

Bandhana added Support to Natural Healing of Both Bones Multiple Fractures of Forearm- An Ayurvedic Case Study

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Abstract:

Fracture of both bones of forearm in adults is a difficult problem to treat. Management is generally surgical open reduction and internal fixation with compression plating of both radius and ulna fractures. Cast or brace immobilization is indicated in un-displaced fractures in patients who are not fit for surgery. But high rates of nonunion are associated with non-operative Management. According to Ayurveda, *bhagna* is the general term denoting fractures and dislocations of bone and joints respectively. In clinical practice bandaging using bamboo splints and local application of *murivenna* has a better result in the management of *bhagna*. In this case report, a 60 year old female patient presented with multiple, both bone fractures of forearm came to Salyatantra OPD. She was given *punarnavadi kashaya*, *lakshaguggulu tablet*, *gandhataila* internally and splinted bandage using *murivenna*. Rebandage was done weekly for 6 weeks. Patient got better symptomatic relief of pain, swelling and tenderness. She attained satisfactory improvement in the range of movement also.

Keywords: Both bone fracture, Forearm, *Murivenna*, Splinted bandage

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Introduction:

Radius and Ulna shaft fractures, also known as adult both bone forearm fractures are one of the most common orthopaedic injuries caused by trauma^[1]. Bone has its own mechanism to ward off the unnatural forces and keep itself intact. But the bone fails to withstand forces which is too large, occurs suddenly, chronic or repetitive forces and when the natural resistance of the bone is lost by a disease process^[2]. Low energy

trauma resulting in both bone forearm fractures, such as a fall from standing height, may only seen in individuals with altered quality of bone, especially women over the age of 60^[3]. Main objective of the management of fracture is to restore the structural integrity and functions of the subject, without complications. Manipulative reduction followed by Cast or brace immobilization is indicated in completely undisplaced fractures. If reduction is successful

a full length arm plaster with the elbow at a right angle and the forearm in a position midway between pronation and supination is sufficient.^[4] It should be monitor very closely for displacement and should be worn for at least 6 weeks.

Management of *bhagna* is mentioned in a systematic way in the *Susrutha samhitha Chikitsasthana*. Conservative measures like *alepa*, *parisheka*, *abhyanga*, *bandhana* using different kinds of splints etc were mentioned to bring the fractured parts into normalcy. *Pratyanga bhagna chikitsa* were also explained in the treatise^[5]. Even in injuries requiring surgical management, Ayurvedic principles hold a typical role in successful healing of the fracture. In the present case, various medicinal preparations having actions like reducing pain, swelling, promoting bone healing and strength were also provided along with the splinted bandage with *murivenna*. The traditional medicinal oil, *murivenna* is indicated for the cure of various types of trauma and inflammation.^[6]

Case Report:

On January 18, 2021 a 60 year old female patient came to Salyatantra OPD, Government Ayurveda College, Tripunithura. She came with complaints of pain and swelling of right forearm since 3 days. She had no history of hypertension, diabetes or dyslipidaemia. The patient had a

Therapeutic Intervention:

The external splintage and *murivenna* oil was applied externally along with internal medicines as mentioned in table-2

Materials and methods of bandaging

Materials used:

- Gauze rolls
- Cotton

history of fall from a two steps height to the kitchen floor by hitting right side of the body with some weight in the right hand. She couldn't get up from the floor herself. She was taken to a nearby allopathic hospital and initially managed with painkillers. On X ray examination of right forearm and wrist, multiple fractures of both radius and ulna were assessed (Fig-1). She was advised surgical correction but she was not willing for surgery. Then the forearm was immobilized using plaster of Paris cast and sling. After 3 days, because of severe pain and discomfort she came to Salyatantra OPD, Government Ayurveda College, Tripunithura. On careful examination, she had swelling, tenderness and impaired movement of right forearm. Local examination findings of right forearm, wrist joint and hand are shown in table-1. There was mild deformity of forearm noted along with mild stiffness of wrist, elbow and joints of hands felt. As per ayurveda, features like *Swayadhubahulyam*, *Sparsaasahishnutvam*, *Avapeedyamane sabda*, *Vividhavedanapradurbhava* and *Sarvasu avasthasu na sarmalabha*^[7] were observed in this case. X ray of right forearm including wrist and elbow joint showed multiple fractures of radius and ulna with minimum displacement of fractured end (Fig- 1). Hence on the basis of clinical findings and x-ray case was diagnosed as *Kandabhagna* (fracture shaft of radius and ulna – right) *Bahiranth prakoshtasthi bhagnam* (*dakshinam*).

- Wooden scale-4
- Kora cloth
- *Murivenna*

Method of bandaging:

After giving mild traction and counter traction, *murivenna* was applied and the forearm including wrist and elbow joints covered with gauze roll. Then wrapped with cotton. Splints were prepared with wooden scales of appropriate size covered with cotton. It is tied along the

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anterior, posterior, and the two sides of the forearm over thickly padded cotton to avoid pressure. Both wrist and elbow joints were immobilized with splints. After that, bandage with *kora* cloth done to provide adequate

support. Forearm kept safe in collar and cuff sling. Patient was advised to apply *murivenna* daily over the fracture site. Advised active movements of fingers, elbow joint to avoid swelling and stiffness of joints.

Table-1: Local findings:

Examination	Forearm	Wrist joint	Hand
Inspection	Swelling and deformity present	Swelling present	Swelling present
Palpation	Grade II tenderness over the shaft of radius, Crepitus present	Bony tenderness absent	Bony tenderness absent
Range of movement	All movements restricted due to pain	All movements possible with pain and not in full range	Can't able to form complete fist, movements painful

Table 2: Splinted bandage with *Murivenna*:

Date of bandaging	Remarks
18-01-2021	Marked swelling and grade II tenderness, movements restricted
27-01-2021	Swelling reduced, grade II tenderness
09-02-2021	Swelling reduced, grade I tenderness
15-02-2021	Mild swelling, grade I tenderness
22-02-2021	Mild swelling, tenderness reduced
01-03-2021	Swelling and tenderness reduced, advised active movements of wrist and elbow joints
08-03-2021	Mild swelling and tenderness, advised active movements of hand
15-03-2021	Tenderness absent, swelling reduced Bandage removed
23-03-2021	Tenderness absent, active movements of wrist, elbow and hand possible

Table 3: Internal Medicines:

Medicines given	Dose	Duration
<i>Punarnavadi kashayam</i> ^[8]	90 ml bd before food	18-01-2021 to 15-03-2021
<i>Lakshadi guggulu</i> ^[9]	2-0-2 after food	18-01-2021 to 20-04-2021
<i>Gandhatailam</i> ^[10]	10 drops with milk at bed time	18-01-2021 to 08-04-2021
<i>Indukantham ghritham</i>	10 gm bd after food	09-02-2021 to 15-03-2021
follow up after removal of bandage		
<i>Jadamayadi lepam</i>	2 times	23-03-2021 to 08-04-2021
<i>Murivenna</i>	Dhara 2 times	23-03-2021 to 08-04-2021
<i>Gandhatailam</i> Capsule	2 bd after food	20-04-2021 to 13-07-2021
<i>Gandhatailam</i> 10 drops with milk	At bed time	11-10-2021

Follow Up and Outcomes:

Fig 1: Right forearm including wrist and elbow joint X-ray



Fig- 2: On 09-02-2021



Fig -3: On 01-03-2021



Fig 4: On 13-07-2021



Fig 5: On 12-10-2021

Discussion:

Fractures can be correlated with *bhagna*. Acarya Susrutha mentioned different methods to manage *bhagna* in a successful way. *Bandhana* is the effective method in the management of *bhagna*. It is a non-invasive method to manage fractures in the out-patient level itself. When fracture happened, to prevent further damage, the fractured bone must be immobilized by splinting the joints above and below the fracture, as movement of these joints would move the bone fragments. Splints should be well padded to protect the skin from injury, loss of circulation, inflammation, and infection.

In the present study, the patient had both bone, multiple fractures of right forearm and she was in her post-menopausal period hence there is already degeneration in the bone. Along with splinted bandage with *murivenna*, internal medications were also given. Apart from mere splinting, application of *murivenna* has a beneficial effect in the management of *bhagna*. *Murivenna* is indicated for various types of traumatic and inflammatory conditions. Because of its *seeta virya*, it never produces dryness as seen in immobilization with plaster of Paris.

This type of bandage not only provides a mechanical support but also acts through its medicinal properties. Bandage with *murivenna* is found to be very effective in reducing swelling, tenderness and pain. Drugs having anti-inflammatory actions helps to reduce swelling. *Punarnavadi kashaya* is having *sophahara* property, *lakshadi guggulu* and *gandhataila* are best for *bhagna sandhana*. It helps in the remodeling of the fractured bone. Administration of *ghrtha* has significant role in the management of fractures. After the removal of bandage patient was advised to do *lepana* with *jadamayadi choorna* in *dhanyamla* and *dhara* using *murivenna*. *Jadamayadi lepana* helps to relieve pain and swelling. Regular application of *murivenna* in the form of *dhara*

helps to attain normal range of movement. Acarya Susrutha explained procedures like *alepa*, *parisheka*, *abhyanga* for the management of *bhagna*. It helps to reduce swelling and pain, also helps to attain the movements. Patient was not comfortable with plaster of Paris but apart from that she was very comfortable with splinted bandage with *murivenna*.

Conclusion:

Splinted bandage with *Murivenna* is very effective in the management of *bhagna*. Daily application of *murivenna* provided cooling effect inside the bandage, which reduces the discomfort due to cotton padding. Also it never allows the skin becomes dry, thus avoids pressure sores. It is light weight compared to bandage with plaster of Paris and is cost effective.

Not observed any complications like cross union, malunion etc. Patient was very comfortable with the weekly follow up and medication. Also full range movement of wrist and elbow joints was regained.

Patients consent:

The written informed consent has been obtained from the patient for treatment and publication of data.

Limitation of study:

Immediate management of pain was difficult with the medicines provided.

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