

EFFECT OF USHNA MANJISTHADI LEPA IN THE MANAGEMENT OF ANKLE SPRAIN (SANDHICHYUTA)

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ABSTRACT

Study design: 20 Patients of Ankle Sprain were selected randomly from Outpatient and Inpatient department of Shalya Tantra. **Place:** Uttaranchal Ayurvedic College and hospital Dehradun U.K – 248001.

Duration: 07 days. **Objectives:** To evaluate the effect of Manjisthadi Lepa in the Management of Ankle Sprain. **Methods:** 20 patients presenting with classical signs and symptoms of Ankle Sprain were selected from the Outpatient and Inpatient department of Shalya Tantra. Ushna Manjisthadi Lepa was applied twice daily for one week duration and daily assessment of the clinical parameters was done according to the proforma and weekly follow up for four weeks.

Results: Duration of one week treatment has provided significant relief with pain reduced by 91.17%, tenderness by 86.00%, swelling by 76.4%, loss of function by, discoloration and movements of the joints

by 100% with $P < 0.001$ level of significant. On the second follow up only 100% relief was noted in all the parameters of Ushna Manjisthadi Lepa. **Conclusion:** Patients showed better improvement in the initial days of treatment i.e. in conditions of Acute Ankle Sprain. Complete remission was seen in 75% of patients, marked improvement in 17.5%, moderate improvement in 7% and no patient showed unchanged results after one week treatment.

KEYWORDS: Patanabhighata, Ankle Sprain, Lepa, Manjisthadi Lepa.

INTRODUCTION

The history of trauma can be anticipated from the date, survival of the fittest. The surgical experience of the ancient age has been compiled systematically in Sushruta Samhita, which is a first documentation of its kind.^[1]

Ayurveda is the science of life. Since time immemorial, Ayurveda has been showing the ideal way of living, which promises a disease-free, happy and long life. The Ashtanga Ayurveda is like an ocean of knowledge consisting of many concepts in concise form. The philosophy, surgical ethics and concepts contributed by Sushruta, 'The father of Indian Surgery', hold well even after nearly five thousand years of development in various aspects of surgery.

The competitive & hectic lifestyle is increasing the incidence of trauma. In day-to-day life, ankle is one among the most common site for acute musculo-skeletal injuries and sprains, which account for 75% of ankle injuries. Acute ankle trauma is responsible for 10-30% of sports related injuries in young athletes. Each year an estimated one million people consult the physicians with acute ankle injuries. More than 40% of ankle sprain have the potential to cause chronic problems.^[2] This joint has to be stable in order to withstand 1.5 times of the body weight when you walk and up to eight times of the body weight when you run.^[3] Ankle joint is formed medially by tibia and talus, while laterally by fibula and talus. It is tightly interlocked joint, exposed to extreme mechanical conditions during single limb support. It is then subjected to the entire body weight and to the force generated by the dissipation of kinetic energy, when the foot rapidly makes contact with the ground during walking, running or jumping.

The strong tibio-fibular and interosseous ligaments tightly bind the distal tibio-fibular joint. Structurally ankle joint has a strong deltoid ligament medially and lateral collateral ligaments laterally, with its three bands. The ankle joint is the only Syndesmosis fibrous joint without a synovial membrane.^[4] The ankle joint is relatively unstable and largely depends on the ligaments for its stability. Ankle pain is most often due to an Ankle Sprain, which usually occurs either by Inversion or Eversion of foot. This is an injury that causes either stretch or tear of one or more ligaments in the ankle joint. Ankle ligaments are probably the most sprained ligaments in the body.

These injuries appear to be simple, but are more painful and hamper the routine activities of the patient. Ankle sprain is characterized by pain, swelling with or without deformity.

Although most ankle sprains occur on the lateral part of the ankle, they can even occur on the medial side as well. An ankle twist is the most common sports injury leading to ankle pain. In addition to ankle sprains and other injuries, ankle pain may also be caused by arthritis, gout, pseudogout and infections.^[5]

In classics there are no direct references regarding sprain and its management. Acharya Sushruta in the context of Asthi-Bhagna has mentioned “Patanabhighatadwa” which means Patana, Abhighata or both are the main causes for sprain, where he has emphasized the application of Sheeta Pradeha to reduce Vedana and Shopha.^[6] In classics Acharya Sushruta considers Lepa as Adhya Upakrama.^[6]

In context of Asthi-Bhagna and Vrana-Chikitsa, Acharya describes the application of Lepa in Jatamatra Shopha having Ugra Ruja.^[7] Importance of Lepa is highlighted by a simile as – How by sprinkling water over the burning house the fire gets extinguished, similarly the pain gets subsided by the application of Lepa.^[8]

Many research works have been conducted on Asthi-Bhagna using Manjisthadi Lepa as Shopha hara, but Vedana Shamaka property of this Lepa has not been studied as per recent research review,^[9a,b,c] There is no reference regarding the number of application and duration of application of Lepa. Pilot study conducted in our hospital in this regard using Ushna Manjisthadi Lepa showed good results. Hence an attempt is made to study the efficacy of Ushna Pradeha of Manjisthadi Lepa in the management of Ankle Sprain.

This is a pilot study conducted on 20 patients and Ushna Manjisthadi Lepa was applied. Lepa was applied twice daily for one week and weekly follow up was done for four weeks duration. Clinical assessment was based on signs and symptoms as-pain, swelling, tenderness, loss of function and discoloration.

The aim of the clinical study was to assess the efficacy of Sushruta's principles in the management of Ankle Sprain.

In the context of Vranalepanabandhana Vidhi Adhyaya Acharya Sushruta explains, in Pradeha Sadhya Vyadhi one can also use Alepa during the day time.^[10] In the context Vranalepana- bandhana Adhyaya while explaining the benefits of Pradeha, Acharya Sushruta emphasizes to use Pradeha at the site of Marma Sthitha Dosha.^[11]

Aims and Objectives

To evaluate the efficacy of Ushna Manjisthadi Lepa in the management of Ankle Sprain.

Study design

The Pilot study was undertaken.

Source of data

20 Patients of Ankle Sprain were selected randomly from the Surgical out patient and in patient department of Shalya Tantra, Uttaranchal Ayurvedic College and Hospital, Dehradun.

Inclusion criteria

1. Patients with clinical features of Ankle Sprain.
2. Patients of first and second grade Ankle Sprain.

Grade I

Mild pain, Mild swelling, Mild joint stiffness, little or no loss of function.

Grade II

Moderate to severe pain, Moderate swelling, Moderate joint stiffness, and Moderate loss of function.

Exclusion criteria

1. Patients with fracture and dislocation of Ankle joint.
2. Patients with third grade Ankle Sprain

Grade III

Severe pain, profuse swelling, complete joint stiffness, and complete loss of function.

Diagnostic criteria

1. Diagnosis was done based on the history of inversion or eversion of foot and clinical features like – pain, tenderness, swelling, loss of function, discoloration, and joint stiffness.
2. Radiographically absence of fracture and dislocation.

Required instruments and equipment's

Gas stove, Steel bowl, Spoon, Rubber sheath.

Drugs required for lepa**Manjisthadi lepa**

- i) Manjistha ii) Yashtimadhu iii) Raktachandana
- ii) Shali Pishti v) Shatadhauta Ghrita.

Method of preparation of lepa

Sukshma Churna of all the above mentioned ingredients were taken in equal quantity in a bowl and Lepa were prepared by mixing it with hot water and were applied to the patients.

Application of Ushna Manjisthadi Lepa

Ushna Manjisthadi Lepa was applied over the affected ankle joint in the Pratiloma Gati with the thickness of Ardra Maheesha Charma. In all patients Lepa was applied twice daily and time duration taken to become dry was noted. This procedure was followed for one week.

Follow up study

Patients were examined on initial day zero and further followed daily for one week. Then weekly once follow up for four weeks to note the changes in signs and symptoms of the patients based on the research proforma and also to note whether the relief provided by the therapy was sustained or not or whether there was any relapse.

Assessment Criteria

Daily assessment of the patient was carried out based on self-gradings given to

- a) Subjective parameters
- b) Objective parameters

a) Subjective parameters

To assess the efficacy of the trial preparation or improvement in the clinical symptoms of the disease, different signs and symptoms were arbitrarily graded on the basis of severity. The Clinical gradations of symptoms are as follows;

1) Pain

- No pain -00
- Localized feeling of pain only during movement -01
- Localized feeling of pain during movement and at rest but not disturbing the sleep -02
- Localized feeling of pain during movement and rest but disturbing the sleep -03

2) Swelling

Swelling was directly recorded with measuring tape in centimetres and readings were noted at the level of, above the Ankle, the mid of the Ankle and below the Ankle joint, and compared with the measurements of normal limb.

Tenderness

- No tenderness -00
- Patient winces on deep palpation -01
- Patient winces on superficial palpation -02
- Patient does not allow to touch the part -03

3) Loss of function

- Normal function/ Normal gait -00
- Can walk with effort -01
- Can walk with help of support -02
- Cannot walk -03

4) Discoloration

- NO ecchymosis/discoloration -00
- Ecchymosis / discoloration present -01

5) Dorsiflexion

- Angle of 25° -00
- Angle above 15° -01
- Angle above 5° -02

6) Plantarflexion

- Angle of 35° -00
- Angle above 25° -01
- Angle above 15° -02
- Angle above 5° -03

7) Adduction

- Normal movement - 00
- Mild pain (movement with pain) -01
- Moderate pain (movement with difficulty) -02

➤ Severe pain (movement not possible) –03

8) Abduction

➤ Normal movement –00

➤ Mild pain (movement with pain) –01

➤ Moderate pain (movement with difficulty) –02

➤ Severe pain (movement not possible) –03

9) Inversion

➤ Normal movement –00

➤ Mild pain (movement with pain) –01

➤ Moderate pain (movement with difficulty) –02

➤ Severe pain (movement not possible) –03

10) Eversion

➤ Normal movement –00

➤ Mild pain (movement with pain) –01

➤ Moderate pain (movement with difficulty) –02

➤ Severe pain (movement not possible) –03

Effects of Ushna Manjisthadi Lepa on the Patients of Ankle Sprain

20 patients of Ankle Sprain were treated with Ushna Manjisthadi Lepa. The effects of this Lepa on the various parameters adopted for this study were as follow

Table No –01: Effect of Ushna Manjisthadi Lepa effect on Pain in Ankle Joint

Pain	Treatment days	BT	AT	%of Imp	SD (±)	SE (±)	T	P
During Treatment	I day	1.7	1.35	20.59%	0.49	0.11	3.18	<0.01
	III day		0.65	61%	0.51	0.11	9.55	<0.001
	VII day		0.15	91.17%	0.60	0.13	11.92	<0.001
Follow-up	II Week		0	100%	0.73	0.16	10.63	<0.001
	III Week		0	100%	0.73	0.16	10.63	<0.001
	IV Week		0	100%	0.73	0.16	10.63	<0.001

One week of application of Ushna Lepa reduced the pain by 20.59% on first day, significantly by 61% on third day to 91.17% by one week treatment which was completely relieved on the first follow up of one week i.e. 100%.(Table-01)

TableNo - 02: Effect of Ushna Manjisthadi Lepa on Tenderness of Ankle Joint

Tenderness	Treatment days	BT	AT	% of Imp	SD (\pm)	SE (\pm)	T	P
During Treatment	I day	1.5	1.35	10%	0.31	0.06	2.5	<0.05
	III day		0.75	50%	0.44	0.98	0.76	>0.05
	VII day		0.2	86%	0.57	0.13	10	<0.001
Follow-up	II Week		0	100%	0.51	0.11	13.34	<0.001
	III Week		0	100%	0.51	0.11	13.34	<0.001
	IV Week		0	100%	0.51	0.11	13.34	<0.001

The Ushna Lepa provided 10% relief on 1st day, 50% on 3rd day and 86% relief after one week of Lepa, which was statistically highly significant with P-value < 0.001. (Table-02)

Table No-03: Effect of Ushna Manjisthadi Lepa on Swelling of Upper 1/3rd of Ankle Joint

Swelling	Treatment days	BT in Cm	AT	% of Imp	SD (\pm)	SE (\pm)	t	P
During Treatment	I day	19.85	19.78	0.40%	0.24	0.05	1.6	>0.05
	III day		19.38	2.42%	0.99	0.22	2.18	>0.05
	VII day		19.2	3.27%	1.31	0.29	2.24	<0.05
Follow-up	II Week		19.2	3.27%	1.31	0.29	2.24	<0.05
	III Week		19.2	3.27%	1.31	0.29	2.24	<0.05
	IV Week		19.2	3.27%	1.31	0.29	2.24	<0.05

Table No -04: Effect of Ushna Manjisthadi Lepa on Swelling of Middle of Ankle Joint

Swelling	Treatment days	BT in Cm	AT	% of Imp	SD (\pm)	SE (\pm)	t	P
During Treatment	I day	23.8	23.45	1.47%	0.31	0.07	5.0	<0.001
	III day		22.65	4.38%	0.67	0.15	7.67	<0.001
	VII day		22.13	7.06%	0.86	0.19	8.84	<0.001
Follow-up	II Week		22.13	15.76%	0.92	0.21	8.33	<0.001
	III Week		22.13	15.76%	0.92	0.21	8.33	<0.001
	IV Week		22.13	15.76%	0.92	0.21	8.33	<0.001

Table No -05: Effect of Ushna Manjisthadi Lepa on Swelling of Lower 1/3rd of Ankle Joint

Swelling	Treatment days	BT in Cm	AT	% of Imp	SD (\pm)	SE (\pm)	T	P
During Treatment	I day	23.6	23.33	1.19%	0.34	0.08	3.5	<0.01
	III day		22.48	4.79%	0.76	0.17	6.65	<0.001
	VII day		22.2	5.93%	0.88	0.2	7.0	<0.001
Follow-up	II Week		22.2	5.93%	0.88	0.2	7.0	<0.001
	III Week		22.2	5.93%	0.88	0.2	7.0	<0.001
	IV Week		22.2	5.93%	0.88	0.2	7.0	<0.001

Lepa provided highly significant (P<0.001) relief in swelling in all parts of the joints after application for one week and was maximum in the middle (7.06%), followed by lower 1/3rd

(5.93%) and comparatively less in upper 1/3rd which was 3.27%. On the follow up study also it remained almost sustained in all these three parts (Table-03, 04 and 05)

Table No-06: Effect of Ushna Manjithadi Lepa on Loss of function of Ankle Joint

Loss of function	Treatment days	BT	AT	% of Imp	SD (±)	SE (±)	T	P
During Treatment	I day	1.2	0.95	20.83%	0.41	0.09	2.78	<0.02
	III day		0.5	58.33%	0.47	0.11	6.36	<0.001
	VII day		0	100%	0.41	0.09	13.33	<0.001
Follow-up	II Week		0	100%	0.41	0.09	13.33	<0.001
	III Week		0	100%	0.41	0.09	13.33	<0.001
	IV Week		0	100%	0.41	0.09	13.33	<0.001

One week Ushna Lepa provided 100% relief in loss of function of ankle joint. This relief was statistically highly significant ($P < 0.001$). This relief continued on the follow up study. (Table-06)

Table No –07: Effect of Ushna Manjithadi Lepa on Discoloration of Ankle Joint

Discoloration	Treatment days	BT	AT	% of Imp	SD (±)	SE (±)	T	P
During Treatment	I day	0.05	0.05	0%	0	0	0	0
	III day		0	100%	0.30	0.07	0.71	<0.10
	VII day		0	100%	0.30	0.07	0.71	<0.10
Follow-up	II Week		0	100%	0.30	0.07	0.71	<0.10
	III Week		0	100%	0.30	0.07	0.71	<0.10
	IV Week		0	100%	0.30	0.07	0.71	<0.10

The discoloration of the affected joint was completely relieved (100%) by one week of Ushna Lepa application. This effect of the therapy was statistically highly significant ($P < 0.001$) and remained sustained on all the follow up study weeks also (Table-07).

Table No –08: Ushna Manjithadi Lepa effect on Dorsiflexion of Ankle Sprain

Dorsiflexion	Treatment days	BT	AT	% of Imp	SD (±)	SE (±)	T	P
During Treatment	I day	1.25	1.25	0	0	0	0	0
	III day		0.35	72%	0.31	0.07	12.86	<0.001
	VII day		0	100%	0.44	0.09	13.33	<0.001
Follow-up	II Week		0	100%	0.44	0.09	13.33	<0.001
	III Week		0	100%	0.44	0.09	13.33	<0.001
	IV Week		0	100%	0.44	0.09	13.33	<0.001

Table No – 09: Effect of Ushna Manjisthadi Lepa on Plantar flexion of Ankle Joint

Plantarflexion	Treatment days	BT	AT	% of Imp	SD (±)	SE (±)	T	P
During Treatment	I day	1.6	1.5	6.25%	0.31	0.07	1.43	<0.10
	III day		0.6	62.5%	0.32	0.07	14.29	<0.001
	VII day		0	100%	0.68	0.15	10.67	<0.001
Follow-up	II Week		0	100%	0.68	0.15	10.67	<0.001
	III Week		0	100%	0.68	0.15	10.67	<0.001
	IV Week		0	100%	0.68	0.15	10.67	<0.001

Table No –10: Effect of Ushna Manjisthadi Lepa on Adduction Ankle Joint

Adduction	Treatment days	BT	AT	% of Imp	SD (±)	SE (±)	T	P
During Treatment	I day	0.8	0.7	12.5%	0.31	0.07	1.43	<0.10
	III day		0.1	87.5%	0.47	0.11	6.36	<0.001
	VII day		0	100%	0.62	0.14	5.71	<0.001
Follow-up	II Week		0	100%	0.62	0.14	5.71	<0.001
	III Week		0	100%	0.62	0.14	5.71	<0.001
	IV Week		0	100%	0.62	0.14	5.71	<0.001

Table No –11: Effect of Ushna Manjisthadi Lepa on Abduction of Ankle Joint

Abduction	Treatment days	BT	AT	% of Imp	SD (±)	SE (±)	T	P
During Treatment	I day	0.4	0.4	0	0	0	0	0
	III day		0.05	87.5%	0.49	0.11	3.18	<0.01
	VII day		0	100%	0.6	0.13	3.08	<0.01
Follow-up	II Week		0	100%	0.6	0.13	3.08	<0.01
	III Week		0	100%	0.6	0.13	3.08	<0.01
	IV Week		0	100%	0.6	0.13	3.08	<0.01

Table No –12: Effect of Ushna Manjisthadi Lepa on Inversion of Ankle Joint

Inversion	Treatment days	BT	AT	% of Imp	SD (±)	SE (±)	T	P
During Treatment	I day	1	1	0	0	0	0	0
	III day		0.2	80%	0.41	0.09	8.89	<0.001
	VII day		0	100%	0.46	0.10	10	<0.001
Follow-up	II Week		0	100%	0.46	0.10	10	<0.001
	III Week		0	100%	0.46	0.10	10	<0.001
	IV Week		0	100%	0.46	0.10	10	<0.001

Table No-13: Effect of Ushna Manjisthadi Lepa on Eversion of Ankle Joint

Eversion	Treatment days	BT	AT	% of Imp	SD (±)	SE (±)	T	P
During Treatment	I day	0.4	0.4	0	0	0	0	0
	III day		0.05	87.57%	0.49	0.11	3.18	<0.01
	VII day		0	100%	0.6	0.13	3.08	<0.01
Follow-up	II Week		0	100%	0.6	0.13	3.08	<0.01
	III Week		0	100%	0.6	0.13	3.08	<0.01
	IV Week		0	100%	0.6	0.13	3.08	<0.01

Effect of Ushna Manjisthadi Lepa on Dysfunction/Movements of Ankle Joint

The effect of the therapy was assessed on the various types of movements of the involved ankle joint. Initially dysfunctions in dorsi-flexion, plantar-flexion, adduction, abduction, inversion and eversion were recorded by comparing with the normal limb movements. One week Ushna Lepa corrected all these functions to 100%, which were statistically highly significant ($P < 0.001$). On the follow up study also these effects were found sustained (Table-08, 09, 10, 11, 12 and 13).

Table No – 14: Table showing result on Clinical features after one week treatment with Ushna Manjisthadi Lepa for Ankle Sprain

Symptoms	Mean score		% of relief	S.D (±)	S.E (±)	‘t’	‘P’
	BT	AT					
Pain	1.7	0.15	91.17%	0.60	0.13	11.92	<0.001
Tenderness	1.5	0.2	86%	0.57	0.13	10	<0.001
Swelling	23.8	22.13	7.06%	0.86	0.19	8.84	<0.001
Loss of function	1.2	0	100%	0.41	0.09	13.33	<0.001
Discoloration	0.05	0	100%	0.30	0.07	0.71	<0.10

The study showed 91.17% improvement in pain, 86% in tenderness, 7.06% in swelling and 100% in loss of function and discoloration respectively. There was marked improvement in all the Parameters of Ankle Sprain with $p < 0.001$ after one week treatment.(Table-14).

Table No –15 Table showing results of Degrees of foot movements after one week treatment with Ushna Manjisthadi Lepa for Ankle Sprain

Foot Movements	Mean score		% of relief	S.D (±)	S.E (±)	‘t’	‘P’
	BT	AT					
Dorsiflexion	1.25	0	100%	0.44	0.09	13.33	<0.001
Plantarflexion	1.6	0	100%	0.68	0.15	10.67	<0.001
Adduction	0.8	0	100%	0.62	0.14	5.71	<0.001
Abduction	0.4	0	100%	0.6	0.13	3.08	<0.01
Inversion	1	0	100%	0.46	0.10	10	<0.001
Eversion	0.4	0	100%	0.6	0.13	3.08	<0.01

Significant improvement in the movement of joints with 100% result after one week (Table - 15).

Total Effect of the Therapy

At the end of the 7 days treatment, the effects of the Lepa were assessed as follows: 100% improvement in all the signs and symptoms was considered as complete remission.

Marked Improvement

Improvement between 50% and 99% was considered as marked improvement.

Moderate Improvement

Improvement below 49 % was considered as Moderate improvement.

Unchanged

No improvement in signs and symptoms was considered as Unchanged.

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