



Efficacy of Lakshadi Plaster and Laksha Guggulu in the Management of Bhagna (Stable Colle's Fracture)

Case Report

Dudhamal T S^{1*}, Mahanta V D², Gupta S K³

1,2. Assistant Professor, 3. Associate Professor & HOD

Department of Shalyatantra, I.P.G.T. and R.A.

Gujarat Ayurved University, Jamnagar, Gujarat – 361 008, India.

Abstract

The application of *lakshadi plaster* in the cases of *Bhagna* (fracture) is an innovative idea in the form of Herbal plaster. In this case report single case was presented having the fracture of forearm i.e. Colles' fracture. *Laksha* is a good bone healing so for the healing purpose internal *Laksh Guggulu* was given 1gm three times for one month. The final observation has shown that the *Lakshadi Plaster* achieve the aim of immobilization as effective as the POP (Plaster of Paris) without any complications. Internal *Laksha Guggulu* helps in early bone healing without any Calcium and Vitamins prescription.

Key words: *Bhagna*, Colles' Fracture, *Lakshadi plaster*, Plaster of Paris

Introduction:

In ancient classics there is very specific description of the *Bhagna* and their management. Sushruta has detailed the basic fundamental of the treatment of *Bhagna* which are adopted now days in the modern orthopedic practice as such.(1) In spite of all these reference in the Ayurveda the applied aspect of these principals are comparatively less. Sushruta mention 12 types of *kandabhagna* (fractures) and 6 types of *Sandhimoksha* (Dislocation and subluxations) in which he touches every kind of fracture without any radiological investigation.(2)

Colles' fracture is named after

*Corresponding Author:

Dudhamal T. S.,

Assistant Professor

Department of Shalyatantra,

I.P.G.T. and R.A.

Gujarat Ayurved University,

Jamnagar, Gujarat – 361 008, India.

Mob.09428671939

E-mail: drtsdudhamal@gmail.com

Abraham Colles, an Irish surgeon, who first described this condition. Colles' fracture is a broken radius bone in the arm near the wrist. It happens when a person slips or stumbles and puts out an open hand to break fall. Incidences are more in an older person whose bones are weakened and brittle mostly in menopausal women with osteoporosis. The symptoms may include sudden pain, bruising, swelling, disfigurement of the wrist (dinner fork deformity). The diagnosis was made by X-Rays of the forearm and wrist. Stabilization of these fractures includes cast immobilization or surgical options like internal fixation, external fixation, percutaneous pinning, and bone substitutes.(3) A Colles' fracture usually takes up to 8 weeks to heal completely. X-Rays may be taken from time to time during recovery to see how it is healing. When the cast or splint is removed, the affected wrist and the fingers, hand, and shoulder on that side may be stiff for several weeks. So it requires exercise and physical therapy.(4)



For immobilization of a fracture; cast application and POP is the most common method for fracture healing. Now-a-days synthetic casts are using which are stronger, lighter, more durable, radioluscent, and water resistant but more expensive than POP.(5) Due to POP complications like rashes, itching, dermatitis and cutaneous ulcerations may develops.(6) Limitations of POP are it has considerable weight and may lead to stiffness due to restricted movement in child. The setting of unmodified plaster starts about 10 minutes after mixing and is complete in about 45 minutes; however, the cast is not fully dry for 72 hours.(7) Recently water proof fiberglass casts adds approximately 2 to 3 more minutes to application time of the cast and increases the cost.(8)

Though there are many devices or material to immobilize the part the principle behind that is the same which Sushruta has mention for the treatment of fracture. So here an aim of immobilization has been fulfilled by using the herbal plaster i.e. *Lakshadi* plaster.

Lakshadi Plaster:

Lakshadi plaster was prepared from following ingredients which were used traditionally in Gujarat state for bone setting as well some drugs was having very good properties of bone healing as per Ayurvedic classic. For the purpose of immobilization Sushruta had mentioned the splints of different plants like *Madhuk*, *Udumbar*, *Ashvatha* etc which are tough in consistency.(9) He has also emphasized principle of the rehabilitation after *bhagna* for normal functioning of the organ and fractured part.(10)

Ingredients of Lakshadi plaster:

1. Laksha (Resin of *Laccita lacca*)
2. Asthishrinkala (*Cissus quadrangularis* Linn.)

3. Multani Mitti (Fullers earth)
4. Sudha Pashana (Talk Powder)
5. Guggulu (*Commiphora mukul* Engl.)
6. Kumari Ghana (*Aloe vera* Linn.)

Preparation of Lakshadi Plaster (LP):

All above ingredients of *LP* were taken in powder form and in equal quantity (i.e. each 50 gms) then water is added to half of the total weight of *dravyas*. This mixture was then slowly heated up till the mixture boils. 2-3 cotton bandage rolls are soaked in this mixture and then *LP* roll is kept on the surface of the table for drying properly. Re-apply *LP* material over the bandage, after repeating this process 2-3 times. After drying up of roll, it was kept in plastic bags.

Laksha Guggulu:

Laksha Guggulu is indicated in the management of *Bhagna* as internal medicine in various texts. This compound preparation is comprised of six ingredients, and the details are available in *Bhaishajya Ratnavali*, (11) *Yogaratanakara*, (12) & *Chakradatta* (13) under the *Bhagnadhikara*. The *Laksha Guggulu* of 250 mg prepared as per SOP of API and packed in polythene bag.

Ingredients of Laksha Guggulu:

1. Laksha: (*Laccita lacca*)- 1 part
2. Asthishrinkhala: (*Cissus quadrangularis* Linn.) - 1 part
3. Kakubha: (*Terminalia arjuna* W. &A.) - 1 part
4. Nagabala :(*Grevia hirsuta* Vahl.) - 1 part
5. Ashwagandha : (*Withania somnifera* (L.) Dunal) - 1 part
6. Shuddha Guggulu : (*Commiphora mukul* Engl.) - 5 part

Procedure of Lakshadi Plaster application:

1. In this case; there was partial displacement of radial fracture, reduction was aimed for adequate opposition and normal alignment of bone fragments.
2. Reduction was achieved by *Anchhana* (traction) and *Pidana* (pressure) technique.
3. Cotton roll was applied below elbow up to metacarpal bone.
4. *Lakshadi* Plaster (LP) ingredients were boiled with water.
5. The bandages soaked with that *Lakshadi* material and then applied over the cotton roll maintaining the alignment of fractured fragments.
6. Total 4 bandages (4 inches size) of *Lakshadi* Plaster were applied and dried.

Case Report

A 70-year-old female patient of *Kaph-Pittaja Prakriti* presented to us for treatment of Colles' fracture having history of fall on left hand. She complained of pain, tenderness, and swelling on the left forearm. On examination redness in the form of ecchymosed and restricted movement of the wrist joint along with dinner fork deformity was noted. The x-ray of left wrist joint (AP view) showed the partial displaced fracture of lower end of the radius. [Figure-1]



Legends:

Figure -1:

Left wrist X-ray of patient after 2nd day of history of falling which shows fracture of lower end of radius with minimum displacement of fractured end.

All the routine laboratory investigations were within normal range. After confirmation of diagnosis on the basis of clinical and radiological findings; *Lakshadi* plaster was applied below elbow joint and kept for 7 days. After 7 days again *Lakshadi* plaster was reapplied when swelling was reduced. That *Lakshadi* plaster was kept for 3 weeks which was in *samabandha*. (14) After 3 weeks plaster was removed and it was found that proper union of fracture bone in X-ray. [Figure -2].



Legends:

Figure -2:

Left wrist X-ray of patient after *Lakshadi Plaster* application after 4 weeks which shows old fracture lower end of radius with good union.

Hence *Lakshadi* plaster was kept for total 4 weeks. Then patient underwent for *murivenna abhyanga* (Oliation) and *parisheka* (Pouring of oil) for 15 days. The plaster was not too tight so the patient was complete cured without any deformity or stiffness after one and half months. *Laksha Guggulu*, 250 mg 4 tablet thrice daily (1 g/day) with luke warm water after food for 30 days was prescribed.

**Discussion:**

In Ayurveda the fracture and dislocation along with their treatment principle is described very beautifully which are adopted as such in today's practice. In above case the aim to treat fracture is immobilization of the fractured bone site. As there is availability of the POP for that purpose but being the Ayurved surgeon the aim is to treat fracture with Ayurved herbal plaster which has the same effect. So as per classics the drugs were selected which are bone healing and having the sticking property so the cast become hard. In this regard above *Lakshadi* plaster drugs almost have bone healing properties.

In this case the *Lakshadi* plaster was applied initially for one week and later on it was reapplied after it becomes loose due to reduction of the swelling. Hence immobilization of the forearm was done for 4 weeks. It was found that the plaster has expected hardness and weight is comparatively less than POP so patient felt good and the color of the plaster is brown similar to the skin color which is looking good. Hence an ultimate aim is to keep immobilization of the fracture part was achieved as such POP without any complications. Due to light weight stiffness of the wrist joint near to fracture site was minimal. The ingredients of the *Lakshadi* plaster might have some local effect on the site. Hence the same may be tried in significant number of patients for the concrete conclusion.

Laksha Guggulu was given 1 gm three times a day internally with luke warm water for one month having the systemic effect for early healing. The details of probable mode of action of entire

ingredients of *Laksha Guggulu* were given below.

Discussion on probable mode of Action of Laksha Guggulu:**Guggulu:**

Guggulu has *Shothahara* (anti-inflammatory) as well as *Bhagna Sandhanakara* (fracture healing) properties due to its anti-inflammatory (15, 16, 17, 18) effect. Experimental studies with *Freundum* resin extract of the oleo-gum resin reduced xylene-induced ear inflammation in mice by 50%.

Laksha:

Laksha has properties like *Bhagna sandhana* (Bone healing), *Vranaropaka* (Wound healing), *Rakta Stambhaka* (Hemostasis). Experimental and histological study also showed that *Laksha* enhance the bone healing. (19)

Ashwagandha:

Ashwagandha constitutes the properties of *Balya*, *Rasayana*, *Vedanasthapana* anti-inflammatory, antioxidant, rejuvenating & immunomodulator. (20)

Nagabala:

Nagabala is having *Madhura*, *Kashaya Rasa*, *Guru*, *Snigdha* and *Pichchhila Guna*, *Shheta Veerya* and *Madhura Vipaka* and *Rasayana* (21) properties.

Arjuna:

Arjuna having *Raktastambhaka*, *Sandhaniya*, *Vranaropaka*, *Raktaprasadana* properties. It is useful in fractures, ulcers, cardiac disorders, fatigue, intrinsic hemorrhages, tumor, inflammations, cirrhosis of liver and hypertension. (22)

Asthishrinkhala:

Asthishrinkhala has *Sandhaniya*, *Dipana*, *Pachana*, *krimighna*, *Rakta-Stambhaka*, *Rakta Shodhaka karma* so it is very useful in *Asthibhanga*, *Abhigataja sotha* and *Raktasrava*. Experimental and clinical studies reveal that *Cissus quadrangularis* Linn. is antioxidant (23)



analgesic (24) anti-inflammatory (25) antipyretic, anti-microbial (26) activities. It contains natural steroids and vitamin (27) so it is very useful for early bone healing. (28, 29)

So it can be said that *Laksha Guggulu* (30) has combined effects on bone healing without any multivitamins and calcium.

Probable mode of action of Lakshadi Plaster:

In this case *Lakshadi Plaster* was applied as a splint and the main ingredient is *Laksha* having *Kashaya Rasa* and *Sheeta Veerya*; which rendered soothing effect by virtue of its *Vedanasthapaka* (Pain-killer) and *Shothagna* (anti-inflammatory) properties. Apart from that *Lakshadi Plaster* was proven as a good splint for immobilization and stabilization of fractured part which is necessary for healing of fracture. This all was probable due to sufficient hardness achieved after applying the plaster on fractured site.

Merits of Lakshadi Plaster:

- *Lakshadi Plaster* is having light in weight when compared to Plaster of Paris cast and patient feels more comfortable with LP.
- LP showed minimal side effects like, stiffness and restricted movement of the affected part due to its herbal ingredients.
- LP provided *Vedana shamaka* (Pain-killer) and *Shothaghna* (Anti-inflammatory) effects due to its ingredients, *Guggulu*, *Kumari*, *Khatika* having properties of reducing pain and inflammation.
- LP having *Sandhaniya* (Healing) properties with *Laksha*, *Asthishrinkhala*, and *Guggulu*, which helped in healing of fractured bone quite early.

Demerits of Lakshadi Plaster:

- LP required more time for setting and achieving hardness i.e. about 6-7 hrs.

- LP is useful only in un-displaced, partial displaced and simple fracture for immobilization purpose.

Conclusion:

As this is a single case study, it can be conclude that in replace of POP we can use *Lakshadi Plaster* and *Laksha Guggulu* for immobilization and bone healing for *Bhagna* (un-displaced fracture)

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