THE EFFECT OF ASTHISHRUNKHALA CHURNA (CISSUS QUADRANGULARIS) IN THE MANAGEMENT OF COLLE’S FRACTURE

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ABSTRACT

Colle’s fracture is the commonest entity in people above forty years of age, and is particularly common in women because of post-menopausal osteoporosis. Asthibhagna chikitsa is very well developed in Ayurveda since Vedic periods. The management of Asthibhagna includes various drugs mentioned in various Ayurvedic classics. So the problem faced by the medical practitioner regarding Colle’s fracture provides much scope for systematic study. In the present case study, clinical evaluation was done to evaluate the effect of Asthishrunkhala churna (Cissus quadrangularis Linn.) in Asthibhagna. Ten (10) registered, clinically diagnosed and confirmed patients of Colle’s fracture were selected from OPD/IPD of NIA, Jaipur. They were treated with only internal administration of Asthishrunkhala (Cissus quadrangularis Linn.) At the end of study it was found that results were significant in the treating the conditions like pain, tenderness and improving the early movement in the patients.

Key words: Asthibhagna, Colles fracture, Asthishrunkhala

INTRODUCTION

Colle’s fracture is a fracture at the distal end of the radius, at its cortico-cancellous junction (about two cm from the distal articular surface) with typical displacement.¹ It mostly results from a 'slip and fall' on an outstretched hand. Nodetailed description of this disease is available in ancient text. Colle’s fracture may be correlated with a type of kandbhagnadescribe in twelve type of kandbhagna in Sushuta Samhita Nidan Sthan.² It is the commonest fracture in people above forty years of age, and is particularly common in women because of post-menopausal osteoporosis.³ So the problem faced by the medical practitioner regarding Colle’s fracture provides much scope for systematic study. Few traditional practitioners specifically dealing with fractures, called 'Bone setters', have been effectively using herbal drugs over many centuries. Many of these drugs are simple, easily available, cost effective and potent. For an un-displaced fracture immobilization with below elbow plaster cast for six week is standard treatment and for displaced fracture standard management is manipulative reduction followed by immobilization with Colle’s cast.⁴
The scientific evaluation of such drugs along with their fundamental principles is essential for their universal acceptance. Hence in this study an attempt was made to prepare a drug about which there are textual references regarding Asthibhagna Sandhan. Through clinical trial in the present study it has been tried to prove the efficacy of the Asthishrunkhala in early mobilization for the management of Colle’s fracture.

There are so many complications of plaster treatment. some of this are impairment of circulation (tight cast), plaster sores, excessive pain, disturbed sleep, recurrence of swelling over toes or swelling over toes or fingers, low grade fever, soakage of the plaster. There are various fracture healing promoter drug described in Ayurveda books and Asthishrunkhala is one of them. So it was decided to evaluate the effect of the drug in early mobilization in the management of Colle’s fracture with a small sample size. Ten patients were treated with application of plaster cast upto 6 weeks along with oral administration of Asthishrunkhala in powder form.

**AIMS AND OBJECTIVES**

- To decrease the period of immobilization
- To evaluate the efficacy of Asthishrunkhala
- To evaluate the effect of Asthishrunkhala on healing time
- To provide cost effective and safe drug to the society

**MATERIALS AND METHODOLOGY**

**Selection of Patient**
Ten clinically diagnosed Patients of Colle’s fracture were selected from the OPD & IPD units of P.G. Department of Shalya Tantra, NIA, Jaipur.

A) Age group: Between 30-70 yrs.
B) Sex: Either Sex
C) Study Design: case study

**Study Center:** Uni-central

**Sample Size and Method:** Total ten Patients

**Trail Methodology**
The modern methodology for trial & statistic design was suitably adopted for the present study.

**Drug used:** Asthishrunkhala Churna

**Drug Dosage:** 3g. BD, with cow’s milk as Anupana

**Preparation method:** The Churna was prepared in GMP certified NIA pharmacy.

**Drug administration:** As mentioned above Asthishrunkhala Churna was administered internally.

**Duration of Clinical Trial**
Duration of immobilization - 4 weeks
Duration of oral drug administration - 6weeks

**Inclusion Criteria**
- Patients of age group 30-70 yrs.
- Patient willing for trail and ready to give informed consent
- Patient having Colle’s fracture which can be reduced by closed reduction method with or without general anaesthesia
- It is not possible to find all these features in all the patients but the presence of maximum features was the main strategy for diagnosis.

**Exclusion Criteria**
- Patient not willing to undergo trials or refused to give informed consent
- Patients below 30 yrs or above 70 yrs
- Patients having TB, Hypertension, Diabetes, Cardiac disorder or some constitutional disorder
- All fracture other than Colle’s fracture
- Open/displaced fracture
- Multiple fractures
- Subluxation of the inferior radio-ulnar joint
- Colle’s fracture having significant angulation and deformity
Fracture required open reduction and internal fixation.

Investigations:
- **X-ray**: X-ray was taken on day one to diagnose the fracture, its type, severity and prognosis. The follow up x-ray was taken at the end of third week, & six week.
- **Serum alkaline phosphate**: On day one, at 3 weeks, at 6 weeks

**Observation of patient during treatment:**
Standard treatment for Colle’s fracture – Immobilization for six weeks
Duration of study: 6 weeks.
Time interval for assessment of progress: Weekly.

**Assessment criteria:**
The improvement in the patient was assessed mainly on the basis of relief in the cardinal sign & symptoms of disease.

A) **Subjective criteria**-
1) Pain
2) Loss of function

### OBSERVATIONS AND RESULTS

#### Table 1: Comparative Assessment of Symptomatic Relief in Trial Group (In %)

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>Mean (BT)</th>
<th>Mean (AT)</th>
<th>Mean Diff.</th>
<th>Mean %</th>
<th>S.D</th>
<th>S.E</th>
<th>t</th>
<th>p</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trial</td>
<td>10</td>
<td>1.6</td>
<td>0.7</td>
<td>0.9</td>
<td>56.25</td>
<td>0.56</td>
<td>0.17</td>
<td>5.01</td>
<td>&lt; 0.001</td>
<td>HS</td>
</tr>
</tbody>
</table>

#### Table 2: Assessment of Pain in Trial Group

<table>
<thead>
<tr>
<th>SL. No.</th>
<th>Symptom</th>
<th>Trial Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pain</td>
<td>73.34</td>
</tr>
<tr>
<td>2</td>
<td>Loss of function</td>
<td>56.25</td>
</tr>
</tbody>
</table>

#### Table 3: Assessment of Loss of Function in Trial Group

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>Mean (BT)</th>
<th>Mean (AT)</th>
<th>Mean Diff.</th>
<th>Mean %</th>
<th>S.D</th>
<th>S.E</th>
<th>t</th>
<th>p</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trial</td>
<td>10</td>
<td>1.5</td>
<td>0.4</td>
<td>1.1</td>
<td>73.34</td>
<td>0.56</td>
<td>0.17</td>
<td>6.12</td>
<td>&lt; 0.001</td>
<td>HS</td>
</tr>
</tbody>
</table>

The observations and results in all the patients have been made in the present work under the following headings.

**Demographic profile**
Demography of general profile - it includes incidence of age, sex, marital status, education, occupation, economic status etc.

**Results of therapeutic Trial**
It includes results on various parameters in all 10 patients registered for current clinical trial to evaluate the efficacy of Asthishrunkhala in the management of Colle’s fracture.

While anchoring the study, total 13 patients were registered on the basis of inclusion criteria from IPD & OPD of NIA. Among all the patients enrolled for the study 3 patients failed to complete the study due to non-compliance of the protocol or were withdrawn due to various reasons. Remaining 10 patients were assorted in trial group.
Prakruti: In this study almost half (47%) of the patients were from Vata-Pitta Prakruti. This is may be due to active nature of Vata Prakruti people as well as they may have more fragile bones. These might be reasons that fractures are more reported in Vata Prakruti people.

Signs and symptoms: The most common signs and symptoms observed in fractured patients were pain and loss of function. To assess these signs and symptoms they are graded as per their characters. The aim of this clinical study was to assess the effect of Asthishrunkhala on fracture healing & pain.

After 6 weeks treatment % relief in pain in trial group was 73.33 (p<0.001). Hence these observations indicate that Asthishrunkhala has analgesic and anti-inflammatory activity.

There was also reduction in loss of function after administration of drug. After 6 weeks treatment % reduction in loss of function in trial group was 56.2%. These results indicate the efficacy of drug in reduction of painful movement and to improve the joint movement. Effect on these signs and symptoms of inflammation indicate about anti-inflammatory nature of Asthishrunkhala. This may also occur due to early healing of the fracture line.

Callus formation, a part of initial fracture healing is influenced by various factors. Age is one of the important factors that influence callus formation. In younger patients callus formation and fracture healing is early as compare to the adults and elderly. This might be due to the increased vascularity as well as ability of cells of periosteum to differentiate more in younger individuals. In this study although most of the patient were older age group yet callus formation was good in these older age patient due to Asthishrunkhala. Callus formation is also dependent on part of bone involved. Callus formation is more in diaphyseal fractures than in metaphyseal fractures. As this study was specified to fracture of lower end of radius where callus formation should be poor but due to Asthishrunkhala callus formation was also good in this part of bone. In trial group Callus formation was found good. In this study grading of callus formation was not done because it was very difficult to grade callus formation radio logically.

Action of Drugs: In the present study the action of trial drug Asthishrunkhala could be explained on the basis of their Rasa, Guna, Veerya, Vipaka and pharmacological action. Asthishrunkhala have Sandhaniya, Rakta-prasadaka nature. It is Ushna Veerya dravya which may be responsible for the reduction of the swelling around fracture area as well as helps to penetrate it in to local tissue for action. Asthishrunkhala has kaphavata-shamaka property which may reduce the local oedema. Due to Madhura Rasa property of Asthishrunkhala local Vata Dosha Shamana takes place so that pain is reduced. Chemically Asthishrunkhala has calcium oxalate, carotene and ascorbic acid which are responsible for early callus formation.

Pharmacological action: Asthishrunkhala contains anabolic and phyto genic steroids like Ketosteroids, silosterol, alpha amayrin, alpha ampyrone and tetracyclic treterpenoids. These anabolic and steroidal components showed a marked influence on fracture-healing. Ketosteroid acts as antagonists to the glucocorticoid receptor and promotes good bone health. It mobilizes fibroblast and chondroblasts to an injured tissue and enhances regeneration. The anabolic steroidal component of Asthishrunkhala showed a marked influence in the rate of fracture healing by influencing...
early regeneration of all connective tissues of mesenchyme origin, namely the fibroblasts, the chondroblasts and osteoblasts involved in the healing and quicker mineralization of the callus." The probable mechanism of action in fracture healing is believed in part to be due to the stimulation of the metabolism and increased uptake of the calcium, sulphur and strontium by the osteoblasts. *Asthishrunkhala* exerts influence both on the organic and mineral phase of fracture healing.

**CONCLUSION**

Colle’s fracture is not described exactly in *Ayurveda* text and it can be correlated with *Kandbhangna*. Females showed their predominance for the disease under trail. The incidence of Colle’s Fractures was found to be more in age group of 51 to 70 years. Patients with *Vata* dominating *Prakrati* are more likely to suffer. No side effects have been reported by the patients during the course of treatment. The sample size was very small to generalize the result. The study was conducted for a shorter duration i.e. for six weeks, which is not sufficient to assess the long term efficacy of the therapy. Pain and loss of function are the two important and troublesome symptoms of fracture which need an immediate clinical attention. The drug has a beneficial effect in reducing symptoms and enhancing bone healing. To say authoritatively *Asthishrunkhala* had any added advantages, further studies should be carried out separately with the help of biochemical analysis. Therefore, it can be concluded that *Asthishrunkhala* is effective in the management of Colle’s fracture as it is safe, cost effective and free from any side effects.

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