaya* has described four types of oil application on head under *Murdhni taila*,^[4] which are *Shiroabhyanga*, *Shiroseka*, *Shiropichu* and *Shirobasti*. *Shirobasti*, were oil is made to retain on head for specific duration by making an artificial cavity with the help of *basti kosha*. As one of the meaning of *basti* is to fill and reside, therefore the word *basti* has been added to *shiras*. Later on the concept of *Kati basti* was developed were in the *sukhoshna taila* is made to stay in the *kati* for specific duration with the help of an artificial cavity made by *masha* powder. Later on the process was carried out on the affected knee joint, with the name of *Janu Basti*.

The conceptual importance of the following procedures are reviewed in brief, taking the references of the similar procedures which have close resemblance with *Janu basti*:

1. In *Chakradutta* a procedure similar to *Nabhi basti* is explained while describing the *atisara chikitsa*.^[5] One should fill up the umbilicus with juice of fresh ginger surrounding it firmly with the paste of *Amalaka* (*alavala*). It checks *atisara*, even if it is severe.

2. Procedure of *netratarpana*^[6]: It is one among the *netra kriyakalpas*, is also having more resemblance with the procedure of *Janu Basti* followed now-a-days. In *netratarpana*, a circular wall of 2 *angula* is constructed surrounding the eye socket with the help of a paste of black gram flour and make it into leak proof. Then the patient is asked to close his eye. Then the prescribed medicated *gritha* is made warm over the hot water and should be poured over the eye, till the eyelashes are fully immersed in the fluid. Then the patient should be asked to open the lids slowly. The procedure should be continued for the prescribed period depending on the disease.

3. Procedure of *Shiro Basti*^[7]: *Avasti yantra* made of leather, which is having opening at both the ends, i.e., at the top and bottom with a diameter of 12 *angula* well

lubricated and made soft, to be worn on the head of the patient up to the level of his ears. A piece of cloth of the width of 3 *angula* moistened slightly is covered on both sides with paste of *masha* and round the heel touching the lower edge of the hairs making it leak proof. Then, the luke warm medicated oil is poured slowly into that cap. Height of the *taila* in that cap should be of 2 *angula* over the skin of the scalp. The patient should retain the oil till exudation appears in the ears, mouth and nose or till the symptoms subside. Especially in disease of *vata* origin, it should be retained for the duration of 10000 *matra kala*, for *pitta* and *rakta* 8000 *matra kala* and for *kapha* 6000 *matra kala*. Afterwards the oil is to be removed and then the cap also. The shoulder, neck, back, forehead etc. are massaged gently and comfortably. The person should be given bath with warm water and food. He should then follow the regimen prescribed for *snehana* therapy. The treatment can be continued for three, five or seven days.

By looking into the procedure described above, some of the important points are to be noted which are as follows.

- In the procedure of *Shiro Basti* for *taila dharana*, leather cap is used and *masha* is used only to fix the cap and to make it leak proof. In case of *netratarpana*, the *masha pishti* is used for *taila dharana*. *Amalaki pishti* is used in the procedure described by *Chakradutta*. So, by looking into these three, the procedure of *netra tarpana* has more resemblance with *Janu Basti*.
- The maximum duration of *Netratarpana* is 1000 *matrakala* (*vatavyadhi*, *adhimantha*) whereas the maximum duration of *Shiro Basti* is 10000 *matrakala*. *Janu Basti* is performed for a flexible duration of 30-45 minutes. So, the duration has more resemblance with *Shiro Basti*.
- In *Shiro Basti* oil is poured upto the height of 2 *angula* above the level of scalp. In *Netratarpana* ghee is poured over the eye till the eye lashes and hairs of the brow are fully immersed in the fluid. In case of *Janu Basti* also oil can be poured till the *janu sandhi* is completely immersed.

PROCEDURE OF JANU BASTI^[8]:

Janu Basti procedure can be performed in three stages.

1. POORVAKARMA SAMBHARA SANGRAHA

- Black gram powder 1kg
- Medicated oil
- Facility to heat the oil
- Towel

ATURA SIDDHATA

Janu Basti may be performed at any time of the day. But it is ideal to carry out the procedure in the morning hours. After evacuating the bowel and bladder the client is subjected to *Janu Basti*. The patient is then asked to lie down in the required position. The knee joint is exposed. *Janu Basti* is carried out at four different locations over the knee joint. Supine position of the patient with knee

extended is ideal for treating the anterior of the knee joint. The popliteal area is subjected to *Janu Basti* in the prone position of the patient with the knee extended. Medial or lateral aspect of the knee joint may be treated with *Janu Basti* in lateral position of the patient with knee partially flexed.

2. PRADHANA KARMA

ALAVALA NIRMANA/ JANUVASTI DHARANA:

1kg of black gram paste is taken in a wide mouthed vessel. Required amount of warm water is added and a homogenous thick paste is prepared. The black gram paste is rolled to mould it into an elongated round mass. The free ends of the elongated mass of paste are joined to form a ring of approximately five inches in diameter. This is then placed on the patient's knee joint. The gap between the skin and the paste is sealed by pressing the black gram paste against skin. Sealing is done at both inside and outside surface of the ring. In this way a frame is prepared and its height should be approximately 1.5 inches.

TAILA DHARANA

Oil is heated in a water bath up to 50 degree centigrade. This oil is poured into the frame. The upper level of the oil should be approximately 1 inch above the skin. Therapist should confirm that the heat in the oil is tolerable. When medicated oil is poured into the frame, the knee is massaged gently by dipping the thumb in the oil.

MAINTENANCE OF CONSTANT TEMPERATURE OF OIL

The oil poured in the beginning gets cooled as time passes. When it is cooled, the oil is taken out from the frame with the help of a spoon. Alternatively one can soak a piece of cotton cloth in the oil to remove and add the oil. Fresh warm oil is then poured into the frame. The cooled oil that is taken out is now kept in the water bath for heating, and will be reused later during the procedure of *Janu Basti*. In this way as the oil in the frame cools down, it should be replaced by the warm one.

REMOVING THE TAILA AND BASTI YANTRA

This procedure of heating the oil is continued for about 45 minutes. And then the oil and the frame are removed.

OBSERVATION

Janu Basti is the type of *sneha poorvaka swedana*. So, among *samyak snigdha* and *samyak swinna lakshanas*, the local effects of the following can be observed in *Janu. Shulahara, Sthanika snigdghata, Sthanika mruduta, Sheetopaharana or Ushnanubhuti, Sthambha nigraha, Gaurava nigraha* and *Vyadhihani* are taken for assessment. In case of *Vataja* disorders, the medicine should be retained for 10,000 *matrakala*. Hence the procedure is performed for 45 min each day.

3. PASCHATKARMA MRUDU ABHYANGA

The knee is then subjected to *abhyanga* and *swedana*. Massage is done in circular fashion covering the whole aspect of the knee joint. After the *Janu Basti* the patient is asked to take rest for about 15 minutes in supine position. Then he may be allowed to take hot water bath.

Duration: the treatment is done for 7 days.

PROBABLE MODE OF ACTION

Janu Basti is a *Sneha poorvaka Swedana*^[9] (if oil is used) and more over it is a *Sthanika Shamana Chikitsa*. As a dry wood can be bent slowly as desired, by the application of *snehana* and *swedana*, similarly even a curved or stiff limb can be slowly brought back to normalcy by the administration of *snehana* and *swedana*.^[10] *Snehana*, when administered, instantaneously provides nourishment to the emaciated tissue element.^[11] By repeated administration of *snehana* and *swedana*, the disease of *vayu* do not get an opportunity to get lodged there completely.^[12] *Sushruta Samhita* in *Shareerasthana* mentions that out of the four *Tiryak Dhamani*, each divides gradually hundred and thousand times and thus become innumerable. These cover the body like network and their openings are attached to *romakooopa*. Through them only *veeryas* of *Abhyanga, Parisheka, Avagaha, Alepa* enter into the body after undergoing *paka* with *Bhrajaka Pitta* in skin.^[13]

Sushruta Samhita Chikitsasthana explains that *Sneha* used in *Avagaha* produces *shareera bala* by saturating through *Siramukha, romakooopa* and *Dhamani*. *Lepa* like *bahirparimarjana* treatments yield result by entering to *romakooopa* thereby circulating through *Swedavaha Srotas*. *Bhrajaka Pitta* will do *pacana* of drugs used in *Abhyanga, Parisheka, and Lepa*.^[14]

Thus with the above references it can be said that drugs used in *Janu basti* procedure get absorbed through and produce action according to the property of the medicine.

DISCUSSION

The skin anatomically consists of three distinct layers.

The epidermis: It consists of keratinocytes, melanocytes, langerhan's cells and merkel cells. The terminal point of keratinocytes differentiation is the formation of the stratum corneum. Formation of this layer is the most important function of the epidermis. It protects the skin against water loss, prevents the absorption noxious agents, and can be thought of as consisting of bricks and mortar. Corneocytes forms the bricks and barrier lipids form the mortar. 'Granular cells' which are stratum corneum helps in maintaining skin hydration and their products serve as ultra violet filters. Lamellar granules also are found within granular cells. These contain probarrier lipids.

Dermis: It is a thick, highly vascular layer made up of ground substance, fibroblasts and collagen fibres, together with appendages of skin, sweat glands and pilo sebaceous follicles. It is metabolically active part of the skin.

Subcutaneous Tissue: It is a fibro fatty layer with varying quantities of adipose tissue in different regions of the body. It provides physical and thermal protection to the deeper structures of the body.

The primary barrier to absorption of exogenous substances through the skin is stratum corneum. Rate of absorption is directly proportional to concentration of drug in vehicle, partition co-efficient, diffusion co-efficient and thickness of the stratum corneum. Physiological factors that affect per cutaneous absorption include hydration, occlusion, age, intact versus disrupted skin, temperature and anatomic site. Among vehicles greases are anhydrous preparations that are either water insoluble or fatty. Fatty agents are more occlusive than water-soluble. They restrict transepidermal water loss and hence preserve hydration of the stratum corneum. Absorption depends upon lipid solubility of the drug since the epidermis has a lipid barrier. The dermis however is freely permeable to many solutes. Suspending the drug in an oily vehicle can enhance absorption through the skin. Because hydrated skin is more permeable than dry skin. Application of medicaments, heat and massage definitely helps in eliminating the number of noxious elements through skin. The application of heat in different forms of *Swedana* promotes local circulation and metabolic activities and also opens the pores of the skin to permit transfer of medicaments and nutrients towards to needed sites and elimination of vitiated *dosha* and *mala* through skin and perspiration.

Heating the tissues results in increased metabolic activity, increased blood flow and stimulation of neural receptors in the skin or tissues and many other indirect effects.

The increase in metabolism is greatest in the region where most heat is produced, which is in the superficial tissues. As a result of the increased metabolism there is any increased demand for oxygen and foodstuffs, and an increased output of waste products, including metabolites. As a result of increased metabolism, the output of waste products from the cells is increased. These include metabolites, which act on the walls of the capillaries and arterioles causing dilatation of the vessels. In addition, the heat has a direct effect on the blood vessels, causing vasodilatation, particularly in the superficial tissues where the heating is greatest. Stimulation of superficial nerve endings can also cause a reflex dilatation of the arterioles. As a result of vasodilatation there is an increased flow of blood through the area so that the necessary oxygen and nutritive materials are supplied and waste products are

removed. Heat appears to produce definite sedative effects. The effect of heat on nerve conduction has still to be thoroughly investigated. Heat has been applied as a counter irritant, which is the thermal stimulus, may affect the pain sensation as explained by the gate theory of Melzack and Wall. Rise in temperature induces muscle relaxation and increases the efficiency of muscle action, as the increased blood supply ensures the optimum conditions for muscle contraction. As blood passes through the tissues in which the rise of the temperature as occurred, it becomes heated and carries the heat to other parts of the body, so that if heating is extensive and prolonged a general rise in temperature occur.

If there is generalized vasodilatation the peripheral resistance is reduced, and this causes a fall in blood pressure. Heat reduces the viscosity of the blood, and this also tends to reduce the blood pressure.

There is reflex stimulation of the sweat glands in the area exposed to the heat, resulting from the effect of the heat on the sensory nerve endings. As the heated blood circulates throughout the body it affects the centres concerned with regulation of temperature, and there is increased activity of the sweat glands throughout the body.^[15]

The decreased blood circulation in tissue is associated with the development of pain. Long term local heat treatment will improve the blood flow in periarticular tissue, resulting in pain relief in the knee in daily life. In addition, the effects of local heat treatment include an increase in collagen fibre extensibility, analgesic effects due to an increase in the pain threshold, and effects on muscle metabolism. Thermal stimulation alone or in combination with mild exercise has been reported to increase the muscle mass and strength in humans and rats. Exercise therapy used in combination with local heat treatment further improves knee joint function because of improvement in pain symptoms and muscle reinforcement. Concerning the effects of heat treatment on articular cartilage, in vitro studies have revealed that an increase in the cartilage temperature (37°C) promotes proteoglycan production as a cartilage matrix component. Electrical heating pads, hot water baths, plasters and hot packs are used in superficial heat application.^[16]

In addition, ligaments and tendons that are anatomically related to the knee joint (collateral ligaments, hamstring tendons, patellar tendon, iliotibial band) lie close to the skin, where they are exposed to external temperatures that may cause changes in their mechanical properties. Such changes could possibly influence joint stressors and affect nociceptors. Walker et al found a significant decrease in the elastic modulus of tendon with an increase in ambient temperature, i.e., the tendon became less stiff as temperature increased. Similarly, Woo et al found that the magnitude of the tensile load required to produce a predetermined strain in the canine medial

collateral ligament decreased as the temperature increased, i.e., less stress was required to stretch the ligament at higher temperatures than at lower temperatures.^[17]

Moist heat produces greater elevation of the subcutaneous temperature than dry heat and is often preferable for relief of joint pain. Application of heat can raise the pain threshold and relax the muscles.^[18] Effects of heat treatment associated with increased cartilage temperature, and the effects on cartilage metabolism due to promotion of blood circulation in the surrounding tissues have been considered for the mode of action of janubasti.

CONCLUSION

It is a non-invasive local treatment methodology practised in Osteoarthritis knee joint. Application of medicaments, heat and massage helps in eliminating the number of noxious elements through skin. The application of heat promotes local circulation and metabolic activities and also opens the pores of the skin to permit transfer of medicaments and nutrients towards to needed sites and elimination of wastes through skin and perspiration. Long term local heat treatment will improve the blood flow in periarticular tissue, resulting in pain relief in the knee. In addition, the effects of local heat treatment include an increase in collagen fibre extensibility, analgesic effects due to an increase in the pain threshold, and effects on muscle metabolism. Thermal stimulation alone or in combination with mild exercise has increases the muscle mass and strength. Effects of heat treatment associated with increased cartilage temperature, and the effects on cartilage metabolism due to promotion of blood circulation in the surrounding tissues.

REFERENCES

1. Agnivesha, Charaka Samhita, Ayurveda dipika commentary by Chakrapanidutta, edited by Vaidya yadavji trikamji acharya, 1941. chawkamba publications, third edition, Chikitsasthana, Vatavyadhinidhana 30th chapter, 295 verse, page no. 646.
2. Sushruta, Sushruta Samhita, Ayurveda tatwa sandeepika, Hindhivyakya, Vajnanikavimarshatippanisahita prathamabhaga by Vaidhya Priyavath sharma, Chawkamba samskritha samsthana, reprint, 2014. Chikitsasthana 32nd chapter, 22th verse, page no.514
3. a. Kanjiv Lochan, Bhaishajya Rathnavali of Bhisagratna Govinda Dasji, Bhaishajya Rathnavali Atisara Chikitsa, Chapter 7, shloka 116, edition, 2009. Chaukhamba Sanskrit prathishtana, Volume 2, pn 458.
b. Dr. P.V Sharma, Chakrapanidutta, Chakradutta, a treatise on principles and practise of Ayurvedic medicine, chapter 3 atisara chikitsa, verse 39, Chawkambha orientalia (Kashi Ayurveda Series 17) pn.51
4. Dr. Kaviraj Atrideva Gupta and Vaidhya Yadunandan Upadyaya, Astanga Hridaya Sutrasthana, Chapter 22, verse 23, edition, 2010. Varanasi, Chaukhamba Prakashan, (The Kashi Sanskrit Series), pn 181-182
5. Dr. P.V.Sharma, Chakrapanidutta, Chakradutta, A treatise on Principles and practise o Ayurvedic medicine, Chapter 3, Atisara Chikitsa, shloka 39, Chaukambha orientalia (Kashi Ayurveda series 17) p 51
6. Dr. Kaviraj Atrideva Gupta and Vaidhya Yadunandan Upadyaya, Astanga Hridaya Sutrasthana, Chapter 24, verse 4, edition, 2010. Varanasi, Chaukhamba Prakashan, (The Kashi Sanskrit Series), pn 187
7. Dr. Kaviraj Atrideva Gupta and Vaidhya Yadunandan Upadyaya, Astanga Hridaya Sutrasthana, Chapter 22, verse 23, edition, 2010. Varanasi, Chaukhamba Prakashan, (The Kashi Sanskrit Series), pn 181-182
8. Dr. G. Shrinivasa Acharya, Panchakarma Illustrated, Chaukhamba Sanskrit Pratishtan, Delhi, 2009; 261-262.
9. Chakrapani, Charaka Samhita with Ayurveda deepika commentary by Chakrapani dutta, edited by Vaidya Jadavaji trikamji Acharya. Varanasi: Chaukhamba Surabharathi prakashan, 2009. Chikitsa Sthana 28/80, P.No. 620
10. Agnivesha, Charaka Samhita with Ayurveda deepika commentary by Chakrapani dutta, edited by Vaidya Jadavaji trikamji Acharya. Varanasi: Chaukhamba Surabharathi prakashan, 2009. Chikitsa Sthana 28/79, P.No. 620
11. Agnivesha, Charaka Samhita with Ayurveda deepika commentary by Chakrapani dutta, edited by Vaidya Jadavaji trikamji Acharya. Varanasi: Chaukhamba Surabharathi prakashan, 2009. Chikitsa Sthana 28/81, P.No. 620
12. Agnivesha, Charaka Samhita with Ayurveda deepika commentary by Chakrapani dutta, edited by Vaidya Jadavaji trikamji Acharya. Varanasi: Chaukhamba Surabharathi prakashan, 2009. Chikitsa Sthana 28/82, P.No. 620
13. Sushruta, Sushruta Samhita, WITH Nibandhasangraha commentary edited by Vaidya Jadavji Trikamji Acharya, Chawkamba samskritha samsthana, reprint, 2009. Shareerasthana 9 chapter, 9th verse, page no.385
14. Dalhana, Sushruta, Sushruta Samhita, WITH Nibandhasangraha commentary edited by Vaidya Jadavji Trikamji Acharya, Chawkamba samskritha samsthana, reprint, 2009. Shareerasthana 9 chapter, 9th verse, page no.385
15. K.D. Tripathi, Text book of Pharmacology, The pharmacological basis of therapeutics – Goodman and Gillman, Physiology by Robert M. Berne, Clayton's Electro therapy by Angela Forster, Nigel Palastanga,
16. Shunsuke Ochiai et.al, Effectiveness of Thermotherapy Using a Heat and Steam Generating

Sheet for Cartilage in Knee Osteoarthritis, *J. Phys. Ther. Sci*, 2014; 26: 281–284.

17. Steven a. mazzuca, et.al Pilot Study of the Effects of a Heat-Retaining Knee Sleeve on Joint Pain, Stiffness, and Function in Patients With Knee Osteoarthritis *Arthritis & Rheumatism (Arthritis Care & Research)*, 2004; pp 716–721. DOI 10.1002/art.20683 © 2004, American College of Rheumatology
18. Kenneth D. Brandt, MD Nonsurgical Management of Osteoarthritis, With an Emphasis on Nonpharmacologic Measures, *ARCH FAM MED/VOL*, 1995.