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Review Article

## AYURVEDIC CONCEPT OF PATHOLOGICAL FRACTURE

B. Shaikh Naziya Sultana<sup>1</sup>

Shrinivas Bannigol<sup>2</sup>

Siddanagouda A. Patil<sup>3</sup>

C. Thyagraja<sup>4</sup>

### Abstract

Fracture is a condition characterised by break in the bony structure. The reasons for the fracture are broadly classified as traumatic and pathological. When the bone is broken due to weakened by a disease, then it is termed as pathological fracture. The knowledge of fracture existed since time memorable. In Ancient Ayurveda the term Bhagna has been used to denote fracture. Detailed description of aetiology, clinical features, types and management of fracture has been dealt in separate chapters of Sushruta Samhita. The description is in relation to traumatic fracture only. There is no mention of pathological fractures in these chapters. However, evidence of pathological fracture can be traced in relation to description of Asthi Vikruti's. The concept of Pathological fracture is highlighted in this article.

Key words – *Fracture, Pathological Fracture, Bhagna and Asthi vikruti.*

<sup>1</sup>MS Scholar, <sup>3</sup>Asst. Prof., <sup>4</sup>Prof. & HOD, Dept of ShalyaTantra, Ayurveda Mahavidyalaya, Hubballi,  
<sup>2</sup>Principal, Sanjeevini Ayurveda Medical College, Hubballi, Karnataka, India.

### CORRESPONDING AUTHOR

**Dr. Naziya Sultana**

MS Scholar, Department of Shalya Tantra,  
AMV, Hubballi  
Karnataka, India.

Email: naziyaishaik1435@gmail.com



## INTRODUCTION

**F**racture is a condition characterised by breaking the continuity of the Bone. Bone is the strongest organ in the body which gives support to all organs and bones are primarily responsible for loco motor function of the body. Any defect in the bone will lead to severe loss of loco motor activity. Hence the diseases of the bone in general and fracture in particular draw immediate attention for effective management. The various aetiological factors responsible for causation of fracture are broadly classified under two headings, as, traumatic cause and pathological cause. Accordingly fractures are classified as traumatic fracture and pathological fracture. The term pathological fracture denotes the fracture occurring due to localized or generalized pathological conditions of the bone.

There are various pathological conditions of the bone which weakens the strength of the bone resulting into fracture.<sup>1</sup>

The chief causes can be enumerated as following:-

**Osteoporosis--** This is a condition where bone weakness increases, and which makes the bone brittle.<sup>2</sup>

**Osteomalacia--** The term osteomalacia means 'bone wasting' due to calcium deficiency. It is seen in multiparous women and in people with chronic starvation.

**Pyogenic osteo myelitis--** It is an infection of bone caused by micro-organisms such as Staphylococcus aureus, streptococcus and pneumococcus. The host bone initiates an inflammatory reaction in response to the bacteria, this leads to bone destruction and production of pus.

**Tubercular osteomalacia--** Infection of bone or joint with tubercle bacilli is nearly always secondary to an infection of some other area usually the lymphatic glands at the roots of the lungs. Spine being the commonest site next to hip, knee and elbow joint.

**Rickets--** Rickets is the disturbance in the metabolism of calcium and phosphorus due to lack of vitamin D. The disease affects both cartilaginous and membranous bones. The bones may crack with trivial injury.

All these conditions will lead to weakness of the bone, thus resulting in to spontaneous fracture of the bone.

The description of fracture is available in ancient Ayurvedic texts. The term Bhagna has been used to denote this condition. So the disease fracture i.e. Bhagna has been affecting the man kind since time memorable. The more detailed description is available in Sushruta samhita. In sushruta samhita separate chapters have been devoted for nidana and chikitsa of this condition. Aetiology, clinical features, types and complications are dealt in Nidana sthana. The various aetiological factors mentioned are of traumatic in nature.

In chikitsa sthana the management of Bhagna is dealt. The methods of reduction and rehabilitation are precisely explained. Various internal and local medicines are advocated for fast and proper healing of Bhagna. In both these chapters only diagnosis and management of traumatic type of Bhagna is discussed. There is no reference of pathological type of Bhagna being described. This creates doubt whether Ayurveda recognises pathological fracture or not.

Further review of literature pertaining to various Asthi vikriti conditions reveals that, Bhagna is one of the lakshana or complication. The chief and common conditions are Asthi kshaya, majja kshaya, majja paripaka, rajayakshma and phakka roga.

**Asthikshaya:** *Asthi kshaya lakshanas* are falling of nails and teeth, breakage and falling of *Asthis*<sup>3</sup> as they become weak

**Majja kshaya:** In *Majja kshaya* symptoms like *Asthi shoonyata* (osteoporosis) has been explained. Due to *Majja kshaya*, *Asthi kshaya* takes place (*Sheeryate isheti*) which is the main pathological cause for *Bhagna*.<sup>4</sup>

**Asthi majja paripaka:** *Paka* (Suppuration) of *Asthi majja* (Bone marrow) takes place and not finding an outlet (to expel out the pus) due to obstruction by the bone and muscle, pus remains inside only and produces *Daha* (Burning sensation) as though burnt by fire itself aided by the combination of heat of both bone and bone marrow, this condition resembling a foreign body gives trouble to the patient for a long time, due to active movements of the body when the abscess gets an outlet it exudes liquid resembling *Meda* (fat), *Snigdha* (unctuous), *Shukla* (white), *Sheeta* (cold), *Guru* (thick) and **when the Asthi (bone) becomes Bhinna (punctured)** there will be exudation of pus, pain and *Trividha dosha prakopa laxanas* (Symptoms due to all the three vitiated dosas) then it is to be understood as *Asthi gata vidradhi*.<sup>5</sup>

**Rajayakshma:** In *Rajayakshma lakshanas sankocha Amsa Parshwa* (deformity of shoulders and flanks)<sup>6</sup> due to *Vata prakopa* takes place. There is *Uttarottara dhatu kshaya*, hence leading to *Asthi kshaya*.

**Phakka:** In *Phakka roga* (Rickets) due to complication of diseases like fever etc *Lakshanas* like *Samsushka spik bahu uru* (Emaciation of hips, arms and chest)<sup>7</sup> takes place which is mainly due to *Asthi kshaya* (deficiency of calcium, phosphorus, vitamin D).

## DISCUSSION

The cause for pathological fracture according to modern medical science and causes mentioned in Ayurvedic texts are almost similar. They can be correlated as following:

Causes mentioned in Modern Medical science	Causes mentioned in Ayurveda
Osteoporosis, Osteomalacia	Asthi kshaya
Pyogenic osteo myelitis	Majja kshaya, Asthimajja paripaka
Tubercular osteomalacia	Rajayakshma
Rickets	Phakka roga

These conditions have similar aetiopathogenesis and clinical features. Fracture i.e Bhagna is seen either as a clinical feature or as complication. In these conditions which is referred as pathological fracture in Modern Medical science and can be called as asthivikruti janya Bhagna. In Ayurveda ,the management of this condition has to be aimed at adopting principles of fracture treatment along with management of underlying pathology.

## CONCLUSION

There is no mentioning of pathological fracture in the chapter of nidana sthana or chikitsa sthana of Bhagna in Sushruta samhita. As pathological fracture is secondary to weakened bone due to bone disease, reference of such type of Bhagna can be traced in a condition where asthivikruti is described. Thus the reference of pathological fracture is available in the description of Asthikshaya, Majjakshaya, Asthimajaa paripaka, Rajayakshma and Phakka roga. So there is a definite evidence of description of pathological fracture in Ayurveda wch can be reffered as asthi vikruti janya Bhagna.

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