

REVIEW ARTICLE ON FUNDAMENTAL PRINCIPLES OF FRACTURE (BHAGNA) IN AYURVEDA**Dr. Arati Gajanan Sadabal*¹ and Dr. S. V. Annapure²**¹PG. Scholar Shalya, Govt. Ayurvedic Mahavidyalaya Nanded.²HOD and Professor, Shalyatantra Dept. Govt. Ayurvedic Mahavidyalaya Nanded.Article Received on
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ABSTRACT

In Ayurveda orthopedic condition is well explained and documented under the heading of 'Bhagna Chikitsa'. Acharya sushruta described exclusive about fracture, its etiology, classification and their management. In ancient period Bhagna were commonly encountered problem occurs in war and attack by animal etc. But in present era these are commonly result of R.T.A. Modern medical science gained excellence in the management of fractures. But in Ayurveda also the fundamental principles of technical management of fractures loke first aid, reduction, immobilization and physiotherapy have beautifully been described. In addition to the local technical management, adjuvant

therapies viz. Oral medication, panchakarma, diet regimen have also been mentioned. By adopting these Ayurvedic principles may such injuries can be managed successfully with minimal rate of complications. In the present article an effort has been done to compile and describe the principles of fracture(Bhagna) according to the modern medical science.

KEYWORDS: Bhagna, Fracture, Bandha, Sukhcheshtprasara.**INTRODUCTION**

Trauma being the birth partner of man has always troubled him. In the advanced era with the increasing momentum of dynamic sophistication of present day life style, the incidences of skeletal injuries are constantly increasing; affecting all age groups. This results into greater physical, psychological, social and financial loss to the patients, their families and the state as well. Surgery in India was in practice right from the pre-historic era, as references regarding are available in Vedas, particularly of orthopedic surgery like prosthetic replacement of limbs, fixation of severed head etc. by As Ashwini Kumars the divine physicians. But it was

in its highest glory during the period of Sushruta, somewhere during the 5th century B.C. For Bhagna(fracture) management unique principles of technical management Sthapna(Reduction), Bandhana(immobilization) and Sukhcheshtprasara(Physiotherapy- a part of Rehabilitation) have been described. Along with this technical management a vast description of local, parenteral, oral medication, dietetic regimen, life style modification have also been mentioned. These principles stand to the test even in present time and can be beneficial to the patient. The present review is aimed to compile the various concept of fracture(Bhagna), its classification and management as described in Ayurveda, their possible interpretation according to the modern science.

Review of Literatures

Shabdotpatti

The word 'Bhagna' is derived from the root 'bhanj dhatu' and 'kta' pratyaya meaning to break.

Definition

'Bhajayayeeeti bhagnam'

A fracture may be a complete break in the continuity of a bone or it may be an incomplete break or crack.

Etiology of Bhagna

Sushrutacharya attempt to specify the nidanas as follows

Patana: Fall from a height, fall on the ground with outstretched hands etc.

Peedana: Violent pressure or compression affects directly or indirectly over the bones.

Prahara: Strong blow from blunt instruments such as mushti prahara.

Akshepana: Violent jerk, vigorous movements or sudden and severe contraction of muscles.

Vyala mrugadashana: Bites, nail injuries or attack of wild beast which was very common in ancient days.

Balavad vigraha: Strong block from heavy or strongly built personality.

Abhigata vishesha: Trauma caused by different reasons results in varieties of fracture including different bones.

Some of the conditions like *asthi kshaya*, *majja kshaya*, *asthi vidradhi*, *pakshaghata* etc are grouped under etiology for pathological fractures. Also *Bhagnas of durjata asthi*(congenitally deformed bones) is also considered as pathological etiology.

Features of Bhagna(fracture)

Sr.No.	Cardinal features of Bhagna	
1	Swayathu Bahulyam	Massive swelling
2	Spandana vivarthana	Tenderness
3	Avapeedyamaney shabda	Crepitus
4	Vividha vedana	Different types of pain
5	Sarvasvasthasu nasharmalabha	Agonizing pain and discomfort in all posture

Classification of Sandhimoksha(Dislocation) and modern correlations

Sr. No.	Sandhimoksha		Dislocation
1	Utpishta	There will be gharshana(crepitus), pain worsening at night with swelling on either sides of joint	Fracture dislocation
2	Vishlishta	Mild swelling, constant pain, jt deformity	Dislocation due to tear of ligament
3	Vivararthita	Pain, deformity with lateral displacement	Anteroposterior dislocation
4	Avakshipta	Pain, deformity with downward displacement	Downward dislocation
5	Atikshipta	Severe pain, deformity, wide displacement	Gross displacement
6	Tiryakshipta	Unbearable pain with bone end obliquely displaced	Oblique dislocation

Classification of Bhagna and correlation with modern(fracture)

Sr.No.	Bhagna		Fracture correlation
1	Karkataka	Two ends of shaft bent, swelling over fracture in the middle	Depressed fracture
2	Ashvakarna	Fractured ends in angular deformity	Complete oblique fracture
3	Churnita	Fracture comminuted with crepitus	Communicated fracture
4	Pichchita	Fractured site crushed with severe swelling	Compressed fracture
5	Asthichalita	One fracture end displaced downwards other end sideways	Periosteal evulsion fracture
6	Kandbhagna	Fractured end free move on vibrating	Complete compound fracture
7	Majjanugata	One fractured end impacted into the marrow cavity of the with exudation of the marrow	Fracture impaction
8	Atipatita	Fractured end droops	Complete compound fracture
9	Vakra	Bone is bent, not completely fractured	Greenstick fracture
10	China	One surface fractured the other surface of the bone intact	Incomplete fracture

Fundamental principles of fracture(Bhagna) management

The line of treatment in Bhagna comprises of three important steps

- a. Bhagna sthapana(Reduction)
- b. Bhagna sthirika(immobilization)
- c. Sukhcheshtaprasara-karmavartana(Rehabilitation)

a. Bhagna sthapana(Reduction)

In case of incomplete fractures or when the fracture is of stable variety reduction is not required. On other hand it is very essential in fractures where the fracture management is unstable. Aim of bhagnasthapana is to approximate the fractured end and to achieve proper alignment. In sushruta samhita there are two main techniques mentioned for closed manipulation as-

Anchana(Traction): In this the wide gap between the fractured fragments may be corrected. Anteriorly, medially, laterally or posteriorly displaced fragments can be brought in alignment by the application of traction.

Peedana(pressure): In this fractured fragments are approximated through gentle and controlled pressure. Unnaman and vinamana techniques can be incorporated within peedana only. In case of Unnamana(elevated) fractured the raised fragment should be gently pressed down. In case of vinamana(depressed) the fragment should be carefully lifted up.

b. Bhagna sthirika(immobilization)

To prevent the movements that interferes with union, to prevent re-displacement of fractured fragments, to prevent angulations and to relieve pain and soft tissue injury kushabandhana is done.

Types of Bandha

Sr.no	Bandha(Bandages)	uses
1	Kosa(Sheath)	Around thumb and fingers
2	Dama(Long roll)	Sling around the straight part of small width
3	Swastika(Cross like)	Spica around joints
4	Anuvellita(Spiral)	Around upper and lower limb
5	Mutoli(Winding)	Circular around neck, penis
6	Mandala(Ring)	Circular around stumps
7	Sthagika(Betel box type)	Amputation stumps, tip of penis or fingers
8	Yamaka(Two tailed)	Around limbs to treat ulcers
9	Khatava(Four tailed)	For jaw, cheeks

10	China(Ribbon like)	Outer angles of eyes
11	Vibandha(Loosely knotted)	Over back, abdomen and chest
12	Vitana(Canopy like)	Protective cover over head wound
13	Gophana(Cowhorn)	Over chin, nose, lips, ano-rectal region
14	Panchangi(five tailed)	Head and neck above the level of clavicles

Sushruta 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 paris which we practice today.

c. Karmavarthana/ Sukhcheshtprasara(Rehabilitation)

objective of rehabilitation:

1. To eliminate the physical disability to the greatest extent possible
2. To reduce the disability to maximum possible
3. To train the person with residual physical disability to work

Significance of the principles of rehabilitation was known to ayurvedic acharyas. Sushruta has instructed the patient of fracture carpal bone to bear weight in increasing orders the fracture healing progress. He instruct the patient to bear the bolus of mud then rock salt and later pashana.

The importance of physiotherapy; after proper union it is desirable that the joints or fractured parts must regain normal functions and shape. It suggest that an injured part should not be put into action immediately, but gradually the movements may be restored. After immobilization gentle massage with specific oils gradually restores the movements in the affected part and enhances circulation.

Dietetic regimen for patients of Bhagna

Diet should be nutritious and balanced. For Sandhana(healing) purposes Guru, snigdha, sheeta and kashaya properties of ahara or aushadha substances are expected. Indicated diets are shali variety of rice, meat soup, milk, ghee and all brihana food and drinks items.

Criteria for Samyaka Bhagna Sandhana

Anavidham- means there should not be any pain or tenderness

Aheenangam – means no shortening or gapping

Anulambnam- means there should not be any irregularity or swelling

Sukhcheshtaprasara- means full and pain free movements or full functional recovery

Factors influencing fracture healing

Age

Physical status

Nutritional status

Type of bone involved

Techniques of management

Seasonal variables

Prakriti (psycho-somatic constitution)

Anatomical factors

Judicious knowledge of these factors can improve the outcome of such injuries.

DISCUSSION

Even though bones are rigid they do bend when an outside force is applied to it. When this force stops bone return to its original shape eg. If one fall forward with outstretched hand, there is an impact on the bones and connective tissue of wrist as it hits the ground. The bones of the hand, wrist and arm can usually absorb this shock by giving slight pressure and then returning to their original shape and position. If the force is too great, however bones will break just as a wooden ruler breaks after being bent too far. The immediate effect of a simple fracture of a human bone are to break the bone cortex and trabeculae, lift up or tear the periosteum and sever the periosteal, endosteal and haversian blood vessels, resulting in extravasation and pooling of blood.

The principles laid down in Ayurveda with regard to 'Bhagna chikitsa' are universal and is still in practice. Irrespective of the system of medicine, the general management of any fracture is, an elevated fractured part should be reduced by pressing it down, while hanging down should be reduced by raising it up, by pooling it in the case of its being pushed aside and by reinstating in its upward position in the event of its being lower down.

CONCLUSION

However, there are certain principles behind every line of treatment, if correctly laid down, would universally remain unchanged whatever be the means that may be adopted to achieve them. Orthopedics 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

orthopedics problem through our good old Sushruta Samhita. Sushrutas 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 family lines of bone setters continue to serve and remind one of their common ancestries with Sushruta tradition. The efficiency of Sushruta's skill regarding the management of a fracture case is not challenged even today. The present day medical science has also accepted most of the principles of Bhagana chikitsa described in Ayurvedic classics; which include approximation of fractured fragments, realignment of fractured ends without any angulations as far as possible so that the full length of the limb or the injured part is obtained, facilitate the injured bone to heal or unite. Rehabilitation technique is been described in steps wise to attain sound function of fractured part and to improve the strength and the stability. Therefore, to expect that whatever means Sushruta adopted in the treatment of a case of skeletal injury nearly 3,000 years ago would be as effective even today is certainly not justifiable.

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