

# Analgesic effect of Cupping therapy (modified alabu / ghati) in Musculo - skeletal pain

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## Abstract

Pain is the commonest clinical presentation in vata oriented musculo-skeletal disorders. This is the prime presentation of a host of clinical conditions like lumbar spondylosis, cervical spondylosis, frozen shoulder, muscular spasm and cramps, sciatica, chronic knee pain due to osteo-arthritis and other inflammatory conditions. Ayurveda has named diseases focusing on the major symptom, shoola: katishoola, manyashoola etc. are examples.

Statistics on chronic pain states that > 1.5 billion people are suffering from some or the other sort of muscular pain globally. The significance of this data is that majority are young adults and teenagers, which causes a serious dent in the work hours of the society. 63% of them consult a doctor first for the management of pain<sup>1</sup>.

Hence, pain management has become the top priority in chronic musculo-skeletal conditions. Ancient therapeutic techniques like alabu and ghati were used to reduce pain and spasm in such conditions, details of which are narrated in Ayurvedic classics. Both these techniques rely upon suction, which is applied at the site of pain. However, the classical methods of alabu and ghati are extremely difficult to be done in the present times. Hence a currently available technique which pursues the philosophy and technique of the classical methods; known as cupping therapy was found worth trial. Unfortunately the knowledge about its mechanism is limited and its proclaimed clinical efficacy is yet to be put to clinical trials. Hence a clinical trial is conducted for testing the efficacy of cupping technique in selected chronic musculo-skeletal cases with pain as the principal presentation. Appropriate data collection is done from Samhitas, reference books and published articles

## Key words

Pain, Shoola, Cupping, Ghati, Alabu

## Introduction

Sūl dhatu plus ka pratyaya is shoola or Sūla. It has various meanings in Sanskrit. It means any sharp pointed object especially

spear but in Ayurvedic texts shoola / Sūla means, acute or sharp pain<sup>2</sup>. Synonyms of shoola are ruja and vedana. This is one of the major indicating symptom in vataja roga according to acharyas. Shoola prashamana or vedanaharna pain relief is one of the major objectives of treatment. In the present era, pain management is one of the principal objectives of management of musculo-skeletal diseases. In tune with this idea, a modified version of the alabu/ghata, i.e., cupping therapy is used in the study.

Cupping therapy and its usage dates back to 1550 B.C<sup>3</sup>. Its oldest textual mention is in Eber's Papyrus (1500 BC, currently kept at the library of the University of Leipzig in Germany). It mentions the use of cupping by Egyptians and Saharans. In Ayurveda, cupping is mentioned in Brihatrayi under the context of Raktamokshana as Alabu, Ghati yantra and Shringa yantra. These texts dates back to 400 B.C - 800 B.C. Hippocrates in 400 B.C used cupping for internal diseases and structural problems. The cupping therapy was introduced in China by famous Alchemist and Herbalist Ge Hong during the period 281 - 341 AD<sup>4</sup>. Prophet Muhammad mentioned cupping in the Islamic holy book of Hadit, as Hijama in 609 to 632 AD<sup>5</sup>.

If muscular pain is not treated on time it can cause permanent disabilities and deformities. It can affect various body systems like the endocrine system, cardiovascular system, nervous system and immune system. The routine activities of patients like sitting, walking, lying down etc. are affected to varying

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degrees. Hence management of pain in such conditions turns out to be a natural priority for clinicians.

### Aims and objectives

To study the effect of traditional cupping therapy on localized pain management and to identify the possible mechanism of action of cupping therapy and to offer rational explanation of its effects.

### Review of cupping therapy

#### Definition

Cupping therapy is defined by the WHO as creating a vacuum on the affected part of the body to ease the pain. In traditional method, vacuum is typically created using fire, but in some other versions vacuum is created mechanically, using manual vacuum handles or pumps<sup>6</sup>.

#### Types of cupping therapy<sup>7</sup>

##### a) Technical types

- Dry cupping
- Wet cupping
- Flash cupping
- Massage cupping

##### b) Power of suction

- Light
- Medium
- Strong
- Pulsating

##### c) Physical methods of suction

- Fire
- Manual
- Automatic

##### d) Uses of suction

- Cosmetic
- Sports
- Aquatic
- Medical (Therapeutic)

### Materials used for Cupping

- a) For cups - Plastic, Glass, Rubber, Bamboo, Ceramic, Metal, Silicone
- b) For suction- Manual suction pump, Fire, Automatic suction pump

### Materials & Methods

#### A) Materials

- 1) Sterilized traditional glass cupping set: 20 cups
- 2) Spirit swab (for disinfecting the area and fire ignition)
- 3) Swab holder (Sponge holding forceps)

- 4) 26G x ½ size needle
- 5) Low flame lighter
- 6) Goniometer
- 7) Pain scale (NRS) – IASP Pain Scale Numerical Rating scale<sup>8</sup>

#### B) Methods<sup>9</sup>

**Step 1:** Written consent and procedure explanation along with its adverse effects.

**Step 2:** Exposing the affected area / cup application point and draping only the affected area.

**Step 3:** Clean and disinfect the affected area / cup application point with spirit.

**Step 4:** Shallow pricks are inflicted upon the skin of the affected area, depending upon intensity and type of pain.

**Step 5:** Carefully igniting the fire and producing negative pressure in glass cup and apply it on desired spot accurately.

**Step 6:** Removal of cup by gently producing counter pressure with fingers.

**Step 7:** Cleaning and dressing the area where cup was applied.

#### Duration of therapy

Depending on intensity of pain, duration varies from 5 to 20 minutes on one spot.

#### C) Selection of patients

A total of 30 patients suffering from acute / chronic musculo-skeletal pain with moderate to severe intensity were randomly selected from Out-Patient Department of Shri J.G. Co-operative Society's Ayurvedic Medical College, Ghatprabha.

##### a) Inclusion criteria

- 1. Pain
- 2. Stiffness
- 3. Muscular spasms
- 4. Nonspecific low back pain, neck pain
- 5. Lumbar disc herniation
- 6. Cervical spondylitis/Spondylosis
- 7. Sciatica
- 8. Frozen shoulder
- 9. Carpal Tunnel Syndrome
- 10. Arthritis

##### b) Exclusion criteria

- 1. Patients with bleeding disorders
- 2. Patients on treatment with anticoagulants

3. Burns, infections at the site of pain
4. Children (less than 5 years)
5. Elderly (more than 75 years)
6. Pregnant women
7. Menstruating women
8. Pain along with varicose veins
9. Pain of Deep Vein Thrombosis.
10. Pain of open wounds

### c) Investigations

#### Complete Blood Count

#### Parameters of assessment

Pain scale test before therapping (pain scale readings) and documentation by Goniometer.

Videographic documentation (using Goniometer to record ROM / angle / gait correction)

Post therapy improvement observed in patients was assessed on the basis of pain scale score and symptomatic relief documented video graphically with Goniometer showing ROM / angle / gait correction.

#### Result and Statistical analysis

Data of 30 patients was first made suitable for statistical analysis and then following statistical measures were applied - Table 1.

|                             | Before Treatment                                                                                                                       | After Treatment | Difference |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------|
| Mean                        | 8.8                                                                                                                                    | 1.83            | 6.97       |
| Median                      | 9                                                                                                                                      | 2               | 7          |
| SD                          | 0.997                                                                                                                                  | 1.117           | 1.27       |
| Data passed normality test? | No                                                                                                                                     | No              | No         |
| Test of Significance        | Wilcoxon Matched-pairs signed- ranks test (Non-parametric test)                                                                        |                 |            |
|                             | Number of all signed ranks (W) = 465.00<br>Number of pairs (n) = 30                                                                    |                 |            |
| P Value                     | < 0.0001 Extremely Significant                                                                                                         |                 |            |
| Inference                   | There is statistically significant difference between before and after pain score.<br>Treatment plays significant role in pain relief. |                 |            |

Table 1. Pain scale test Results and Statistical Analysis

### Discussion

Mechanism of cupping

#### a) Raktamokshana - Bloodletting

Raktamokshana is accepted as half of the therapeutic measure in shalyatantra like basti in kayachikitsa<sup>10</sup>. It is a general

rule that, when the regular treatment with shadvidhopakrama fails to give any relief in any disease, one should consider the involvement of raktadhatu in the pathogenesis and is best treated by raktamokshana. Acharya Sushruta propounds practical guidelines for rakthamokshana and claims it as most effective therapy in half of the body ailments and it is understood that effect of rakthamokshana according to types like prachanna in localized, jaluka in deep seated, alabu, ghati and shringa localized in skin area and siravedhana in entire body pathologies in case of blood being vitiated by vata dosha – shringa (horn) is used for blood letting, In case of pitta dosha – jalauka (leeches) and in kapha dosha – alabu (gourd) are used.

In cases where there is vata prakopa due to pitta kaphaja avarana or in vata prakopa due to dushita rakta janya avrodha, Cupping therapy plays a role in effecting anulomana by ashudha rakta pravahana which indirectly relieves the pain and the

symptom of shula is reduced. So patients with ashudha raktajanya samprapti or pitta - kapha avaranajanya samprapti gets immediate relief with this treatment<sup>11</sup>.

#### b) Cupping Therapy Mechanism<sup>12</sup>

Three theories have been suggested

to explain the effects produced by cupping therapy of pain reduction. These include Pain Gate Theory (PGT), Diffuse Noxious Inhibitory Controls (DNIC) and Reflex Zone Theory (RZT).

#### i. Pain Gate Theory (PGT)

First projected by Melzack and Wall (1965), it is the most influential theories of pain reduction.

- a) Cupping influences chronic pain by altering the signal processing at the level of nociceptors both of the spinal cord and brain.
- b) Large fibre impulses also partially close the pre-synaptic gate. It is believed that cupping stimulate pain receptors which lead to increase the frequency of impulses, therefore ultimately leading to closure of pain gates and hence pain reduction.

#### ii. Diffuse Noxious Inhibitory Controls (DNICs) or Conditioned Pain Modulation (CPM)

This phenomenon is thought to underlie the principle of counter-irritation to reduce pain. Herein one pain masks another: or pain inhibits pain. Local temporary damage of the skin and capillary vessels induced by cupping may cause a nociceptive stimulus that activates DNICs.

#### iii. Reflex Zone Theory (RZT)

External manifestations of an internal process can often be detected at a site distal to the affected organ. It is suggested that the principle of a link between one part of the body and another can be understood in terms of interaction of nerve, muscle and chemical pathways. RZT depends on the premise that signs and symptoms of illness related to one dermatome may be reflected in changes in neighboring dermatomes. For e.g. The shoulder triangle is segmentally related to the median nerve. Hence to treat carpal tunnel syndrome, cupping on this area has been practiced in European folk medicine and is supported by various studies.

#### Conclusion

Cupping therapy for pain management done as an office procedure with duration varying from 5- 20 minutes depending upon intensity of pain is significantly effective in patients having acute or chronic muscular pain. Thus cupping therapy has potential to improve the quality of life. Cupping therapy mimics and enhances an analgesic effect which has minimum side effects and can be considered safe. This review identified some possible mechanisms of cupping therapy based on various theories that explains its diverse effects. No single theory could explain its full spectrum of effects.

Further multicentric trials can be carried out with even larger sample size. This study recommends cupping therapy as an effective complimentary therapy for relief of musculo-skeletal pain due to various causes. Cupping therapy might be helpful in the

rehabilitation of patients having deformity due to muscular spasm. Hopefully in the coming years, the changes induced by Cupping therapy at the tissue interfaces and neuro-vascular pain sensing mechanisms may also be explored.

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