

ROLE OF TRADITIONAL METHODS MENTIONED IN AYURVEDA FOR ASTHI SANDHI CHIKITSA: A REVIEW

Lawate Uday*, Wairagade Sushil and Kedar Nita

¹MS (Scholar), Shalyatantra Dept., Government Ayurved College, Nagpur, Maharashtra,
India.

²Assistant Professor, Shalyatantra Dept., Government Ayurved College, Nagpur,
Maharashtra, India.

³Head of Department, Professor, Shalyatantra Dept., Government Ayurved College, Nagpur,
Maharashtra, India.

Article Received on
30 October 2020,

Revised on 20 Nov. 2020,
Accepted on 10 Dec. 2020

DOI: 10.20959/wjpr20211-19445

*Corresponding Author

Dr. Lawate Uday

MS (Scholar), Shalyatantra
Dept., Government Ayurved
College, Nagpur,
Maharashtra, India.

ABSTRACT

The most ancient and traditional practiced medical science is Ayurveda. The human body is described as a combination of *Atma*, *Manas*, *Panchmahabhuta*. The most important supportive framework of the body among these is *Asthi* (Bone tissue). Trauma management has been in practice since *vedic* periods as *Bhagna Chikitsa*. *Bhagna* is a fracture or dislocation of joint or bone. The *Bhagna* mainly divided as *Sandhimukta* (Dislocation) and *Kandabhagna* (Fracture). *Sushruta* has mentioned in detail about diagnosis and management for all orthopaedic injuries under the heading of *Bhagna*. In *Charaka Samhita*, *Charaka* has also mentioned *Bhagna* along with wounds which is very difficult to heal. In General, treatment of *Bhagna*

includes *Asthi Sandhana*. Along with this *Sushruta* has described the aetiopathogenesis, Symptoms, Classifications and Management of various traumatic musculo-skeletal conditions.

KEYWORDS:- *Asthisandhana*, *Sandhimukta*, *Asthibhagna*, Fracture.

INTRODUCTION

Indigenous system of medicine does not limit themselves to just fulfilling the needs of primary health care, but also reach out to certain specialized areas. One such popular but little-known area is *Bhagna Chikitsa* (fracture management). In *Ayurveda*, the fracture of

bones and its management was mentioned in *Sushruta Samhita*, *Nidana Sthana* and *Chikitsa Sthana* in the view of medicinal along with surgical management without any diagnostic resources in 1500 B.C.

Today, we are able to examine fractured bone directly under radiological examination. In absence of this, *Sushruta* had evolved extremely useful, logical and detailed methods of determining the types of fractures and their management. Many interesting facts have been described in ancient *Ayurvedic* classics in the management of fractures including different kinds of *Alepa*, *Avasechana*, Bandages, Splints (*Kusha*) and Slings to be used.

This study helps to explore the hidden skills, methods of conservative and operative management of *Asthi Sandhi Chikitsa* according to traditional method.

AIM AND OBJECTIVES

1. To highlight the principle of *Bhagna chikitsa* according to Ayurveda.
2. To explore the concepts of management of *Bhagna* (fractures) from ancient Ayurveda.

METHODOLOGY

Various classical literatures are searched to review the traditional methods used for *Asthi Sandhi Chikitsa*.

Bhagna

Various kinds of *Bhagna* (Fracture) may be caused due to fall, pressure, blow, violent jerking or by the bites of ferocious beasts etc. these may be grouped under two main subdivisions such as *Sandhi-Mukta* (Dislocation) and *Kanda-Bhagna* (Fracture).^[1]

Diagnosis of bhagna

General symptoms of *kanda bhagna* (Fracture)

- I. A violent swelling (*Shotha*) with throbbing or pulsations (*Spandana*).
- II. Abnormality in the position of the fractured limb.
- III. Cannot bear the least touch, crepitus under pressure (*pidana*), a looseness or dropping of the limb (*Sanstrangata*).
- IV. The presence of a variety of pain and sense of discomfort in all positions.

Type of *kanda bhagna*

1. ***Karkatam* (Fracture with Haematoma)**- Fractured bone pressed or bent down at its two articular extremities bulges out at the middle so as to resemble the shape of a knot (*Granthi*).
2. ***Ashwakarnam* (Oblique fracture)**- Fractured bone projects upward like the ear of a horse.
3. ***Churnitam* (Comminuted fracture)**- The fractured bone is found to be shattered into fragments which can be detected by palpation and crepitation.
4. ***Pichchitam* (Compression fracture)**- A smashed condition of the fractured bone which is found to be a great swelling.
5. ***Asthi-chchllitam* (Subperiosteal haematoma)**- the covering bone (periosteum) is splintered off called as *Asthi-chchllitam*.
6. ***Kanda-Bhagnam* (Transverse fracture)**- The completely broken or severed bone are found to project through the local skin.
7. ***Majjanugatam* (Impacted fracture)**- A fragment of fractured bone is found to pierce into the bone and dig out the marrow.
8. ***Ati-patitam* (Complete fracture)**- The fractured bone droops or hangs down.
9. ***Vkram* (Green stick fracture)**- The unloosened bone is bent down from its position in the form of an arch.
10. ***Chhinnam* (Incomplete fracture)**- The only one articular extremity of the bone is severed is called *Chhinnam*.
11. ***Patitam* (Cracked fracture)**- The bone is slightly fractured and pierced with large number of holes having excruciating pain.
12. ***Sphutitam* (Fissured fracture)**- The bone is largely cracked and swollen becomes painful as if stuffed with the bristles of a shuka insect.^[2]

According to *Sharangadhara* types of *Bhagna*- there is 8 types of *Bhagna*^[3]

- | | |
|--------------------------|---------------------------|
| 1. <i>Bhagna</i> | 2. <i>Prushtavidarita</i> |
| 3. <i>Vivrita</i> | 4. <i>Vishlishta</i> |
| 5. <i>Tiryakakshipta</i> | 6. <i>Adhogata</i> |
| 7. <i>Urdhvagata</i> | 8. <i>SandhiBhagna</i> |

General features of *sandhi-mukta* (Dislocation)

- I. Incapability of extension (*Prasarana*), flexion (*Akunchana*), movement, circumduction (*Vivartana*) and rotation.
- II. Immobility of the natural movements of the joints of the dislocated limb.
- III. Extremely painful and cannot bear the least touch (*Sparsha-asahishnuta*).

Type of *Sandhi-Mukta*

1. ***Utplishtam* (Fracture dislocation)**- A swelling is found to appear on either side of the articulation attended with a variety of pain at night.
2. ***Vislishtam* (Subluxation)**- A little swelling accompanied by a constant pain, disordered function and simple looseness of the dislocated joint.
3. ***Vivartitam* (Dislocation with lateral displacement)**- Pain and unevenness of the joint owing to the lateral displacement of the connected bones.
4. ***Adha-Kshiptam* (Dislocation with downward displacement)** - An excruciating pain and looseness of the dislocated bones are the symptoms in which a dislodged bone is seen to drop or hang down from its joint.
5. ***Ati-Kshiptam* (Dislocation with overriding)**- Abnormal projection or dislocated bone is removed away from its joints which becomes extremely painful.
6. ***Tiryak-Kshiptam* (Dislocation with oblique displacement)**- The projection or displacement of the bone on one side accompanied by a sort of intolerable pain.^[4]

Principles of management

Principle treatment of *Asthi Bhagna* (Fracture)- For all types of fracture and dislocation traditional method described in ayurveda and modified as needed is still relevant. According to *Charaka*, *Bhagna* cause by blunt trauma, then Surgeon (Vaidya) should be try to get the original position and then apply covering of *Kavalika* and make this part immobilize with the help of *Kusha* (Splint). Cloth dip in *Ghruta* should cover around the *Kusha*.^[5]

Principle Treatment of *Sandhimukta* (Dislocation) - An elevated and fractured joints should be reduced by pressing it down, while one hanging down should be set by raising it up, by pulling it in the case of its being pushed aside and by reinstating it in upward position in the event of its being lowered down. All joints, movable or immovable should be set to their normal position by these setting procedures mode of reduction known as *Anchhana*, *Pidana*, *Sankshepa* and *Bandhana*.^[6]

1. **Anchana**- To apply traction

2. **Pidana**- Manipulation by local pressure
3. **Sankshepa**- Opposition and stabilization of fractured part of bone.
4. **Bandhana**- Immobilization

A crushed or dislocated joints should be kept at rest, joint is spontaneously reset to its natural or normal position after the correction of its deformity incidental to a blow or hurt having been affected. The fractured or dislocated part should be first covered with a piece of linen soaked in *Ghrita*. Splint should be placed over it, splints (*Kusa*) should be made up from barks of *Udumbara*, *Madhuka*, *Ashvasttha*, *Palasa*, *Kakubha*, *Bamboo*, *Vasa* and *Manjistha*, *Madhuka*, *Raktachandana* and *Sali*-rice mixed with *Shata-Dhuata Ghrita* should be used for plastering the *Bhagna* (Fracture).^[7]

Bandaging technique

Bhagna should be bandaged once a week in cold weather, on every fifth day in temperate weather and on every fourth day in hot weather or the interval of the period for bandaging should be determined by the intensity of the *Doshas* involved in each individual case. An extremely loose bandage prevents the firm adhesion of a fractured bone, a light bandage gives rise to pain, swelling and suppuration of the local skin. Hence in case of *Bhagna*, experts prefer a bandage which is neither too tight nor too loose.^[8]

Treatment of fractures in particular limbs.^[9]

1. ***Nakhasandhi (Subungual haematoma)***- crushed or swollen by the accumulation of the deranged blood in the locally, the incarcerated blood should be first let out with the help of an *Ara* and part should be plastered with paste of *Sali*-rice.
2. ***Anguli bhagna (Fractures of phalynx)***- A finger or phalanx bone put out of joint or fractured should be first set in its natural position and bandaged with a piece of thin linen and should be then sprinkled over with *Ghrita*.
3. ***Bhagna of padasthi (Fractures of tarsal bone)***- In the foot fractured part should be first lubricated with *Ghrita*, then duly splinted up and bandaged with linen.
4. ***Dislocation of janu sandhi (Knee joint)*** - the affected part should be lubricated with *Ghrita* and carefully pulled straight, after which it should be splinted with barks of *Nyagrodha* and bandaged with clean linen.
5. ***Bhagna of urusthi (Fractures of femur)***- the fracture projecting out a thigh bone should be reset with the help of a circular splint and bandaged. In case of *Sphutita* or *Pichchita* thigh bone, the part should be also bandaged in the aforesaid manner.

6. **Dislocation of kati (Hip joint)**- it should be reduced by the fractured bone being raised up or pressed down and the patient then be treated with *Basti*.
7. **Bhagna of parshuka (Fractures of Ribs)** - fracture of one of the rib bone, *Ghrita Alepana* over local chest region and then should be lifted up (in a standing posture) and the fractured rib, whether left or right, should be relaxed by being rubbed with *Ghrita*. Strips of Bamboo or pad (*Kavalika*) should be placed over it and the patient be carefully laid in a tank or cauldron of oil with the bamboo splint duly tied up with straps of hide.
8. **Dislocation of ansa sandhi (Shoulder joint)**- the region of *Kaksha* should be raised up with an iron-rod (*Mushala*) and bandage the part, thus reduced, in the shape of a *Svastika* bandage.
9. **Dislocation of karpura sandhi (Elbow joint)**- First *Sandhi* should be rubbed with the thumb, after which it should be pressed with a view to set it in its right place by fixing and expanding the same. After that the affected part should be sprinkled over with any oleaginous substance.
10. The same measures should be adopted in dislocation of the *Janu Sandhi* and the *Mani Sandhi*.
11. **Tal bhagna (Fractures of carpal metacarpal bones)**- fractured bone in the palms of hands, the two palms should be made even and opposed and then bandaged together and the affected parts should be sprinkled with raw and *AmaTaila* (unmedicated oil). The patient should be made first to hold a ball or cow-dung, then a ball of clay and then a piece of stone in his palm and so on, with the progressive return of strength (to the affected part).
12. **Griva bhagna (Dislocation cervical vertebrae)**- in the case of a bending or intussusception of the *neck* downward, the head should be lifted up by putting the fingers into the hollow (*Avatu*) above the nape of the neck and at the roots of the jaw bones (*Hanu*). Then the part should be bandaged with a piece of linen after having evenly put the splint (*Kusa* round the neck). The patient should be caused to lie constantly on his back for a week.
13. **Dislocation of hanu sandhi (Jaw)**- in case of dislocation of *Hanu Sandhi*, the *Hanu* should be fomented (*Svedana*) and duly set in their right position, bandaged in manner of a *Panchangi- Bandha* and a *Ghrita* boiled and prepared with *Madhura (Kakolyadi)* and *Vayu*-subduing (*Chavyadi*) groups should be used as *Nasya* by the patient.
14. **Shiro Bhagna (Fracture of Skull)**- fracture of the bone of forehead unattended by any oozing out of brain matter, the affected part should be simply rubbed with *Madhu, Ghrita*

and then duly bandaged. The patient should take *Ghrita* for a week. A *Bhagna* occurring in the upper part of the body should be treated with application of *Mastikya-Shirobasti* and pourings of oil into the cavity of the ears.

Importance of sandhana karma in bhagna

1. ***Dantabhigata (Injuries of Teeth)***- A tooth of a young person, not broken but loose, should be plastered with a cooling paste on its outside after having pressed out the accumulated blood at the root. The tooth should be sprinkled or washed with cold water and treated with drugs having *Sandhaniya* properties. The patient should be caused to drink milk with the help of a *Kamal nal* (lotus stem). The loose tooth of an old man should be drawn.
2. ***Nasa Bhagna (Nasal Fracture)***- A nose sunk down or depressed should be raised up with the help of a rod or director, while it should be straightened in a case of simple bending. Then two tubes open at both ends, should be inserted into the nostrils (to facilitate the process of breathing) and the organ should be bandaged and sprinkled with *Ghrita*.
3. ***Karna Bhagna (Ear pinna Injury)***- the cartilage of ear being broken, the organ should be rubbed with *Ghrita* straightened, and evenly set its right position and bandaged.

Immobilization mentioned in ayurveda

Kapatshayana

Indication:- *Kapatshayana* is indicated in fractures and dislocation of the pelvic joint, the spinal column, the chest and the shoulder.

In case of a fracture of the bone in the leg and in the thigh, the patient should be laid down on a plank or board and bound to five stakes or pegs in five different places for the purpose of preventing any movements of his limbs. The distribution of the (binding) pegs in each case should be as follows. In the first case (fractured leg bone), two on each side of the two thighs making four and one on the exterior side of the inguinal region of the affected side. In the second case (fracture of knee-joint) two on each side of the ankle joints making four and one on the side of the sole of the affected leg. In case of long-standing dislocations, the joint should be lubricated with *Taila*, fomented and softened in the manner mentioned above in order to reduce it to its natural state.^[10]

Rehabilitation *bhagna* mentioned in ayurveda

The patient should be made first to hold a ball or cow-dung, then a ball of clay and then a piece of stone in his palm and so on, with the progressive return of strength (to the affected part).

Infections and its management in *bhagna*

Savrna bhagna chikitsa:- In the case where a *Bhagna* would be found to have protruded out of the ulcerated part and dried, it should be carefully cut off near the margin of the ulcer and subsequently treated as a case of fractural ulcer.

Dangers of infection in *bhagna*- A physician (*Vaidya*) should exert his utmost to guard against the advent of any suppurative (*Yathapaka*) setting in a *Bhagna*, since a suppuration of the local veins, nerves and muscles is difficult to care.^[11]

Modern perspective

Simple fractures are managed by conservative and operative methods. Management of fractures by closed reduction consists of

1. Resuscitation, 2. Reduction, 3. Retention, 4. Rehabilitation

Resuscitation is the topmost priority if the patient is in shock following a fracture.

Reduction of the fracture fragments if it is displaced. Usually it is done under general anaesthesia after adequate radiological study. There are two methods of reduction viz. Closed reduction and open reduction.^[12]

Methods of open reduction

1. Exposure, 2. Reduction, 3. Temporary stabilization, 4. Definitive stabilization

Retention: once the fracture fragments are reduced, it has to be retained in that position till the fracture unites. Retention methods may be by plaster of Paris, by continuous traction, use of functional braces.

Rehabilitation is by way of physiotherapy and exercises.

Management of Compound Fractures

To convert a contaminated wound into a clean wound.

To establish union in a good position.

To prevent pyogenic and clostridial infections.

The treatment plan includes debridement It consists of Exploration, Excision, Evacuation, External fixators and definitive wound care.^[13]

Conservative management of bhagna

A cold decoction of the drugs of the *Nyagrodhadi* group should be used in *Sechana* of affected part, whereas in the presence of pain, should be *Sechana* with milk boiled with the drugs of *Laghu-Panchmula* or simply with the oil known as the *Chakra-taila* made lukewarm. cold lotions and medicinal plasters of *Dosha* subduing drugs should be given.

Laksha churna in bhagna- A preparation of milk (from cow delivered for the first time) boiled with the drugs of the *Madhuradi* group and mixed with the *Laksha Churna* and *Ghrita* should be given to a patient as a beverage every morning.^[14]

Gandha taila- This oil should be administered with good results in possible ways (e.g. potions, liniments, unguents and errhines) to a *Bhagna* patient. Administered in food or drink, or employed as a liniment, in *Basti-karma* or as an errhine (*Nasya*), it acts as a sovereign restorative. Rubbed over the neck, chest and shoulders, it adds to the strength and expansion of those parts of the body.

Trapusadi taila- *Trapusha*, *Aksha* and *Piyala* should be cooked with *Kwath* of *Madhura* (*Kakolyadigana*) and with ten times the quantity of milk. It is an excellent medicated oil and used as a potion for anointing, and as an *Nasya*, *Basti-karma*, it speedily brings the union of *Bhagna*.^[15]

Mal-Union of asthi bhagna (Rudha kanda bhagna)

A faulty union of a bone lying between two joints (*Kanda Bhagna*), the union should be again disjointed and the *Asthi Bhagna* should again be set right and treated as a case of ordinary *Bhagna*.

Ideal union (Samyaka rohana of bhagna)

A complete union of a *Asthi Bhagna* should be inferred from its painless or unhurt (*Anavidhha*), from its full and perfect development (*Ahinanga*), from the absence of all elevation and from its perfect freedom in flexion and extension (*Sukhachestavihara*).^[16]

Kashtasadhya asadhyabhagna (Fractures difficult to treat)

According to *Vagbhata* the *Krusha*, *Ashkta*, *Vatapidita* or the person who used to be *Kashtasadhya* is the bone has more tear, crepitus present on palpation of Fractured site, small part of *Bhagna* (Fracture) get inserted into bony part, most part of bone is fractured and only

some area is normal while having trauma, feel of breakage during movements of *Sandhi, Bhagna* (Fracture) involving bone marrow insertion (*Majjanugata*).

Kapalasthi Bhagna in *Katipradesh* (Hip bone Fracture), dislocation of *Katisandhi* and *Pichitam Bhagna* of *Janghasthi* (compression fracture of Femur) are *Asadhya* according to *Vaghbhatta*.^[17]

Dietary and Herbal Supplements^[18]

Pathya- A diet consisting of boiled rice, meat-soup, milk, soup of Satina pulse and all other nutritive and constructive food and drink.

Apathya- Salt, Pungent, Avoid exposure to the sun and physical exercises.

DISCUSSION

The basic principle of fracture (*Bhagna*) management described by *Sushruta* In 1500 BC like *Anchana, Pidana, Sankshepa, Lepa, Bhandhana* is well elaborated. Ingredients which get absorbed and enhance bone healing were used in *Avasechana, Lepa, Kusha* at that ancient time. As This preparation has *Pitta Shamaka, Ushna Viryatmaka* properties which helps to reduce the pain and swelling at the fracture site. The basic principles of *Bhagna* management *Anchan, Pidana, Sankshepa, Bandhana* are modified by modern science like Reduction, Retention, Rehabilitation and Stabilization of bones. As such Thomas splint is nothing but the modification of *Kapatshayana*, and this shows the principles described by *Sushruta* are still relevant and applicable in modern era.

CONCLUSION

Ayurveda is well developed science that nothing needs to be added or deleted from the text even now. Except for its surgical part like Internal Fixation, External Fixation, Nailing, plating etc, we can find solution for almost all orthopaedic problems through our ancient science of *Ayurveda*. Various modalities for the fracture developed down the centuries, but the basic principles described by *Sushruta* for management of *Bhagna* and *Sandhimukta* were rational, practical and even radical, because he was not averse even to break a malunited bone and resetting it. These practices are still in used in many parts of rural India where families of bone setters continue to serve and remind one of their common ancestries with *Ayurveda* tradition. The principles laid down by *Ayurvedic* texts are so relevant that they are practiced even in the present times by the orthopedic surgeons. This traditional method of *Asthi Chikitsa* was practiced thousand years ago holds true even in modern era.

REFERENCES

1. Kaviraj Kunjalal Bhisagratna, The Sushruta Samhita An English Translation Varanasi; Choukhamba Sanskrit Series office, 1991; 2: 97.
2. Jadavji T. Narayan Ram, editors. Sushruta Samhita with Nibandhsangraha of Dalhanacharya, Varanasi; Chaukhamba Surbharati Prakashan, 2018; 329.
3. Tripathi B. Sarangadhara Samhita Annotated with DIPIKA Hindi Comentry, Varanasi; Chaukhamba Surbharati Prakashan, 2019; 71.
4. Jadavji T. Narayan Ram, editors. Sushruta Samhita with Nibandhsangraha of Dalhanacharya, Varanasi; Chaukhamba Surbharati Prakashan, 2018; 328.
5. Shukla V. Tripathi R., Charaka Samhita vol-II, Delhi Chaukhamba Sanskrut Pratisthan, 2014; 600.
6. Sharma A. Sharma P. Sushruta Samhita Sushruta vimarshini hindi Vyakhya Varanasi; Chaukhamba Surbharti Prakashana, 2010; 2: 192.
7. Kaviraj Kunjalal Bhisagratna, The Sushruta Samhita An English Translation Varanasi; Choukhamba Sanskrit Series office, 1991; 2: 279.
8. Tripathi B., Ashtanghridayam Nirmla Hindi Vyakhya, Delhi; Chaukhamba Sanskrut Pratisthan, 2017; 1087.
9. Sharma A. Sharma P. Sushruta Samhita Sushruta vimarshini hindi Vyakhya Varanasi; Chaukhamba Surbharti Prakashana, 2010; 193.
10. Sharma A. Sharma P. Sushruta Samhita Sushruta vimarshini hindi Vyakhya Varanasi; Chaukhamba Surbharti Prakashana, 2010; 199.
11. Tripathi B., Ashtanghridayam Nirmla Hindi Vyakhya, Delhi; Chaukhamba Sanskrut Pratisthan, 2017; 1090.
12. Maheshwari J. Mhaskar V., Essential Orthopaedics, New Delhi; Japyee brothers Medical Publication, 2019; 15.
13. Maheshwari J. Mhaskar V., Essential Orthopaedics, New Delhi; Japyee brothers Medical Publication, 2019; 22.
14. Tripathi B., Ashtanghridayam Nirmla Hindi Vyakhya, Delhi; Chaukhamba Sanskrut Pratisthan, 2017; 1088.
15. Jadavji T. Narayan Ram, editors. Sushruta Samhita with Nibandhsangraha of Dalhanacharya, Varanasi; Chaukhamba Surbharati Prakashan, 2018; 419.
16. Kaviraj Kunjalal Bhisagratna, The Sushruta Samhita An English Translation Varanasi; Chaukhamba Sanskrit Series office, 1991; 288.

17. Tripathi B., Ashtanghridayam Nirmla Hindi Vyakhya, Delhi; Chaukhamba Sanskrut Pratisthan, 2017; 1086.
18. Jadavji T. Narayan Ram, editors. Sushruta Samhita with Nibandhsangraha of Dalhanacharya, Varanasi; Chaukhamba Surbharati Prakashan, 2018; 415.