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ROLE OF PANCHAKARMA IN POST FRACTURE REHABILITATION A REVIEW

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ABSTRACT :

Rehabilitation is the act of restoring function of an affected part to its pre-injured state. Improved results of fracture management owe much towards rehabilitation which is one among the three standard principles of fracture treatment. Rehabilitation should begin as soon as the fracture is reduced by definitive treatment. The earliest descriptions of rehabilitative care can be traced from the compendium by legendary surgeon Susruta. The possibilities of *panchakarma* (purificatory therapies) and allied treatment modalities in post fracture rehabilitation are well explained and practically explored by ancient physicians. These descriptions aim at the effective rehabilitation and functional restoration of the affected part. The post fracture complications including joint stiffness, muscle wasting, and restricted mobility of the affected part can be successfully managed by a combination of ayurvedic therapies including *panchakarma.*

Key words: Rehabilitation, Post fracture complications, *Panchakarma*

INTRODUCTION: Treatment of fracture has become more precise and successful with the advancement of radiographic techniques. In the beginning of twentieth century, the era of modern fracture management began to develop. Before that the surgeons had to rely upon knowledge of dissected specimens and upon clinical evidence in determining the nature of injury. Even when the advantages of an aseptic technique and of radiography become available, operative procedures were still severely handicapped by the lack of inert metals, with which to fix the bones in opposition. In present era, when it comes to manage a fracture, the first choice arise is surgery or application of POP cast. The legendary Ayurvedic surgeon Susruta and his school of thought treated fractures with less complication or no complication either, with classical ayurvedic methods. Fracture management is carried under the guidelines of Golden Rule 3R, i.e. Reduction, Retention and Rehabilitation. The proper methods of diagnosing and effectively managing fractures are extremely important in treating patients[1]. Most of fractured bones heal usually in six weeks. But that healing may be evidenced by the presence of callus formation only. As there may be enough stress placed through the body by the fracture, inevitably there is chance of damage to other soft tissues and structures that lead to joint stiffness and muscle weakness even though treated by the best available management.

The trends in fracture management had changed during the post – world war years as there were tremendous developments in metallurgy, with the inventions of alloys which could remain indefinitely in the tissues without corrosion, this lead to a drastic change to the conventional concept of fracture management which comprises of

reduction or immobilization. Above all, it has come to the realization of orthopaedicians that, in the treatment of fractures it is not the bone alone that matters but much attention to be paid to the soft tissues, and especially to the muscles, whose function must be preserved by active use within the limits. Immobility of affected part is imposed by necessary splintage, and its functional restoration is attained by controlled activity when the splintage is removed. In the second half of the twentieth century, dramatic changes in technology availed the physicians for better diagnosis and to treat of all types of musculo-skeletal injuries[2]. The introduction of newer designs of implants and its insertion using advanced instruments and engineering methods was put forward by Swiss AO[3]. Along with the introduction of different types of internal fixations, in response to the increased number of open fractures and injuries, improved designs of external fixators also was brought in. Parallel to this, conservative treatment have also advanced with the introduction of light weight splinting materials and better designs of splint. There is now clear evidence that earlier movement of limbs, with both fractures and soft tissue injuries, will promote healing and speed rehabilitation. Reduction and Immobilisation are often unnecessary, but rehabilitation is always essential [4].

Rehabilitation: According to the displacement of fracture fragments, it can be classified either as, un-displaced fracture, where the bone has a break but is still in normal position, or displaced fracture, where a fragment of bone has displaced; it can be in the form of a shift, angulations or rotation. The first category of fractures are usually treated without surgery unlike the second which generally requires surgery if the displacement is more. All fractures require treatment, proper bone healing and rehabilitation. Adequate care is essential to regain full use and range of motion where in the role of rehabilitation is important and serves bi-fold purpose.

1. To preserve function as far as possible while the fracture is uniting.
2. To restore function to normal, when the fracture is united.

The two essential methods of rehabilitation are active use and active exercises [5].

1. Active use: In this method the patient should continue the use of the injured part as naturally as possible within the limitations imposed by necessary treatment. The degree of function that can be retained depends upon the nature of the fracture, the risk of re displacement of the fragments, and the extent and duration of immobilisation. Although in some injuries rest may be necessary in the early days or weeks, gradual return to activity must be encouraged as soon as possible from an early stage.
2. Active exercises: These comprise exercises for the muscles and joints. While a limb is immobilised by plaster or splint, exercises must be directed mainly to preserve the muscle function by static contractions and it can be acquired under proper supervision. Rehabilitation emphasizes restoring full range of motion, strength, proprioception, and endurance, while maintaining independence in all activities of daily living. The duration and type of rehabilitation depends on the associated soft tissue involvement, the location, type of fracture as well as the method of stabilization.

In modern contemporary sciences, physical medicine offers satisfactory results in rehabilitation by using different modalities for controlling pain and oedema.

Panchakarma:In Ayurveda, the principle of fracture management is well explained in an excellent and scientific way like *Anchana* (counter traction), *Pidana* (compression), *Samkshepa* (minimising gap between the fragments), and *Bandhana* (bandaging)[6] . Different types of treatment modalities are explained, which brings back the affected soft tissues to the pre injured state or gives more nourishment to the structures involved. The traditional classical treatments, along with some of the *panchakarma* procedures, play a major role in fracture management, where *Panchakarma*, can be administered as a step of rehabilitation. It includes - *Poorvakarma* (pre-procedure) – includes *snehana* (oleation) and *swedana* (sudation), which includes *abhyanga* (massage), *sneha-dhara* (continuous oil irrigation), *shirobasthi* (retaining oil on scalp) etc.*Pradhana karma* (principal procedure) including *nasya, virechana* (purgation), *vamana* (emesis), *anuvasana vasthi* (oil enemata), *asthapana vasthi* (decoction enemata).*Sneha* (oleation therapy) can be administered both externally and internally in various types of fracture. Acharya advises to consume red rice, meat soup, milk, clarified butter, *yusha* (lentil soup) etc and diet that is nutritious/nourishing in nature[7]. *Ashtanga hridaya* (A concise text on essentials of eight branch of Ayurveda), *Doshadivijnaaneeyam adhyaya* (chapter on the knowledge of body humors), explains that there is *ashraya ashrayi sambandha* (inherited inter dependency) between *asthi* (bone tissue) and *Vatadosha* , hence any injury to *asthi* results in aggravation of *Vata*, thus treatment modality is to be planned accordingly. In *Ashtanga hridaya*, it is mentioned that treatments advised for *vatavyadhi* (diseases manifested due to aggravation of *vata*) can be administered to a patient suffering *bhagna*[8] (fracture & Dislocation), and 4 types of *snehana* i.e. *Pana* (oral administration), *nasya* (nasal instilation), *abhyanga*, *anuvasana* can also be administered for strengthening) [9]. Internal administration of ghee processed with *madhur oushadha* (a group of drugs that possesses sweet property) cooked along with *laksha* and cooled is advised for oral intake. In case of compound fracture, the wound should be treated with plenty of ghee and honey. *Veshtana* (circular bandage) with *sarpi* is mentioned in all fractures .Thus *snehana* is mentioned in all fractures, in order to regain the flexibility of bones and joints.

Vasthi: Administration of *vasthi* in fracture of hipbone after reduction is advised[9]. In fractures of sacrum, there will be neurological deficits due to involvement of higher sacral roots. In pubic rami fracture or ischial fracture, which is the commonest fracture in elderly, there will be pain when hamstrings are put in action. Rupture of urethra and of urinary bladder are the commonest injuries seen in separation of pubic symphysis and fracture pubic rami. Bowel and rectal injuries are all common and sometimes require immediate surgical intervention. In these conditions *Vasthi* , as a rehabilitation procedure will help to manage the complications.

Nasya & Anuvasana Vasthi: The role of *snehapana*, *nasya* , *shirobasthi* and *karnapurana* in fractures involving *urdhwakaya* (above clavicle) and *anuvasana vasthi*, for fractures involving *shakha* (extrimities) are explained.

Oil of *trapusa, aksha* and *priyala* cooked with drugs of *madhura rasa*, together with *Vasa* and ten parts of milk[10], is best to unite fractures quickly when used for *Pana, abhyanga, nasya, basthi karma*. In *hasta tala bhagna* (fracture of phalanx) ,

correction should be made followed by *pariseka* with *taila* and bandage. Pain, swelling, tenderness and loss of wrist movement are some of the common complaints in carpel injuries. If the injury does not need surgical intervention short arm cast immobilisation is the line of management [11]. For this the modalities described in Ayurveda will help the patient to counter the complications. Thus *brihmana* (strengthening) is the main rehabilitative treatment modality which is to be administered in case of any fracture and *brihmana* can be achieved through *abhyanthara* and *bahya snehana karma*.

Fracture of Phalanges: It should be first reduced by closed manipulation, then bandage should be done by sprinkling ghee. Affected part should be bandaged with the help of splint. Mainly if there is no displacement or displacement is minimal, conservative management is enough, for which short arm cast is used. But if the fracture is comminuted or the displacement of the fragments is more than 1mm or the angulation is more than 15^0, then surgical correction is advised.

Fractures of lower Extremities (Tibia – Fibula or Femur): The fractured site should be gently massaged with ghee followed by traction along the direction of the bone. After, it should be splinted with *Nyagrodadi gana dravyas* and bandaged with the help of linens. In case of fracture of the arm bones, should be treated according to above procedure. In case of fracture associated with *vrana* locally a paste of *Nyagrodadi gana dravyas* along with ghee and honey is applied. In case of Tibia – Fibula or femur bones fractures, a special immobilization methods known as *Kapatshayana vidhi* is also mentioned[12]. In this method the patient should be led down on a plank or board and bound to give steaks or pegs in five different places. In case of Femur fracture a pair of peg should be placed at either side of the Hip joint and other. Pair peg and both the sides of knee joint .The fifth pair at the sole. In case of Tibia and Fibula all the pegs should be placed as in femur fracture except instead of putting peg, at Hip joint, they should be placed at the either side of ankle joint. The idea behind the *Kapatshayana vidhi* is that the major fractures cannot be immobilized only with the help of splints.

Fracture of cervical spine: Counter traction should be done in the upward direction. An appropriate splint may be applied around the neck and tied with linen. The patient should be advised to be in supine position for seven days. The fracture occurring in the upper part of the body should be managed with Sirovasthy, *KarrnaPurana, Ghrita Pana* and *Nasya*[14].Sirovasthy can be done for 7 to 14 days assessing the status of the fracture and the general condition of the patient. In some cases where the patient is not able to sit for a long period or not able to hold his head for a long time Pichu also can be considered. Rehabilitation procedure mentioned by Sushruta like *Mrita Pinda, Dharana, Lavana Dharana,and Paashana Dharana* for upper limb are almost matching with modern rehabilitation methods of physiotherapy .

For post fracture rehabilitation, physical therapy is the most commonly accepted mode of management. The type of therapy will, of course, differ based on the type of fracture. But in general, therapy begins when the cast is removed. Strengthening and aggressive range of motion exercises usually must wait until the bone has healed. The physical therapist assesses the fracture to make sure the patient can return safely to previous home and work activi-

ties. It helps the patient restore full movement and strength in a safe manner, while healing occurs. A return too early after a fracture may increase the risk of another fracture[13]. While considering the ayurvedic treatment modalities, it is evident and time tested that use of *Sneha* internally and externally along with certain *panchakarma* procedures like *nasya* and *vasthi* is having a great role in regaining the functions of the affected part. *Dhanwanthara thaila, Murivenna, Prabhanjana thaila, Shashtika thaila* etc. are some of the *thaila* preparations which are widely used. *Abhyanga, Shashtika pinda sweda, Dhanyamla dhara* and different types of *Pinda sweda* are commonly practised to manage the post fracture disabilities and the complications.

CONCLUSION: Along with the assistance of modern physical medicine techniques , Ayurveda can successfully manage the post fracture rehabilitation with *panchakarma* and other treatment modalities like *Dhanyamla dhara,Upanaha sweda, Shastika pinda sweda* etc. Dhanyamladhara and Upanaha sweda can be used to manage pain and swelling while Shashtika pindasweda is used to encounter the injuries to the surrounding soft tissues and also to give nourishment.The soft tissue injuries associated with fractures also has to be managed with utmost care to avoid complications. So the system of Ayurveda can be used effectively for bringing back the patients to normal.

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