

ROLE OF ANUVASAN BASTI IN FRACTURE HEALING: A REVIEW

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**ABSTRACT**

Trauma or injury to the bones and joints has been a challenging state of affairs since the times of prehistoric man. Fracture in *Ayurveda* is termed as *Bhagna* which is brilliantly explained and tabulated under the heading '*Bhagna Chikitsa*' in the classical texts. *Acharya Sushruta*, the father of Surgery and the pioneer of *Sushruta Samhita* has described absolute about fracture's etiology, classification and various techniques for its management. *Asthi* undergoes musculo-skeletal, traumatic injuries resulting in *Bhagna* i.e. Fracture which implies to breach or break in the continuity of a bone. It can be classified into two main types-*Kanda Bhagna* and *Sandhi-Mukta*. *Basti* is a basic and remarkable therapy in *Asthi*-related diseases. As *Vata Dosha* contributes extensively for the occurrence of *Asthi*-related diseases because of the *Asharya-Asharyi Bhava*. The present paper reviews the role and mode of action of *Anuvasan Basti* in the healing of a fracture. The description available in *Ayurvedic* texts are as much pertinent in modern times as they were in past.

Keywords: *Bhagna*, Fracture, *Anuvasan Basti*, *Ayurveda*

INTRODUCTION

Trauma or injury to the bones and joints has been a challenging state of affairs since the times of prehis-

toric man. With industrialization, agriculture and transportation the odds of getting injured has in-

creased to such an extent that epidemiologically, trauma is becoming one of the biggest killers and manglers of human beings all over the world. Ancient science is relevant not just for primary healthcare but also specializes in certain areas and one such area is 'Fracture'. It is defined as complete or incomplete separation in the continuity of a bone. With advancement in medical equipments now a days we can do detailed examination of a fractured bone by radiology. But in bygone times, *Acharya Sushruta* had devised very practical and exceedingly useful, analytical and detailed methods of ascertaining the different types of fractures and various modalities for management and healing. Fracture healing is a complex physiological process that involves the coordinated participation of hematopoietic and immune cells within bone marrow. Basti as one among the *Panchkarma* signifies its multifaceted actions.

Material and Methods- Information related to *Bhagna* and *Anuvasan Basti* (oil enema) was reviewed from

- Classical *Ayurvedic* texts
- Modern textbooks
- Articles related to *Bhagna* and *Anuvasan Basti*

Literary Review

Concept of Asthi (Bone) –*Asthi Dhatu*, among the *Sapta Dhatu*, is the one which is confer with the prime function of *Shareera Dharana* (bodily support) and administering the nutrition. As per the law of successive production of *Dhatu* (*Ksheerdadhi Dhatuparinama Nyaya*), *Asthi* is produced from its preceding one, that is from *Meda*. *Prithvi Mahabuta* is much more present in bone. *Meda* creates a consolidated mass of *Prithvi*, *Agni*, *Anil* etc its own heat and forms the bones. *Vayu* creates sponginess of the interior of bones which is filled with *Sneha* obtained from *Meda*; this is also called *Majja* i.e. Marrow. *Vayu* and *Akash* and others form the spongy substance as well¹. *Asthi Dhatu* and *Vata Dosha* are interlinked according to the *Ayurvedic* principle of *Ashraya-Ashrayi Bhava*. Based on this principle, *Asthi Dhatu* is the seat of *Vata Dosha*. *Asthi* and *Vata* are inversely proportional to each other regarding *Vridhhi* (increase) and *Kshaya* (decrease). *Vridhh Vata* leads to *Kshaya* of *Asthi*².

Bhagna-Review: The literary meaning of *Bhagna* is a 'break in continuity of the bone'. According to *Amarkosh* the word *Bhagna* is derived from "*Bhang*" *Dhatu* and "*Kta*" *Pratyaya*, which means 'to break'. *Bheda*, *Bhedana*, *Vibhanga*, *Bhanjana* are all words which can be used as synonyms for '*Bhagna*'. Thus, it means as the result of an external force by a hard object the bone must break. *Bhagna* can be classified into two main types-*Kanda Bhagna* and *Sandhi-Mukta*. *Kanda-Bhagna* is the break in continuity through the bones and *Sandhi-Mukta* is the break in continuity through the joints. Even modern medical literature defines fractures and dislocations the same way as in the ancient science. The word *Bhagna* in *Ayurvedic* texts refers to both-fractures and dislocations.

The principal cause of *Bhagna* (Fracture) is violence happening either direct or indirect. Direct violence fracture occurs at the point of impact. And in case of Indirect fracture, a bone away from the point of impact gets fractured due to transmission of force there. *Acharya Sushruta* tells that the causes for fracture are falling from a height, compression, strike by a rod, extensive pulling of extremities, attack by a wild animal³. *Vagbhata*, in *Ashtanga Sangraha* has also stated the same opinion concerning the cause of fracture⁴. Besides age, sex, occupation, diseases, etc are the associated factors for occurring fracture. By proper history taking and clinical findings, fracture can be diagnosed easily. He quoted the signs and symptoms same as would be mentioned in any modern surgical textbook. *Acharya Sushruta*'s view in this aspect is much astonishing and is yet admired. He mentioned the signs and symptoms, both in general and specific.

General Features of *Kanda Bhagna*⁵

- ***Svayathubahaulyam* (Marked Swelling):** Typically, fracture whether it is hairline or comminute, it is to be associated with moderate to severe swelling.
- ***Sparshaasahishnutvam* (Tenderness):** It is invariably present altogether varieties of fractures.
- ***AvapidyamaneShabda* (crepitus):** is a definite sign of fracture to verify diagnosing.

- **Vividhavedanapradurbhavah (Different types of pain):** the broken bone before its reduction and immobilization produces variety of pain. The degree of pain depends on various factors such as nature of trauma, bone fractures, displacement of the fragments and nature of soft injury.
- **Sarvasuavasthasunabramalabha (inability to get comfort in any position):** fracture provides pain and discomfort to the patient until it is immobilized. The discomfort is specified patient keeps resting the fractured part, in a single posture, does not produce any movement, as this is able to produce to the pain

Management of Bhagna⁶

Bhagna Sthapana (Reduction): Sushruta has accentuated upon the closed reduction techniques by the use of assorted forces like *Aanchhana* (traction), *Peedana* (compression), *Sankshepana* (reduction or compression), *Unmanna* (pulling upwards), *Vinmanna* (pressing downwards). This is the first principle of fracture treatment and is done if required.

Bandhana (Immobilisation): Once the injury has been reduced or corrected it needs to keep in a fixed position such that there is no movement in it, till it unites, or the fractured portion gets sticky. There are two methods which have been stressed upon by *Acharya Sushruta* for the stabilisation or fixation of fractured part i.e. *Kusha* and *Bandhana* (Splintage or external immobilisation) and *Kapaat Shayana* (fracture bed).

Sukhchestaprasara (Physiotherapy): It is very important to bring back the conventional functions of the affected parts as soon as possible, mainly by gaining the strengths of bones and soft tissues. Under the management of fractures of bones of palm (metacarpals) in *Sushruta Samhita* has delineated gradually increasing weight bearing. It has been mentioned that the patient should hold *Mritpinda* (ball of clay) then *Lavana* (salt) and finally *Pashaana* (a piece of stone) in his palm to regain the strength.

Concept of Fracture Healing- Bone healing process is to restore the tissue to its original physical and mechanical properties and is influenced by a variety of systemic and local factors; healing occurs in three dis-

tinct and overlapping stages. Two basic types of fracture healing are the primary or direct fracture healing and secondary or indirect fracture healing. The primary fracture healing occurs with minimal callus formation. It is direct attempt of bone to re-establish its continuity and thus requires direct contact of cells in the cortex. The majority of fractures heal by secondary or indirect healing. It occurs in four phases hematoma formation, early inflammatory, repair, and late remodelling phase⁷. In the early inflammatory stage, a hematoma develops within the fracture site during the first few hours and days. The primary nutrient and oxygen supply of this early process is provided by exposed cancellous bone and muscle. The use of anti-inflammatory or cytotoxic medication during the 1st week may alter inflammatory response and inhibit bone healing. During repair stage, fibroblast begins to lay down a stroma that helps support vascular in growth progress; a collagen matrix is laid down while osteoid is secreted and subsequently mineralized which leads to the formation of a soft callus around repair site. In terms of resistant to movement, this callus is very weak in the 1st 4–6 weeks of the healing process and required adequate protection in the form of bracing or internal fixation. Eventually, the callus ossifies forming a bridge of woven bone between the fractured fragments. Fracture healing is completed during remodelling stage in which the healing bone is restored to its original shape, structure, and mechanical stress placed on the bone.

Parenteral Ayurvedic Principle for Fracture Healing

Bhagna (skeletal injuries) occurring in upper part of the body should be treated with *Mastishkya* (a type of *Sirobasti* or to keep a swab of cloth or cotton well soaked with oil over the head) injuries, *Karanpurna* (pouring of oil in the ear) and *Nasya* (nasal medication), and fractures of the extremities should be treated with *Anuvasan Basti*⁸. *Gandha Taila* or *Trapushadi Taila* (Ayurvedic medicated oils) should be used for all these purposes⁹. Elsewhere in *Yogratnakara* for *Bhagna* (skeletal injuries) treatment use of *Mahavishgarbha Tailam* and *Mahabala Tailam* (Ayurvedic medicated oils) have also been recommended.

Basti Review - Experiences and experiments in the field of medicines has been remarkably associated with the development and can be considered as fundamental as it can be, these experiments and experiences give an edge and time to establish the credibility of this ancient science, called *Ayurveda*. One of the fundamental and impressively important elements of *Ayurvedic* treatment is *Panchkarma* therapy. It has been established that *Panchkarma* therapy which includes- *Anuvasan*, *Nasya*, *Vaman*, *Virechan* and *Niruha* are crucial to get rid of disease completely. *Basti* means enema which is medicated. In this process, medicated decoctions and oils are administered through anus in the body with the assistance of instruments specially designed for the process of *Basti*. One of the fundamental and crucial treatment being *Basti* is thought to be the “*Chikitsardha*”. In *Ayurveda* which implies that it half of the treatment, however myriad effects have been associated with it. It is possessed with multidimensional actions. *Basti* acts through its *Virya*¹⁰, being the active principles of the drug. *Basti*'s active ingredients spread all inside the body to get results that we desire, and it is injected in the body through *Pakvashaya* i.e. Rectum and Colon. The absorption of *Basti Dravyas* can be understood by certain references in our classics. This process can be described as similar with the process of water and minerals intake of trees and plants through their roots so *Basti* does the same to get to each and every part of the body through *Pakvashaya*. *Basti* has the prime functioning of colon cleansing. The effects on whole body can be seen of colon cleansing and consequently, it is comparable to the ‘*Srotoshodhana*’. The rationale for colon cleansing is ‘Autointoxication’, the idea that food enters the intestine and rots¹¹. *Basti* has two types *Niruh* or *Asthapan Basti* (decoction enema) and *Sneha* or *Anuvasan Basti* (oil enema). In this type, medicated *Sneha* in the form of oil/*Ghee* is administered. *Anuvasan* implies-to stay. The administered medicines do not cause harm after staying for a longer period inside the body.

Vata is prominent *Dosha* among the three *Dosha* and it has the ability to move from one place to another. This *Vata* is responsible for moving *Pitta* and *Kapha*

from one place to another. Therefore, it is responsible for all diseases either *Sakhagata* (extremities), *Koshtagata* (abdominal cavity), *Marmagata* (vital organs), *Urdhwagata* (upper body), *Adhogata* (lower body), *Sarvaavayavagata* (entire body). So *Basti* is considered as ‘*Chikitsardha*’. It is specially indicated for *Vataj* dominant diseases¹². *Acharya Charaka* states *Basti* first acts on *Pakvashaya* (large intestine) and keeps the *Vata* in *Samavastha* (equilibrium). It produces *Shamana* of *Vata*. So, all the *Vata Vikaras* will be diminished just like the tree which is cut by its roots loses the extremities & Stem, *Shakha* (branches), *Kanda* (stem), *Pushpa*¹³ (flowers)

Probable Mode of Action of Anuvasan Basti-The *Anuvasan Basti* made in Tail (oil) or *Ghrita* which have *Madhura* (sweet) and *Snigdha* (unctuous) properties helps to control *Vata Dosha* and due to *Sukshma Guna* (minute properties) of *Saindhva* (rock salt) it reaches up to micro channel of the body¹⁴ and helps to open fresh blood supply to the bone tissue. In this *Basti*, *Dravyas* are having *Madhur Rasa*, *Ushana Virya* (hot potency) and *Madhura Vipaka* (pungent post digestive taste) which favours normal functioning of *Dhatvagni* (metabolic stage) facilitating increased nutrition to the *Asthi Dhatu*. *Ghrita* is *Vatashamak* (pacifier of *Vata*), *Madhura*, *Shitavirya* (cold potency) has the properties of *Sanskarasya Anuvartana*¹⁵ (that which inherits the properties of other drugs without altering itself) precipitating bioavailability of other drugs. Thus, it pacifies *Vata* improves the *Dhatu Upachaya* (metabolism of the tissue) leading to *Samyaka Rasa Raktadi Dhatu Nirmana*. *Samyaka Rasa Dhatu* leads to the formation of *Samyakarakta*, *Mamsa* and *Uttarottar Dhatu*. It strengthens the muscle power of the body and promotes the tissue regeneration. *Basti* is effective in *Asthivaha* and *Majjavahasrotas*. *Purishadhara Kala*, the colon membrane is considered as *Asthidhara Kala*, the membrane of the bone tissue. *Asthi* is important site of *Vata Dosha*. Hence medications are given rectally affect all the tissues upto bone tissue. *Ayurvedic* medicated oil's *Basti* is specially indicated in *Bhagna* will act on the site of fracture. *Gandha taila* or *Trapushadi taila*

(Ayurvedic medicated oils) was used in *Anuvasana Basti* which is indicated in *Bhagna Chikitsa*

DISCUSSION

According to *Ayurveda* point of view there is direct relation of fracture with clinical presentation indicate towards dominance of *Vata Dosh* and *Vikruti* (vitiation) of *Asthi Dhatu* (bony tissue). In *Bhagna*, the blood supply to the bone is decreased due to any type of *Margavrodha* (occlusion of blood vessels) ultimately leading to delay fracture healing. *Margavrodha* is also responsible to aggravate *Vata Dosha* which in turn leads to *Dhatu Kshaya* which accounts for increased proportion of *Vata*. So, *Basti* is first line of treatment of *Vata Dosha* as well as *Margavrodha*¹⁶. *Anuvasantail Basti* and there by producing desired effects in the form of: (i) Formation of callus; i.e. 1st step due to the *Srotoshodhana* effect of *Anuvashan Basti* - all necessary elements responsible for callus formation reach to the effected site. (ii) Analgesic action- According to *Ayurveda Vata dosh* responsible for pain. So *Basti* is first line of treatment of *vata Dosha*

CONCLUSION

Basti is an excellent therapy in *Asthi*-related diseases. *Vata Dosha* contributes largely for the occurrence of *Asthi*-related diseases because of the *Asharya-Asharyi Bhava*. And in modern concept use of anti-inflammatory or cytotoxic medication during the 1st week may alter inflammatory response and inhibit bone healing. So *Anuvashan Basti* can be best option for anti-inflammatory or cytotoxic medication.

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