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A Clinical Study in the Management of Frozen Shoulder with *Agni Karma*

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ABSTRACT

Frozen shoulder medically referred to as adhesive capsulitis is a painful shoulder condition of unknown etiology with restricted movement of the shoulder. *Agni karma* is an *Anushastrakarma* explained by Sushruta Acharya for various clinical conditions. One of the indications for *Agni karma* is *atyugraruja* (excruciating pain) caused by *Vata&/Kapha*. The objective of the study was to evaluate the efficacy of *Agni karma* in the management of Frozen Shoulder with an Open label clinical interventional study with pre-test and post-test design. Twenty subjects satisfying the inclusion criteria were randomly selected from the OPD and IPD of S.D.M College of Ayurveda Udupi in whom classical *Agni karma* procedure were carried out. The statistical analysis was done using Paired 't' test and Wilcoxon sign rank test. The study showed significant reduction of pain, improvement in the range of movement and stiffness hence can be recommended as a therapeutic procedure for frozen shoulder.

KEYWORDS

Frozen shoulder, *Agni-Karma*, *Panchaloha-Shalaka*



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INTRODUCTION

Frozen shoulder medically referred to as adhesive capsulitis is a painful shoulder condition of unknown etiology with restricted movement of the shoulder¹. Characteristically, there is slow onset of painful restriction of movement, especially external rotation and abduction, with the pain being most prominent at night. Thickening and contraction of the glenohumeral joint capsule and formation of adhesion causes pain and restriction of movements. The shoulder is tender to palpate and there will be restriction in both active and passive range of motions depending on the stages of the disease. Frozen shoulder typically last for 12 to 18 months with 3 main phases- the painful stage, the painful stiff stage and the resolving stage. Management is symptomatic with analgesics, NSAID, local corticosteroid injections and physiotherapy aimed at restoring normal movements and function. Surgery is usually reserved for prolonged stiffness affecting function and in patients who have debilitating symptoms in associated with rotator cuff tears.

Ayurvedic literatures mention about the disease *Apabahuka* where the clinical description resembles that of frozen shoulder. In this condition the vitiated *vata dosha* in the *Amsapradesha* causes the

*shoshana of the amsabandhana and sankocha of sira of Amsa pradesha leading to sthamba and Bahu prasbandhana hara*². *Agni karma*³ (Therapeutic Cautery) is an *Anushastrakarma* explained by Acharya Sushruta for various clinical conditions. *Agni karma* due to its *thikshna and ushna guna* eliminates *Vata* and relieves pain. *Agni karma* is mentioned as a line of treatment by Acharya Susrutha³ and Vagbhata⁴ in conditions where *Vata* gets lodged in *snayu sandhi* and *sira* in the context of *Vatavyadhi chikitsa*.

In modern medicine, no promising management for the acute pain and restoration of joint movements are available, other than NSAIDs, Steroids, Local injection of glucocorticoids which have serious adverse effects like allergic reactions, shrinkage of the skin, weakening of tendons etc. *Agni karma* a simple, less invasive, safe and cost effective OPD procedure which was widely used in the management of musculoskeletal diseases was selected in this clinical study and an attempt is made to evaluate the effect of *Agni karma*, in the management of frozen shoulder.

MATERIALS AND METHODS

a. Study design

An Open label clinical interventional study with pre-test and post-test design.



b. Source of data

A minimum of 20 subjects were randomly selected for the study from the IPD and OPD of our hospital.

c. Inclusion criteria

- Selection of patients was done irrespective of sex and religion.
- Patients with classical signs and symptoms of Frozen shoulder, i.e. Pain, Stiffness and restricted movements
- Patients between age Group of 16 and 70 years

d. Exclusion criteria

- Patients contraindicated for *Agni karma* as per text.
- Patients with Acute Traumatic Disorders of Shoulder Joints.
- Subluxations or recurrent dislocations of the shoulder joints
- Patients suffering from arthritis like Osteoarthritis, Gouty arthritis, Tb arthritis etc.

Assessment criteria

Subjective

- Stiffness
- Pain(Figure 1)

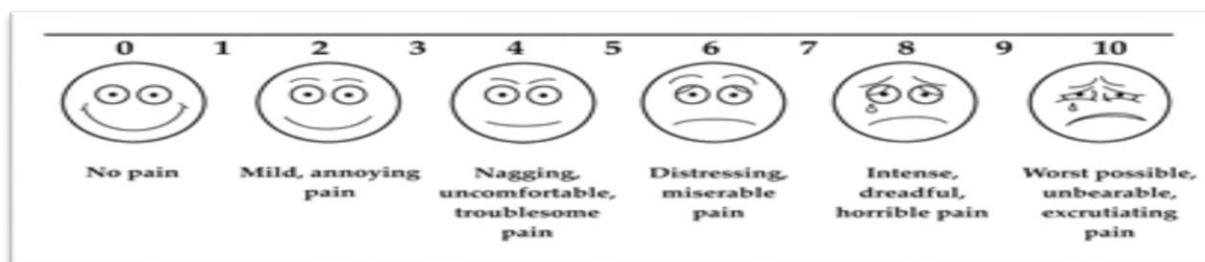


Figure 1 Pain Assessed with Visual analogue scale

Objective

- Tenderness

- Range of movements and functional assessment for the shoulder joint using a Goniometer.

Table 1 Assessment Criteria's

CRITERIA	GR 0	GR 1	GR 2	GR 3	GR 4
TENDERNESS	No pain	Patient says its paining	Patient winces	Winces and withdraws the part	Do not allow to touch the paining area.
STIFFNESS	No stiffness	Mild stiffness	Moderate stiffness	Severe stiffness	-
ROM (ABDUCTION)	Full free	Above 120	60 -120	Up to 60	No abduction
EXTERNAL ROTATION	Full free	Above 50	25-50	Up to 25	No External rotation

GR 0: Grade 0, GR 1: Grade 1, GR 2: Grade 2, GR 3: Grade 3, GR 4: Grade 4

Statistical analysis

Collected data was statistically analyzed using Paired t test and Wilcoxon sign rank test.

Drugs used

- 1) Ghritha
- 2) Madhu : they are suggested for external application after *Agni karma* by Acharya



Sushrutha. This helps to reduce the pain and alleviate the pitta and rakta vitiated due to Agni karma³.

Relevant investigations were carried out to rule out other diseases

PROCEDURE

Patients were briefed about the procedure and a written consent was taken from the patient. Patients were given Yavagu internally as a pre-requisite to the procedure. Patients were made to sit comfortably and a specially designed Panchalohashalaka was heated over a heat source. The affected part was prepared with surgical spirit and the tender most area of the shoulder joint was marked. With the tapta panchaloha shalaka, twak dahana was done in the form of bindus (dots). Postoperatively about 5gm of mixture of honey and ghee was applied immediately on the burnt part. Special Proforma was prepared and the effect of the Agni karma was recorded based on the subjective and objective parameters. Selected patients were treated with Agni karma on 1st day and 8th day (if required). Patients were observed once in a week during intervention period. Follow up of the patient was done once in a week for two weeks after the last procedure.



a. Pre-Operative Arrangements



b. Tendermost area is marked



c. Operative Procedure: Application of tapta Shalaka

Figure 2 Procedure of Agni karma (a-g)



d. Post Operative: Application of Madhu and Ghrita



g. Review of the Agni karma site After 2 week



e. Before treatment 1st day



f. After treatment on 7th day

RESULTS

The study proved that(**Table 2**) there was 65.7% improvement in the Pain level with $P < 0.0001$ which shows statistically extremely significant effect . As in(**Table 3**) in terms of stiffness there was 55.5% improvement with $P < 0.0001$ which shows statistically extremely significant effect.As in(**Table 4**) in terms of tenderness there was 68.3% improvement with $P < 0.0001$ which shows statistically extremely significant. As in (**Table 5**) in terms of Abduction there was 57.37% improvement with $P < 0.0001$ which shows statistically extremely significant effect. As in(**Table 6**) in terms of External rotation there was 53.2% improvement with $P < 0.0001$ which shows statistically extremely significant effect.

Table 2 Statistical Analysis Effect of Treatment on Pain

Group	N	BT Mean	Pain	Diff d	%	Paired t test				
						SD	SEM	P	Significant	
	20	7.6	AT	5.0	2.60	34.2	1.33	0.29	<0.0001	ES
			FP 1	4.05	3.55	46.7	1.35	0.30	<0.0001	ES
			FP 2	3.40	4.20	55.2	1.90	0.42	<0.0001	ES
			FP 3	2.60	5.00	65.7	2.70	0.60	<0.0001	ES

BT- Before Treatment, AT- After Treatment, FP- Follow up, ES- Extremely significant

**Table 3** Statistical Analysis Effect of Treatment on Stiffness

Group	N	BT Mean	Stiffness	Diff d	%	Wilcoxon rank test				
						SD	SEM	P	Significant	
20	2.25		AT	1.20	1.05	46.6	0.61	0.13	<0.0001	ES
			FP 1	1.30	0.95	42.2	0.47	0.10	<0.0001	ES
			FP 2	1.25	1.00	44.4	0.63	0.14	<0.0002	ES
			FP 3	1.00	1.25	55.5	0.79	0.17	<0.0001	ES

BT- Before Treatment, AT- After Treatment, FP- Follow up, ES- Extremely significant

Table 4 Statistical Analysis Effect of Treatment on Tenderness

Group	N	BT Mean	Tenderness	Diff d	%	Wilcoxon rank test				
						SD	SEM	P	Significant	
20	3.00		AT	1.50	1.50	50	0.88	0.19	<0.0001	ES
			FP1	1.40	1.60	53.3	0.50	0.11	<0.0001	ES
			FP2	1.55	1.45	48.3	0.75	0.16	<0.0001	ES
			FP3	0.95	2.05	68.3	1.05	0.23	<0.0001	ES

BT- Before Treatment, AT- After Treatment, FP- Follow up, ES- Extremely significant

Table 5 Statistical Analysis Effect of Treatment on Abduction

Group	N	Bt Mean	Abduction	Diff D	%	Wilcoxon Rank Test				
						SD	SEM	P	Significant	
20	3.05		AT	1.70	1.35	44.2	0.73	0.16	<0.0001	ES
			FP1	1.40	1.65	54.09	0.68	0.15	<0.0001	ES
			FP	1.50	1.55	50.81	0.60	0.13	<0.0001	ES
			2							
			FP	1.30	1.75	57.37	1.03	0.23	<0.0001	ES
			3							

BT- Before Treatment, AT- After Treatment, FP- Follow up, ES- Extremely significant

Table 6 Statistical Analysis Effect of Treatment on External Rotation

Group	N	BT Mean	External rotation	Diff d	%	Wilcoxon rank test				
						SD	SEM	P	Significant	
20	3.10		AT	1.85	1.25	40.32%	0.74	0.16	<0.0001	ES
			FP 1	1.60	1.50	48.38%	0.68	0.15	<0.0001	ES
			FP 2	1.40	1.70	54.83%	0.68	0.15	<0.0001	ES
			FP 3	1.45	1.65	53.22%	1.05	0.23	<0.0001	ES

BT- Before Treatment, AT- After Treatment, FP- Follow up, ES- Extremely significant

DISCUSSION

Age is an important factor influencing many diseases. In the present study the majority of patients were in the age group of 41-50 years (40%) of patients. Occupation wise distribution shows high incidence in those with physical exertion on the affected part. Most of the patients were doing manual labour (40%) and next were housewife's (25%). These group generally

have the habit of using shoulder joint extensively. Incidence was noted more in the right shoulder (70%). Hence overuse of the shoulder joint may be one of the causes for the disease. Duration of the disease shows high incidence in those patients who come under the group of up to 6 months of duration (55%) this suggests that majority of patients were under stage 1 – the painful phase of frozen shoulder. 65% of the



patients had disturbed sleep due to pain. Improper sleep at night will further lead to vata prakopa and leads to worsening of the disease. *Vata kapha prakruthi* individuals were more (45%) and the disease is also caused due to dominance of vata and kapha dosha. *Agni karma* has therapeutic effect both on *Vata and Kapha dosha*³.

PROBABLE ACTION OF AGNI KARMA

Agni karma helps in decreasing the pain by alleviating the vitiated *vata dosha*. The *ushna laghu and sara guna* of *Agni karma* helps in removing the *dooshitha kapha* which causes *srotorodha*. When *srotorodha* is removed, *vata* gets back to normalcy and pain is relieved. In *Agni karma* and *sweda karma*, the common factor is *ushna prayoga*. *Sweda karma* is capable of decreasing *harsha, toda, ruk, sodha, sthamba* etc very quickly. *Soolasamana* is the main action of *sweda karma*. By taking this principle, in *Agni karma* the *ushna prayoga* is capable of relieving pain immediately.

Agni karma can have an effect on the local blood flow i.e. causing vasodilatation. Vasodilatation helps in oxygenation of the tissues and clearance of the metabolites causing pain. *Agni karma* procedure helps in relieving pain by stimulating the release of endogenous pain relievers (Opioid Peptide) which closes the gate in the spinal

cord, thus preventing the pain signals to reach thalamus through lateral spinothalamic tract⁵. (Gate Control Theory)



CONCLUSION

Agni karma a unique Ayurvedic therapeutic procedure has an instantaneous analgesic effect on the deep pain of frozen shoulder. Promising improvement in the range of movements and stiffness of the shoulder joint was observed in the study. Although the *Agni karma* induces burns, injury was superficial, causing minimal discomfort to the patient and the burn marks produced were insignificant. *Agni karma* is a simple, safe, cost effective, less invasive OPD procedure and can be recommended as a therapeutic procedure for frozen shoulder.

**Ethical clearance number-
SDMCAU/ACA-49/ECA80/16-17**



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