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A RANDOMIZED COMPARATIVE CLINICAL STUDY TO EVALUATE THE ANALGESIC EFFECT OF JALOUKAVACHARANA AND SIRAVYADHA IN VATAKANTAKA WITH SPECIAL REFERENCE TO CALCANEAL SPUR

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ABSTRACT

Vatakantaka (Calcaneal spur) is one among *Vataja Nanatmaja Vyadhi*. *Kantavath Vedana* (pricking pain) in *Padatala Pradesha* of *Khudapradesha* (Heel region) is a prominent characteristic feature, which is caused by *Vishamampade* (walking on irregular surfaces), *Atishrama* (excessive exertion over the heel) etc. This can be correlated to a Calcaneal Spur, which is a calcium deposit causing a bony protrusion on the underside of the heel bone, often frequently associated with plantar fasciitis; treatment includes Raktavasechana (bloodletting), *Erandataila Pana*, *Agnikarma* (cauterisation) and *Samanya Vatavyadhi Chikitsha* (general line of management). *Jaloukavacharana* (leech therapy) is a type of *Ashastrakrita Raktamokshanopaya* which is indicated in *Avagadha Avastha* (deeply situated), *Grathita Avastha* (complicated structures) of *Doshas* and by the word *Sarvani Sarveva* in all condition wherever *Raktavasechana* is indicated. At present, *Jaloukavacharana* (leech therapy) is taken. The study comprises 40 patients of *Vatakantaka* (Calcaneal spur). These patients were randomly selected based on inclusion and exclusion criteria. The duration of the study is 21 days. After evaluating therapy, it was observed that *Jaloukavacharana* provided better analgesic relief to the patients of *vatakantaka* (Calcaneal spur).

Keywords: *Vatakantaka*, Calcaneal spur, *Jaloukavacharana*, *Siravyadha*, Bloodletting, Leech therapy.

INTRODUCTION

Vatakantaka is one of the most common problems affecting people worldwide, as it depends on locomotion and daily activities. *Vatakantaka* is explained by *Acharya Caraka, Sushruta, Vagabhata, Madhavakara, Cakradatta, Vangasena, Bhavaprakasha, Yogaratnakara*.

Vatakantaka is one of the *Vataja Nanatmaja Vyadhi.*[1.] Vitiated *Vata* in *Khudapradesha* is the main cause of the disease, which is characterised by *Kantakavat Shoola* (severe pricking pain) in *Padatala Pradesh*. *Nidana* for *Vatakantaka* is improperly placing the feet on the ground while walking *(vishamampade*)2 or exhaustion due to excessive walking *(atishrama).*

Pain in the heel region can be subdivided according to the area affected, such as pain within the heel, pain behind the heel, and pain beneath the heel[3]. Calcaneal Spur is a bony projection forward from the undersurface of the calcaneal tuberosity4, and it is characterised by pain within and beneath the heel region; hence, it can be correlated to *Vatakantaka*. The causes are mainly repeated attacks of plantar fasciitis, repeated trauma, ill-fitting footwear, constant pulls of the shortened plantar fascia and fibromatosis of plantar fascia.[5] Calcaneal Spur is characterised by pain over the ball of the heel, tenderness on the plantar aspect of the heel with a slight swelling at the attachment of the plantar fascia.[6]

The study on the incidence of calcaneal spur in the Indian population with heel pain is around 59%, in which females, obese, middle age and young athletes group are mostly affected.[7] Current conservative treatment modalities include treating the causative factor, rest, non-steroidal anti-inflammatory drugs, local hydrocortisone and microcellular rubber infiltration or placing a soft pad under the tender heel.[8] These non-steroidal anti-inflammatory drugs produce adverse effects like gastric irritation.

Surgery as a last resort is done either by chiselling off the bony spur with the division of plantar fascia or endoscopic plantar fasciotomy.[9] But some potential postoperative complications of surgery include recurrent heel pain, permanent local numbness, painful nerve entrapment, wound dehiscence, infections and hypertrophic scar. It requires hospitalisation and is expensive for the patient. Above all, there is always a good chance of recurrence in these treatment modalities.

According to *Acharya Chakradatta*, the treatment for *Vatakantaka* includes *Raktavasechana*, *Eranda tailapana*, *Agnikarma*10, and *Samanya Vatavyadhi Chikitsa*. *Jaloukavacharana* and *Siravyadha* are among the various types of *Raktavasechana.*

Para-surgical procedures like allowing blood to bleed for therapeutic purposes are known as *raktamokshana*. *Jaloukavacharana* is one of the *Ashashtrakrut Raktamokshanopaya.* It is indicated in *Avagadha Avastha* and *Grathita Avastha*[11] of *Doshas* and can also be used in all the conditions where *Raktavasechana* is indicated (*Sarvani Sarveva*)[12].

Hence, Considering the above factors to manage pain in *Vatakantaka, Jaloukavacharana* is taken for a study group.

Acharya Sushruta specified the use of *Siravyadha* in *Vatakantaka, and previous research studies on Siravyadha are taken as the standard procedure for the present study. Jaloukavacharana is the safest and most cost-effective procedure, and it is carried out in Bala, Vrudha, Biru, Sukumara, and Durbala. Hence, the present study is undertaken to compare the analgesic effect of Jaloukavacharana* and *Siravyadha* in *Vatakantaka* with special reference to Calcaneal Spur.

MATERIALS AND METHODS :

Study Design- A Randomized Comparative Clinical Trial

Sample size- 30 diagnosed patients of *Vatakantaka* (Calcaneal spur) were selected and registered for the study.

Duration of study: 21 days.

Criteria of selection of patients:

Inclusive Criteria:

- A patient presented with pain in the heel region, having *Vatakantaka* (Calcaneal Spur).
- Patients of either sex aged between 20-60 years.

- Patients who are fit for the *Jaloukavacharana* and *Siravyadhana* procedure

Exclusion Criteria :

- Patients suffering from bleeding disorders and Anemia.
- Patients suffering from systemic diseases, including DM, HTN and Cardiac diseases.
- Pregnancy and lactating women.
- Patients with HIV/HbsAg/HCV positive are excluded.

ASSESSMENT:

The observations will be recorded according to the case proforma before, during, and after treatment for every sitting.

1st Sitting - on 1st day *Jaloukavacharana* or *Siravyadha.*

2nd Sitting - on the 15th day, *Jaloukavacharana* or *Siravyadha.*

Observations will be done on the 0th, 1st, 7th and 15th day.

Follow Up:

Patients will be asked to report for the follow-up study on the 21st day of the procedure.

CRITERIA FOR ASSESSMENT

The treatment's result will be assessed based on subjective and objective criteria, with a suitable score/grading for each parameter.

- **Subjective Parameters:**

Shoola (pain)

Sparsha Asahishnuta (tenderness)

1. *Shoola* (Pain)

Table No.1: Visual Analogue Scale

Pain	Score	Grade
No pain	0	P_0
Mild pain	1-3	P_1
Discomfort pain	4-6	P_2
Distressing pain	7-9	P_3
Intense pain	More than 9	P_4

2. ***Sparsha Asahishnuta*(Tenderness)**

Table N0 2: Tenderness Grading

Tenderness	Score	Grade
No tenderness	0	T_0
Mild tenderness (Patient complains of pain and allows to touch the heel.)	1	T_1
Moderate tenderness (Patient complains of pain and on touch withdraws the heel.)	2	T_2
Severe tenderness (patient does not allow to touch the heel)	3	T_3

- **Objective Parameters:**

Shotha (Swelling)

Swelling will be assessed by measuring with tape and comparing it with the standard heel.

***1. Shotha* (Swelling)**

Table N0 3: Swelling Grading

Swelling	Score	Grade
No swelling	0	S_0
0.1mm to 0.5mm swelling	1	S_1
0.6mm to 1.00cm swelling	2	S_2
1.1cm to 1.5cm swelling	3	S_3
1.6cm to 2.00cm swelling	4	S_4

INVESTIGATION:

- Blood - Hb%, CT, BT, RBS, HIV, HBsAg.
- Radiology -X-ray of ankle joint AP and Lateral view.

MATERIALS REQUIRED :

The following materials are required in the present study.

- Study Group : To perform *Jaloukavacharana - Nirvishajalouka.*
- Standard Group: To perform *Siravyadha* - Sterile needle.
- A bowl containing water mixed with *Haridra choorna,*
- Hole towel
- Sterile gloves
- *Tila taila (Abhyanga)*
- Tourniquet
- Sterile gauze, sterile pad and roller bandage.

PROCEDURE:

Table No.4 : Procedure of Jaloukavacharana and Siravyadhana

	Jaloukavacharana	***Siravyadhana***
Group name	Study group	Standard group
Sample size	15	15
Material Required	*Nirvishajalouka*(1)	Sterile needle 22 no(1)
• ***Purva karma*:**		
Position of the patient	Sitting on the stool at a height of knee.	Sitting on the stool at a height of knee.
Hole towel	Draped	Draped
Site	2 *angula* above the *Kshipramarma*	2 *angula* above the *Kshipramarma*.
	Wash with water	*Yavagupana* fallowed by *Abhanga* and *Swedana* by *tila taila.*
➢ ***Pradhana karma:***		
Tourniquet	Not tied	Tied above the *Gulpha* region.
Prick	Prick the vein 3.5cm above *Kshipramar-ma* by needle and apply *jalouka.*	Puncture the vein 3.5cm above the *Kshipramarma* by needle.
Procedure duration	When *jalouka* leaves sucking by itself.	Till *samyak raktasrava lakshana* are seen (till bleed stops by itself).

➢ ***Paschat karma*:**		
	Vamana of *Jalouka* is to be done.	Remove the tourniquet and needle slowly.
Bandhana	Done	Done
Rest	30 min	30 min
Amount of blood	Calculated	Calculated
Sitting	2 sittings with a gap of 15 days	2 sittings with a gap of 15 days
Pariharavishaya	Advised	Advised

OBSERVATION AND RESULTS:

- **Statistical analysis :**

Statistical results of *Raktavasechana* with *Jaloukavacharana* in Group A and *Siravyadhana* in Group B patients before and after treatment in *Vatakantaka*.

3 of 0 patients were registered in this study; 15 were in group A, while 15 were in the B group. Each patient was observed thoroughly and noted correctly.

The observations are recorded.

Table No 5: Showing Distribution of Total Patients

Patients	Group A	Group B	Group C
Total No of Patients	16	16	32
Completed	15	15	30
Drop Out	01	01	2

- ***KANTAVATH VEDANA* (PAIN)**

➢ **Group A: Pain before the treatment of *Jaloukavcharana*. The mean score value was 4.26, reduced to 2.26 after the treatment with 46.9% improvement, and with a t-value of 6.48, which is statistically significant with a p-value less than 0.0001. The mean score was reduced to 1.20 after a follow-up with 53.1% improvement and a t-valve of 4.67, which is statistically significant with a** p-valve less than 0.0001.

➢ **Group B:** Pain before the treatment of *Siravyadhana*, the mean score value was 4.40, reduced to 1.86 after the treatment with 57.7% improvement and with a t-value of 6.51, which is a statistically significant p-value less than 0.0001 and mean score reduced to 0.70 after a follow up with 62.3% improvement and with t-value 0.26 is statistically significant with p-value less than 0.0001.

- ***SHOTHA* (SWELLING) *:***

➢ **Group A: Swelling before the treatment of *Jaloukavacharana*, the mean score value was 0.66, reduced to 0.13 after the treatment with 80.3% improvement and a t-value of 4.0, which is statistically significant with a P-value less than 0.001. The mean score was reduced to 0.00 after a follow-up with 100% improvement and a t-value of 1.46, which is statistically significant with a** P-value less than 0.16.

➢ **Group B:** Swelling before the treatment of *Siravyadhana*, the mean score value was 1.13, reduced to 0.73 after the treatment with 64.6% improvement and with a t-value 3.5, which is a statistically significant p-value less than 0.003 and mean score reduced to 0.33 after a follow up with 29.2% improvement and with t-value 2.6 is a statistically significant with p-value less than 0.019.

- ***SPARSHA ASAHISHNUTA* (TENDERNESS) :**

➢ **Group A:** Tenderness before the treatment of *Jaloukavacharana*, the mean score value was 2.4, reduced to 1.6 after the treatment with 64.1% im-

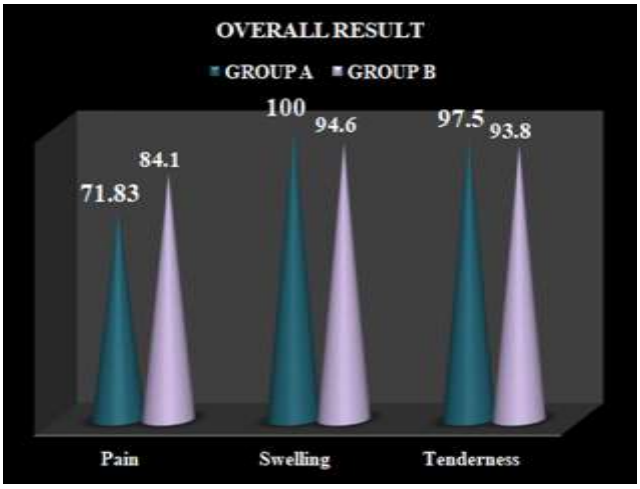
provement and with a t-value of 9.7 which is statistically significant with P-value less than 0.0001 and mean score reduced to 0.06 after a follow up with 93% improvement and with t-value 4.5 which is statistically significant with P value less than 0.0001.

- **Group B:** Tenderness before the treatment of *Siravyadhana*, the mean score value was 2.13, reduced to 1.2 after the treatment with 56.3% improvement and with a t-value 6.9, which is a statistically significant p-value less than 0.0001 and mean score reduced to 0.13 after a follow up with 80.5% improvement and with t-value 6.2 is a statistically significant with p-value less than 0.0001

Table No 6: Comparative Overall Results of Group A & Group B

SIGNS & SYMPTOMS	GROUP A			GROUP B		Percentage pain relief
	Mean score			Mean score		
	BT	FU	Percentage pain relief	BT	FU	
Kantavath Vedana (PAIN)	4.2	1.20	71.83	4.40	0.70	84.1
Shotha (SWELLING)	0.6	0.00	100.0	1.13	0.06	94.6
Sparsha Asahish-nutha (TENDERNESS)	2.4	0.06	97.5	2.13	0.13	93.8

Graph No 1: Compassion Of Overall Percentage Relief of Group a AndGroup B Based on Signs and Symptoms



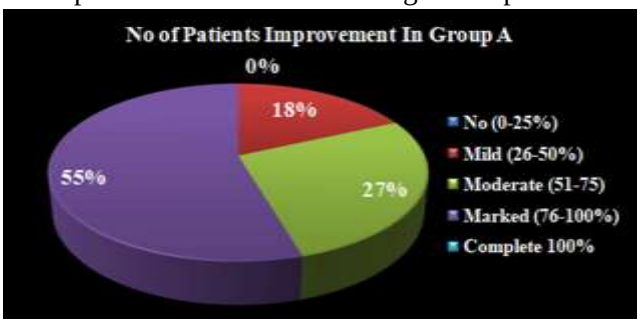
ASSESSMENT OF TOTAL EFFECT OF *JALOUKAVACHARA* (GROUP A)

Table No 7: Effect Of *Jaloukavacharana* - Group A

Class	Grading	No Of Patients
0-25%	No improvement	0
26-50%	Mild improvement	2
51-75%	Moderate improvement	3
76-100%	Marked improvement	6

100%	Complete remission	4

Graph No 2:Compassion Of Overall Percentage of Improvement in Group A

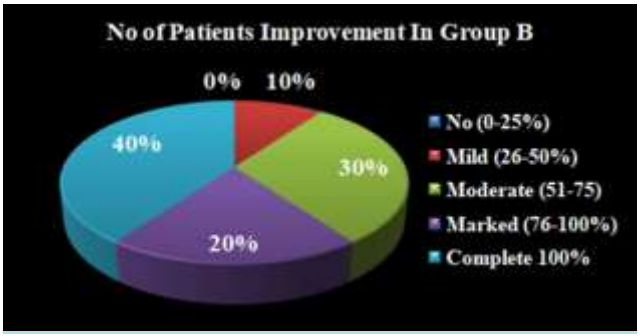


ASSESSMENT OF TOTAL EFFECT OF *Siravyadhana* (GROUP B)

Table No 8: Effect Of *Siravyadhana* - Group B

Class	Grading	No Of Patients
0-25%	No improvement	0
26-50%	Mild improvement	1
51-75%	Moderate improvement	3
76-100%	Marked improvement	2
100%	Complete remission	9

Graph No 3: Compassion Of Overall Percentage of Improvement in Group B



DISCUSSION

In this study, *Jaloukavacharana* is taken for a procedure as it is a type of *Raktavasechana* indicated in *Vatakantaka* by *Acharya Cakradatta*. As per *Acharya Vagabhata, Jaloukavacharana* is indicated in *Grathita avastha* and *Avagadha avastha* of *Doshas* and acts as *Shoola Upashamana.* As per *Acharya Sushruta, Jaloukavacharana* can also be used in all conditions where *Raktavasechana* is indicated (*Sarvani Sarverva).*

In this study, *Siravyadhana* is taken for a procedure as it is a direct indication in *Vatakantaka* as per *Acharya Sushruta* and *Acharya Vagabhata*. *Siravyadha* is considered to be the *ardha chikitsa in shalya tantra.* The procedure of *Siravyadha,* as explained in the classics, takes more work to put into vogue practice. Hence, its technique has been modified for this study. The procedure is done with the needle's help, where the tip is *yavaakara/vreehimukha akara.* Based on the shape at

its tip, it can be called a *vreehi mukha shastra.* This needle would be better
substitute for classical *vreehimukha shastra,* the advantages being free availability, well-sterilised condition, the rare occurrence of complications, the possibility of accurate measurement of extracted blood and over to all these, it causes minimum discomfort.

- **Pain :**

In this study, 71.83% of pain relief was seen in group A after doing *Jaloukavacharana* and 84.1% in group B after doing *Siravyadhana.*

- **Tenderness :**

In this study, *Jaloukavacharana* relieved 97.5% of tenderness in group A, and *Siravyadhana* relieved 93.8% of tenderness in group B.

- **Swelling :**

In this study, *Jaloukavacharana* reduced swelling by 100% in group A, and *Siravyadhana* reduced swelling by 94.6% in group B.

- **Comparative overall result :**

In this study, *Raktavasechana* by *Siravyadhana mean score was 90.933, and Jaloukavacharana mean score was 73.66. The result of Siravyadha was highly significant compared to Jaloukavacharana. This infers that Siravyadhana is giving better results* than *Jaloukavacharana.*

CONCLUSION

Vatakantaka is the result of over-usage and improper care given to the foot. It is a common clinical condition found in day-to-day practice. It causes severe pain, especially in the morning, while getting up from bed, the first step after extended rest, prolonged standing and prolonged walking on uneven surfaces with improper, rugged sole footwear. Achilles tendinitis, plantar fasciitis, tendo-achillis bursitis, retrocalcaneal bursitis and calcaneal spur come under 'painful heel' according to contemporary medicine. Not much relief was noticed with other modalities of therapy. It took a long time to cure, and patient satisfaction was low.

For desperate patients, *Raktavasechana* with *Jaloukavacharana* and *Siravyadha* are the therapies that give better results. Both procedures are very simple, safe, economical, and effective. They do not need much preparation and can be done in OPDs.

Both the procedure *Jaloukavacharana* & *Siravyadha* are effective in *Vatakantaka.*

They are beneficial, safe, simple & economical.

Siravyadhana is found to be more effective than *Jaloukavacharana.*

It is having an instant effect & can be accepted as a suitable treatment modality for the current era.

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