

## ORTHOPAEDICS IN AYURVEDA – BHAGNA CHIKITSA- A REVIEW ARTICLE

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### ABSTRACT

Orthopaedic condition is well explained and documented in the literature of Ayurveda in the name of “Bhagna Chikitsa.” Many of the new techniques are well developed for the management as per the condition Acharya Sushruta described exclusive’s about fracture, it’s etiology, classification, and various modalities of the management. *Bhagna* in ancient period were commonly encountered problem occurs in war and attack by animal etc. but in the present time these are commonly as a result of RTA. *Bhagna* was explained by Acharya Sushruta depending upon nature of trauma, shape of fracture, displacement of fracture fragment and fracture with or without wound. If it occurs in the bone it is called as “*Kand bhagna*” (bone fracture) and in the joint it is called as “*Sandhimoksha*” (dislocation). The principle of fracture of fracture management defined by Acharya Sushruta centuries ago are as per condition suggestive conservative or surgical treatment. conservative modalities includes *Kushabandh*, *Alepa*, *Chakrayoga*, *Taila Droni* etc are still relevant .The Western medicines take over in the management of complicated fracture with the introduction of many surgical instrument like intramedullary nails etc. and delays fracture union and healing potential. This paper expounds the wisdom of orthopaedic branch in ancient times especially fracture and it’s management with possible modern correlation and how much knowledge existed and how well organized was it so many centuries ago. It would be worthwhile to explore this unique feature for use in present times. The concept, theories and techniques which were practical several thousand years ago hold true even in modern era.

**Keywords:** Orthopaedic, RTA, Bhagna.

### INTRODUCTION

Ayurveda is the complete science of life where we get elaborate descriptions about prevention of disease. One of the common problem and challenges to the modern world is trauma and the management of the “Skeletal System injuries” which occurs as result of trauma in most of cases. In 1st B.C. Acharya Sushruta has mentioned detailed diagnosis and management for all traumatic orthopedic injuries which will

hold good and deserves appreciation under heading of *Bhagna* and *Bhagna* treatment. He also delineated osteology, etiology, pathology of fracture, clinical fracture, types, non surgical and surgical management and complication and their management. Fracture is termed as *Bhagna* in Ayurveda which mean break or break in continuity of bone. It can be of two

types *Sandhimoksha* (Dislocation) and *Kandabhagna* (Bone fracture).

As surgery made fast development down the centuries, the treatment of fracture began to be studied as separate branch called Orthopedics or the art of correcting and preventing deformities. This part of medicine comes under *Shalyatantra* in Ayurveda.

Susruta the father of surgery is emphatically a surgeon in all respect. He has documented this without the help of x-ray or other modern diagnostic gadgets. This was done through extensive cadaver dissection. Susruta samhita is the only complete work in this field that is available us.

Just like the modern orthopedic has two branches - Orthopaedics and Traumatology. Ayurveda too had similar branches namely Marma Chikitsa and Bhagna chikitsa.

### **The concept of osteology**

According to Hornle the author of medicine of ancient India part I 1907 the word Osteon has developed from the word Asthi. The derivation of this word is from-

#### **As Sanchibhyam Kithan or As Kshepe**

That means which is thrown away – Even the carnivorous animals discard the bony part after consuming the flesh. Probably people of yore might have found this all around the forest as thrown away. The word skeleton derived from the Greek word Skeletos – dried applies to parts which remains after the softer tissues have disintegrated.

It is one of the seven *dhatu*s and the only *dhatu* in *Khara* nature. They are divided into five

namely *Kapala* (flat bones), *Ruchaka* (lustrous bones), *Taruna* (Cartilaginous bones), *Valaya* (Curved/tubular bones), and *Nalaka* (long bones).

The word *Bhagna* and fracture literally means one and same to break. The word *Bhagna* is derived from the root *Bhanje Amardane*. The term *bhagna* covers all bony disruptions ranging from highly comminuted fractures at one end of scale to minute hairline fractures. *Bhagnas* are described under two major headings namely *Kanda Bhagna* and *Sandhi Mukta*. Vaghabhata has classified as *Sandhi Bhagna* and *Asandhi Bhagna*. In *Madhava Nidana*, *Madhukosa tika -Savrana Bhagna* and *Avrana bhagna* are mentioned.

### **Aetiology of a fracture**

According to the description given by Sushruta, trauma such as fall, compression, blows; specific traumas from teeth of ferocious, docile animals are mentioned as the cause of various types of fracture.

Nowadays due to deforestation and industrialization the nature of trauma has greatly changed and the cause of injury is widely distributed to other causes, such as road traffic accidents, occupational hazards etc. One may wonder why so many types of aetiology of fracture are mentioned by all these Acharyas. This may be to make the students know, that fracture from the tooth of a docile animal will be different from that of a blow. In other words fractures resulted from each and every *nidana* will be different from the other. This holds well with the modern idea of mechanism of injury.

**Table 1:** Cardinal feature of Bhagna(fracture):

Sr. No.	Cardinal features of a Bhagna	
1	<i>Swayathu Bahulyam</i>	Massive swelling
2	<i>Spandana vivarthna.....</i>	Tenderness
3	<i>Avapeedyamaney Sabda</i>	Crepitus
4	<i>Srasthangata</i>	Loss of transmitted movement
5	<i>Vividha vedana</i>	Different types of pain
6	<i>Sarvasvasthasu Nasharmalabha</i>	Agonising pain and discomfort in all posture

**Table 2:** Classification of *Sandhimoksha* (Dislocation) and modern correlations:

Sr .No.	Sandhimoksha (Dislocation)		Correlation
1	<i>Utpishta</i>	Swelling on either sides of jt with pain worsening at night There will be <i>gharshana</i> (Crepitus) Fracture dislocation	Fracture dislocation
2	<i>Vishlishhta</i>	Mild swelling constant pain joint deformity	Dislocation due to tear of ligament
3	<i>Vivarraritha</i>	Pain deformity with lateral displacement	Anteroposterior dislocation
4	<i>Avakshipta</i>	Pain deformity with downward displacement	Downward displacement
5	<i>Atikshipta</i>	Severe pain deformity, wide Displacement	Gross displacement
6	<i>Tiryaksipta</i>	Unbearable pain with bone end obliquely displaced	Oblique displacement

Inability to extend rotates flex or virtually all types of movements are either impossible or

extremely painful and swelling is the main signs of a dislocation.

**Table 3:** Classification of *Bhagna* (Fracture) and modern correlation:

Sr.No.	<i>Bhagna</i>		Correlation
1.	<i>Karktaka</i>	Two ends of shaft bent; swelling over the fracture in the middle	Depressed fracture
2.	<i>Ashvakarna</i>	Fractured ends in angular deformity	Complete oblique fractures
3.	<i>Churnita</i>	Fracture comminuted with crepitus	Communicated fracture
4.	<i>Pichchita</i>	Fracture site crushed with severe swelling	Compressed fracture
5.	<i>Asthichallita</i>	One fractured end displaced downwards other end sideways	Periosteal evulsion fractures
6.	<i>Kandbhagna</i>	Fractured end free move on vibrating	Complete compound fractures
7.	<i>Majjanugata</i>	One fractured end impacted into the marrow cavity of the with exudation of the marrow	Fracture impaction
8.	<i>Atipatita</i>	Fractured end droops (e.g. Jaws)	Complete Compound fractures
9.	<i>Vakra</i>	Bone is bent ,not completely fractured	Greenstick fractures
10.	<i>Chinna</i>	One surface fractured the other surface of the bone intact.	Incomplete fractures

The three fundamental principles of fracture treatment are

A. *Bhagna Sthapana* (Reduction)

B. *Bhagna Sthirikara* (Immobilisation)

C. *Punah cheshta prasara* (Rehabilitation)

As soon as the fracture is diagnosed steps should be taken to reduce the fracture. De-

layed reduction may result in delayed union or non union and the displaced fragment may cause nerve damage or disturbance of circulation. For reduction of a fracture, certain manipulations are necessary.

Manipulation is usually done as a therapeutic measure. But when it is performed with skill and understanding, it acquires a diagnostic function in assessing the stability of a fracture which in turn may govern the choice of treatment. The aim of reduction is to reduce the space between fragments and to place in original position.

- The correct repositioning of the displaced bone are achieved raising the depressed fragment, pressing down the elevated, pulling and straightening when one end is overlapping the other. The basic procedures in treating a fracture are Traction (Anchana), Compression (Peedana), Immobilization (Samkshepa) and Bandage (Bandha). Once a joint or fracture is reset and the deformity corrected, it regains its normal state by healing which is facilitated by rest and cold irrigation, medicinal plaster and dressings with linen soaked in medicated oils and splints. During olden days splints were used for immobilisation.

**Table 4:** The bark of the following trees was found to be useful:

Sr.No.	Bark of trees used	Latin name	Properties
1.	Madhuca	Madhuca longifolia	K S M Gu, Ru
2.	Udumbara	Ficus glomerulata	K S K Gu, Ru
3.	Aswatha	Ficus religiosa	K S K Gu, Ru
4.	Palasa	Butea frondosa	K U K La, Sn
5.	Kakubha	Terminalia arjuna	K S K La, Ru
6.	Vamsa	Bambusa bambos	K S M La, Ru
7.	Sarja	Terminalia tomentosa	K S K La Ru
8.	Vata	Ficus bengalensis	K S K Ru Gu

**Bandh (Bandages):**

Bandages are indispensable in the treatment of fractures. Bandages are usually done to hold the splints and dressings in position its main uses are

- to stop bleeding by pressure
- to give rest and support
- to retain dressings and splints in position
- to prevent oedema
- to correct deformity

**Table 5:** Types of bandages and uses:

Sr.No.	Bandha (Bandages)	Uses
1.	Sheath (Kosa)	Around thumb and fingers
2.	Long roll (Dama)	Sling around straight parts of small width
3.	Cross – like (Svastika)	Spica around joints
4.	Spiral (Anuvellita)	Around upper and lower limbs
5.	Winding (Mutoli)	Circular around neck penis
6.	Ring (Mandala)	Circular around stumps
7.	Betel box type (Sthagika)	Amputation stumps tip of penis or fingers
8.	Twotailed(Yamaka)	Around limbs to treat ulcers
9.	Four-tailed (Khatva)	For jaw, cheeks, temples
10.	Ribbon-like (China)	Outer angles of eyes ;temples

11.	Loosely knotted	Over back abdomen & chest
12.	Nooselike(Vibandha)	
13.	Canopy like	Protective cover over head wound
14.	Cowhorn (Gophana)	Over chin, nose, lips, ano-rectal region
15.	Five tailed (Panchangi)	Head and neck above the level of clavicles

The following materials are used for making bandages

- Cloths made from linseed fibres
- Cloths made from cotton fibres
- Woolen materials
- Fine cloth
- Silk Cloths made from naga tree fibres
- Chinese cloth
- Inner layer of bark of trees
- Animal skin
- Skin of gourd
- Beaten syama creeper
- Rope of munja grass

Acharyas have mentioned the rules of bandaging very scientifically. It should be neither too tight nor too loose. Tightness can lead to swelling, pain, blebs and too loose a bandage can never give the desired stability of the fractured fragments. Like vise bandaging should be done in the interval of three, (hot Season) five (Normal season) or seven days (Cold season) depending upon the climatic conditions.

#### **Immobilization techniques in Ayurveda**

There is enough evidence to prove that Susruta and his followers had profound knowledge on immobilization techniques. One of the applications mentioned in Bhaishajya Ratnavally is Panka pradeha. It means application of mud around the fracture site. Most probably it could be analogous with plaster of parris which we practice today. Another type of immobilization techniques which is very prevalent in Kerala and adjoining states are a combination of white of egg, Black gram powder and cloth.

#### **Rehabilitation**

The first objective of rehabilitation is to eliminate the physical disability to the greatest extent possible second to alleviate or to reduce the disability to maximum possible level and third to train the person with residual physical disability to work and live within the limits of disability but to the hilt of his capabilities Significance of the principles of rehabilitation was known to ayurvedic Acharyas. Susruta has instructed the patient of fracture carpal bone to bear weight in increasing order as the fracture healing progress. He instructs the patient to bear the bolus of mud and then rock salt and later Pashana.

There are certain foods that hastens healing and they are

- Salyanna - Unpolished rice
- Mamsarasa- Meat soup
- Majja- Marrow soup
- Ksheera-Milk and its products
- Gritha- Ghee
- Yoosha- Dal soup
- Brimhana aahara- Nourishing foods
- Brimhana paaniya- Nourishing drinks

#### **Prognosis**

The treatment of Churnita, Chinna, Atipatita and Majjanugata type of fractures are difficult to heal. Dislocations of joints in children, elderly and debilitated individuals are also difficult to try.

The treatment of fractures and joint injuries are difficult in patients who eat too little, who

lack self control to comply with instruction and those with *vataja* constitution. The treatment is easy and successful in youth in the absence of *dosa* perturbation and in cold weather condition. The stability of a joint which takes a month in youth may require twice as long in middle age and thrice in old age.

### Individual joint injuries

- If a nail or nail bed is crushed a swelling develops with the collection of blood, blood should be drained by incision with a sharp knife and wound bandaged with paste of Sali rice.
- When a joint of a finger is dislocated with or without a fracture, the deformity should be corrected to restore normal appearance and finger bandaged with ghee soaked linen and irrigated with ghee.
- When foot gets injured part should be anointed and protected with splints. Patient advised to desist from movement
- If the fracture is at lower limb – knee joint or femur injured area should be anointed and site straightened with great care. After straightening the area should be immobilised with splints made of bark of Nyagrodha tree. If this is a compound fracture also, the fractured site should be anointed well and reduce the fracture site with ‘Chakrayoga’ and bandaged properly. Similar treatment should be adopted for Picchita and sphutitha type of fractures. The chakrayoga holds similarity to the technique adopted by Jacob bigelow of Boston which was later termed as bigelows manoeuvre.
- When the pelvic bone is fractured it should be corrected with raising the depressed part or compressing the elevated portion.
- Ribs when injured the patient is made to stand and the area anointed with ghee and immobilised with splints. The patient is made to lie down in ‘Taila kataham’.
- Shoulder joint dislocation should be reduced using a ‘Musala’ to lift the head of humerus upwards. Expert physician should bandage it into a *swasthika bandha*.
- Elbow dislocation should be bandaged after reduction with thumb joint should be extended and wrist joint injuries.
- Both palms should be joined together and bandaged exactly after reduction of any injury related to palms. The affected palms should properly irrigated with medicated ghee.
- Collar bone if fractured the site is fomented and fracture reduced by pressing down the elevated fragment and bandaged with the help of musala.
- The fracture over the bahu should be treated just like that of URU.
- Neck if injured by twisting or bending should be straightened by inserting fingers through the nape of neck. Bandage administered with help of splint and thereafter the patient is made to lie for a week.
- Jaw if dislocated should be reduced and *panchangi bandha* administered. Nasya and vatahara drugs are advised thereafter.
- In young adult if the tooth become loose and not broken the blood collected should be drained and tooth washed with cold water and replaced with the help of certain cold paste. He should drink liquid foot through the help of straw of lotus stem. For elderly people the tooth should be pulled out.
- Depressed nasal fragment should be straightened with the help of Salaka and two tubes. The nose should be irrigated and bandaged.
- Ear if injured should be rubbed with medicated ghee and normal appearance restored manually.
- Skull fracture without tissue should bang after the application of ghee and honey for week.

- Fractured lower limb patient should be made to lie down on hard and wooden board and limb immobilized with fixing five pegs. Two on each side and one at the centre. Similar method is advised in fractures over spine, hip chest and collar bones.
- In chronic dislocation where the deformity is longstanding stiffness should be softened with lubricants, fomentation.
- In malunited fracture the site should be refractured and treated like a fresh fracture.
- Surgeon should not spare any effort to prevent infection or suppuration which will affect the muscles, vessels, and ligaments. A good outcome of treatment is when the part shows no deformity or lengthening or shortening and when movements and activities are unrestricted and comfortable.

## CONCLUSION

Orthopaedics in Ayurveda is so well developed that nothing needs to be added or deleted from the text even now. Except for its surgical part we can find solution for almost all orthopaedic problems through our good old Susruta Samhitha. Susruthas approach to the treatment of fractures and dislocations 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 vogue in many parts of rural India where families of bone setters continue to serve and remind one of their common ancestries with Susruta tradition. No wonder why Susruta is said to be the father of Surgery.

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