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## ORIGINAL ARTICLE

# EFFECT OF MANJISHTADI LEPA AND LAKSHADI KSHEERAPAKA IN THE MANAGEMENT OF COLLE'S FRACTURE

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### Abstract:

**Background:** Sushruta has explained very clearly about the diagnosis and management of bhagna stating clearly the basic principles involved in handling these cases with the most methodical approach like Anchana (Traction) Peedana (Counter traction) Sankshepana (Correction of deformity) and Bandhana (Immobilisation). Sushruta also stressed the features of ideally healed bone and Physiotherapy by using different substances like Mrutpinda, Lavanapinda and lastly after gaining strength Pashana Dharana should be done. **Aims and objectives:** To evaluate the effect of manjistadi lepa and lakshadi ksheerapaka in the management of Colle's fracture. **Materials and methods:** The selected patients were subjected to realignment of the fractured ends by reduction techniques of conventional closed methods by shake hand method as in Colle's fracture. After reduction, Manjistadi lepa was applied. To maintain this reduced position, splints prepared out of bamboo sticks covered with cotton roll were placed in position with roller gauge kept in collar sling. The bandha was changed once in week without disturbing the fracture alignments. This treatment was continued for 6 weeks. **Results:** pain, swelling, tenderness and loss of function was very effectively reduced within one week of treatment, which is statistically proved with p-value <0.001. **Conclusion:** Administration of Laksha Ksheerapaka is effective in early bone healing. This ancient management is safe, easily available, less complications, and better acceptability.

**Key words:** Manjistadi Lepa, Lakshadi Ksheerapaka, Colle's fracture, Bhagna, Radius bone.

### Introduction:

Sushruta has explained very clearly about classification of skeletal injuries into Kandabhagna and Sandimoksha. Further Kandabhagna according to the bone involved, diagnosis and management of bhagna stating clearly the basic principles involved in handling these cases with the most methodical approach like Anchana (Traction) Peedana (Counter traction) Sankshepana (Correction of deformity) and Bandhana (Immobilisation)<sup>1</sup>. Sushruta also

stressed the features of ideally healed bone<sup>2</sup> and Physiotherapy by using different substances like Mrutpinda, Lavanapinda and lastly after gaining strength Pashana Dharana should be done<sup>3</sup>.

The fundamentals laid down by Acharya are based upon the sound footing of his scientific approach and a vast clinical experience with keen observations.

So for no research studies were conducted as an individual bone by Sushruta principle. Hence a clinical research entitled the "Management of Kanda Bhagna with special reference to Radius

#### **Aims and objectives:**

To evaluate the effect of manjistadi lepa and lakshadi ksheerapaka in the management of Colle's fracture

**Materials and Methods:** The present clinical study was aimed to assess the efficacy of the Ayurvedic management on radius fracture as individual bone.

#### **Inclusion criteria:**

1. Stable radius fractures Simple radius shaft and both end fractures. Both Male and Female patients
2. Patient's age group between 20 to 60years.

#### **Exclusion criteria**

1. Open radius fractures
2. Patients with nerve and vessel injury
3. Patient suffering with any other debilitating diseases

#### **Intervention:**

**Drugs used for Lepa:** Manjishta (Rubia cordifolia)<sup>6</sup>, Yashtimadhu (Glycyrrhiza glabra)<sup>7</sup>, Raktachandana (Santalum rubrum), Shali Pishti (Oryza sativa), Shatadhauta Ghrita

**Drugs used for Ksheerapaka:** Yastimadhu-10 grams, Laksha-10gms, Kshira - 100 ml, Jala - 800 ml

Laksha kshira paka is prepared in the manner of Ksheerapaka<sup>8</sup> preparation method. This was given 100ml internally daily in the morning.

Selected patients were examined as per the clinical proforma prepared for the study and subjected to routine blood and urine examinations to rule out other systemic disorders.

The selected patients were subjected to realignment of the fractured ends by reduction techniques of conventional closed methods by

Fracture" has under taken<sup>5</sup>. This fracture is also called Piedmont fracture (afterpiedmont orthopaedic society) has under taken<sup>5</sup>.

**Study design:** A prospective observational clinical study was undertaken on 20 patients.

**Source of data:** 20 Patients of stable radius fracture were selected randomly from the Surgical out patient and in patient Dept. of Shalya Tantra, S.D.M. College of Ayurveda and hospital, Hassan.

4. Infective diseases of the bone like osteomyelitis
5. Patients of deficiency diseases.

#### **Diagnostic criteria**

1. The clinical features like History of trauma, Pain and swelling in the affected forearm.
2. Positive findings of radius fracture radiographically.

**Requirements:** Bamboo splints, Roller gauze, Gloves, Cotton roll

shake hand method as in Colle's fracture. After reduction, Manjistadi lepa was applied. To maintain this reduced position, splints prepared out of bamboo sticks covered with cotton roll were placed in position with roller gauge kept in collar sling. The bandha was changed once in week without disturbing the fracture alignments. This treatment was continued for 6 weeks.

After confirming the bony union clinically, active physiotherapy like initially mrtpinda dharana, lavana pinda dharana and pashana dharana was followed in successive days. The patients were advised to take with restrictions of lavana, katu and amla rasa, kshara and ruksha dravyas. Advised to avoid atyadhika maithuna, atapa sevana and vyayama.

**Follow up study:** Patients were examined on initial day zero and further followed up weekly and the changes of signs and symptoms in the

patients were recorded weekly once based on the research proforma like-

**Subjective improvements:** The improvement in the clinical symptoms of the disease was The Clinical gradations of symptoms are as follows

- 1) Pain: No pain-00, Tolerable pain - 01, Intolerable pain – 02,
- 2) Swelling: No swelling -00, At site-01, At related joint-02, At whole limb-03
- 3) Tenderness: No tenderness-00, Patient winces-01, Patient winces and withdraws affected part-02, Patient does not allows to touch the part-03

**Observations:**

**Table no.1:** Age wise distribution of patients

Sr.no	Age group	No of patients	Percentage
1	21-30	03	15%
2	31-40	10	50%
3	41-50	05	25%
4	51-60	02	10%
	Total	20	100%

The study revealed that the incidence of Bhagna was commonly seen in the age group of 31-40 years i.e. 50%. Mostly this may be due to this

1. Subjective improvements
2. Objective improvements

assessed based on the gradation of each symptom as follows-

- 4) Loss of function: Normal function-00, Able to perform with difficulty-01, Unable to perform-02
- 5) Callus assessment: Good callus – 00, Mild callus – 01, No callus – 02,

**Objective improvement** – To assess the objective improvements, radiographic examination carried out before the initiations of treatment then weekly till the clinical union of the fracture.

age group patients are young adults and are more labour group by which, they happen to be sustain more trauma.

**Table no.2** showing the statistical analysis of symptoms after treatment

Sr.no	Symptoms	Mean score	% Of improvement	S.D	S.E	t-Value	p value
1	Pain	0.15	91.4%	0.502	0.112	14.28	<0.001
2	Swelling	0.05	96%	0.695	0.155	7.74	<0.001
3	Tender ness	0.05	96%	0.83	0.18	7.88	<0.001
4	Loss of function	0.10	90%	0.46	0.10	9.8	<0.001
5	Callus	0.45	82.50%	0.49	0.11	15.08	<0.001

**Discussion:**

The site wise incidence shows, there were more number of patients with lower end Radius bone fracture i.e. 70%. This may be due to protect head may fall with outstretched hand. This is one of the common reasons for fracture of lower

end of Radius. In middle aged and above middle-aged patients usually the osteoporotic changes are seen. This will affect the lower end of radius, which is cancellous part and in

females the osteoporotic changes may be due to hormonal imbalances.

**Fig. No. 1:** Showing Colles' fracture



#### **Effect of therapy:**

The main aim of clinical study is to assess the efficacy of Ayurvedic management of Radius as individual bone. Pain and swelling are important symptoms of this fracture. In this study neither a single anti-inflammatory nor analgesic drug was used. The initial mean value of pain was 1.75, and then it was reduced to 0.15. Usually this pain was relieved to the patients immediately after *parisheka*. But in most of the patients after one week of observation it came down drastically. Hence these observations indicate the *parisheka* with *laghupanchamoola ksheerapaka* has got analgesic action.

The observations towards swelling also show that there was drastic reduction of swelling after application of *lepa* for 2 or 3 sittings. The initial mean value was 1.25, which was reduced to 0.05 after the application of *Lepa*. The same indicates the efficacy of *lepa* in reducing the swelling. That means this *lepa* has got definite role to play with anti-inflammatory action.

As callus formation is the part of fracture healing, the patient, tissue, and treatment variables influence it. Subsequently, these factors can influence the time of appearance of callus in the radiograph. The age is one of the

important variables that influence fracture healing. This may be related to the increased vascularity and ability of the cells of periosteum to differentiate in younger individuals. Certain tissue variables can also affect the development of callus formation. Radiographic evidence of callus is dependent on site of bone involved, as well as the nature of fracture. Fractures, particularly in the diaphyseal region develop more callus than metaphyseal fractures. The difference is related to the amount of periosteum enveloping the bone. In these cases, clinical parameters, such as lack of pain with movement or tenderness on palpation, are used to assess fracture healing. This is also true for impacted fractures. As in this study the age group 20-60 patients are taken, the number of patients with radius lower end fractures are more, hence callus assessment was difficult. But in these cases direct diaphysis involved, in these cases the same is assessed properly and callus formation was early in these cases.

The P value is  $< 0.001$  this statistical analysis shows that the treatment is effective in relieving the symptoms like pain, swelling, tenderness and loss of function.

In few patients early callus formation was observed that this might be due to the effect of Ksheerapaka. Still more researches need to be carried out to assess the same. The study, which was carried out at Banaras Hindu University by Dr. P. J. Deshpande on "effect of Shell-lac in healing of fracture." Where they did an animal experiment and it was a chemical and histological study. The results says that the Laksha when administered orally in milk basis acts beneficial in fracture healing by influencing cellular organization and activity in the repair phenomena. The mucopolysacchride contents sharply raised in the first week, soon followed by study rise in the collagen content of the treated bones. This suggests the collagenization phase starts much earlier than the control series. The good amount of proteins supplied through the milk could also contribute to better healing of fracture of the treated animals. There is fibroblastic proliferation mainly in the first and second week and Osteoblastic proliferation in the third and fourth week. Although the cellular activities continue throughout the period of healing, the maximum activities seen in the period mentioned above. Apart from the histological evidence the bio-chemical observations suggest increased collagen content of the treated bone tissue in the first and subsequent weeks.

In the third and fourth week the histological studies are also well supported by the bio-chemical observations. During this period chondroblasts, which are rapidly multiplying, penetrate in the region of collagen fibers and are followed by proliferating Osteoblasts. All this phenomena especially Osteoblastic proliferation and Osteochondral ossification seems to be stimulated in the animals receiving this drug. However, the stimulation is not as pronounced as other known anabolic hormones like dianabol, testosterone etc.

Similarly in the fourth and fifth week the remodeling process also takes place more rapidly than the control animals. This all

indicates that the drug may probably be having some anabolic activity, which produces general retention of nitrogen and minerals leading to the positive nitrogen balance.

From this study it was found that pain, swelling, tenderness and loss of function was very effectively reduced within one week of treatment, which is statistically proved with p-value <0.001. This may be attributed to the treatment modality adopted. The callus formation in the present study was started early by the end of 2<sup>nd</sup> week. This shows that, the present treatment stimulated the callus formation at an early stage to facilitate early bone healing.

#### **Probable mode of action of therapies:**

**Lepa:** Almost in all the patients the swelling was reduced within 24-36 hours after application of the lepa. This may be because; the lepa consists of following drugs,

**Manjistha:** Manjistha by its action it is raktaprasadaka and as it is having Ushna Veerya due to which it will dilate the peripheral vessels, especially there will be venous dilatation followed by increased peripheral arterial blood flow. This may be the reason for the reduction of the swelling around fracture area. As it is having kapha-pitta-shamaka property by which it will reduce the local edematous residue and its ushna veerya property helps to penetrate in to local tissue. The chemical composition is calcium salts, gum, resinous matter may be absorbed, by these properties it initiates for early callus formation.

The swelling is the one of the reason for pain at fracture site due to pressure on peripheral sensory nerves. Where in here the reduction of the swelling and pain may be due to its ushna property and madhura rasa by which local vata shamana action takes place and pain is reduced.

**Yashtimadhu:** This drug is told in Sandhaneeya gana by charaka, and with madhura and kashaya rasas, it definitely enhances the bone healing. As this drug is having Madhura and Snigdha properties due to which it reduces the Pitta i.e. it

does anti-inflammatory action locally. And also this drug, which is having the property of Madhura Vipaka and guru guna due to which it, does vata shamana i.e. responsible for shoolahara. As it is having anti-microbial properties by which it doesn't allow to grow any microbes in the lepa and its chemical composition includes salts and potassium, these may also help for bone growth when it is absorbed internally.

**Shatadouta ghritha:** The Laghu Guna of gritha enhances, after it has been washed hundred times. Means it attains much Laghutva by its sanskara and becomes readily permeable in to skin by body temperature. As the molecules of ghritha and further reduced which is now rendered easily into the skin. The Snigdha and Madhura property of the same reduces swelling and pain. The Snigdha guna may also enhance the bone formation at fractured site. The fatty lobules of the absorbed ghritha may help for tissue repair as in case of fractures.

**Raktachandana:** Due to its Madhura Rasa and Sheeta Veerya it reduces Sthanika daha by which it helps to reduce pain. By shotahara property of this drug it will take out the edematous fluid of fractured site.

**Shalipisti:** The Laghu Guna makes the drug penetrate through skin very easily. The pisti prepared out of it will be having Pichhila guna, at the time the Sheeta Veerya and Snigdha property of the drug creates stickiness on the skin by which it puts a local pressure which makes the collected tissue fluid to escape out. The same drug may again absorb this. The starch content of the Shali gives strong support to fractured bone. Hence this may be very important drug in reducing swelling, pain and for immobilisation.

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**Ksheerapaka:** It consists of highly active principles of drugs like Yashtimadhu, Laksha, and ghritha. As Yashtimadhu is balya and dhatuvardhaka, raktastambaka, pittashamaka, by these properties, administered internally, initially it may act as anti-inflammatory. Then due to its other properties like madhura rasa, madhura vipaka and sandhaneeya guna definitely it plays a major role in early callus formation. Also, as described earlier and the researches have proven that the Laksha has got definite role in forming Osteoblastic cells at fractured bone. The Grishtaksheera (collestrum milk) that has got rich proteins, calcium and other minerals. Hence by virtue of these properties it helps in early bone healing by nourishing the injured bone.

**Splints:** The barks of several trees were advised for splintage. But in present study the splints prepared out of bamboo were used due to its easy availability. These splints can be made as per the size required; the limbs can exactly fit in to the inner concave surface of the bark. The outer surface of the bark being rigid gives adequate support for broken limbs, but the disadvantage observed that, if it is not properly rolled by cloth it may rub against the skin and create wounds. As Sushruta has named few drugs for ideal splintage and the drugs are having similar properties like Ruksha, Kashaya, Sheeta, Mrudu these may have definitely to do something with fracture healing. A further study is required in this regard.

**Conclusion:** Administration of Laksha Ksheerapaka and manjistadi lepa stimulated the callus formation at an early stage to facilitate early bone healing. This ancient management is safe, easily available, less complications, and better acceptability.

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