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Case Report

INTEGRATED AYURVEDIC AND PHYSIOTHERAPY APPROACH IN THE MANAGEMENT OF ACUTE LATERAL ANKLE SPRAIN- A CASE REPORT

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ABSTRACT :

Background: Ankle sprains are the most frequent musculoskeletal injuries, often leading to functional instability and temporary impairment. The "RICE' protocol is commonly practised for early recovery. The management principles in *Ayurveda* can be understood under *Bhagna Chikitsa*, *Sadyovrana,* and *Marma chikitsa.* Integration of two systems is the need of the hour for better treatment outcome and quality patient care. **Clinical findings:** A 26-year-old young male student, presented with swelling and pain at the right ankle joint since the last 24 hours, which was associated with difficulty and increased pain while walking**.** The case was diagnosed as a right-sided lateral ankle sprain by performing a talar tilt test and an anterior drawer test, which showed positive signs. Ottawa ankle rules were performed to differentiate it from fractures by advising an X-ray of the foot with anteroposterior, lateral, and oblique views, which was normal in this case. **Outcome:** The adopted integrated treatment, which includes local Ayurvedic procedures, standard RICE protocols, and physiotherapy procedures, gave good results in the form of pain reduction, swelling, local temperature, increased range of motion, and an early return to sports. **Conclusion:** Integrated treatment approach for a period of 2 months has given good outcome with no adverse events. The patient has returned to play and performing well, further research in this area is necessary to validate the results.

KEYWORDS: Ankle sprain, *Ayurveda*, *Bhagna chikitsa*, *Marma chikitsa, Sadyovrana,* Physiotherapy, case report.

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1. INTRODUCTION

Ankle sprains are the most common injuries experienced by sports professionals and individuals participating in recreational activities. [1] In sports like rugby, cricket, football, etc., the incidence rate is 6–8 per 1,000 people. [2] The severity of an ankle sprain is graded based on the extent of damage to the lateral ligament complex and clinical findings, which significantly affect the function and stability of the ankle joint. Lateral ligament injuries of the ankle occur when the foot undergoes inversion and supination, accompanied by external rotation of the tibia. [2]

In *Ayurvedic* classics, direct references to sports injuries are not available, but they can be correlated to *Gulphamarmaghata* (injury to the ankle joint), which causes *Ruja* (pain), *Stabdhapadata* (foot stiffness), and *Khanjata* (limping). [3] Rest, ice application, compression, elevation, analgesic and anti-inflammatory medications, etc. are the standard treatment procedures that are followed as part of the treatment protocol. Accurate diagnosis and timely treatment during the initial evaluation are crucial to reduce the risk of recurrent instability. Evidence indicates that even a mild ankle sprain can lead to considerable long-term morbidity, with up to 40% of cases resulting in persistent symptoms. [4] *Ayurveda* classics explain immobilisation of the affected part along with *Abhyanga* (massage), *Swedana* (fomentation treatment), and the application of *Lepa* (medicated paste application) and *Pichu* (oil cotton swabs) in the management of injuries. [3] Integration of the various sciences to provide complete and definite care is the need of the hour. In this regard, we highlight here a case of lateral ankle sprain that was treated with an integrated approach.

2. CASE REPORT

A 26-year-old young male student, non-diabetic and non-hypertensive, presented with swelling and pain at the right ankle joint since the last 24 hours, i.e., on August 27, which was associated with difficulty and increased pain while walking. The case was treated at KLE Ayurveda Hospital, Belagavi, Karnataka, from August 27 to October 25, 2021. MR NO:KLE 210012188, OPD NO: 210023203. The incident occurred during cricket play as a part of a recreational activity. The patient had a history of falls and sudden twists while playing cricket, and immediately he developed the above symptoms. He was of moderate build and in good nutritional status.

Clinical Findings - A general examination showed vital signs including a blood pressure of 110/70 mmHg, a pulse rate of 86 bpm, and a temperature of 93.2°F. Systemic examination of the central nervous system, cardiovascular system, and respiratory system revealed normal findings. Local examination revealed that swelling at the lateral aspect of the right ankle joint measured 56 centimetre with severe tenderness, pain (VAS-9/10), VDS (8/10), a local rise in temperature (101.30 F) with loss of function of the ankle joint, and a range of movements, i.e., plantar flexion (80), dorsiflexion (7.50), inversion (70), and eversion (00). An X-ray of the right foot with antero-posterior and oblique revealed a normal study without any fractures.

Diagnostic Assessment - Meta-tarsal, talus fractures, and ankle sprains were considered for differential

diagnosis. Positive talar tilt tests and anterior drawer test along with normal x ray findings, the case was diagnosed as a grade II acute ankle sprain. [5] As per *Ayurveda*, it was diagnosed as *Gulpha Marma Abhighata*.

Intervention

The treatment was planned according to the severity grading of the ankle sprain, which was co-related with *Gulpha Marma Abhighata* and treated accordingly with *Marmaabhighata Chikitsa*.

Local application of *Sheeta Manjishtadi Lepa* (Table 1), crepe bandage application, *Murivennataila Pichu, Bandhana* (Figure 1), *Sthanika Shashtika Shali Pinda Sweda*, along with physiotherapy like transcutaneous electric nerve stimulation (Figure 2), ultrasound (Figure 3), inferential therapy and passive assisted exercises were advised.

Figure 1 *Bandhana* with *Murivenna taila* application

Figure 2 TENS application

Figure 3 Ultrasound therapy

Timeline

Table 1: Therapeutic intervention of both therapies at different time points

Plan of care	27/8/21 to 31/8/21	1/9/21 to 6/9/21	7/9/21 to 12/9/21	13/9/21to 28/9/21
Manjishtadi Lepa application	✓			
Immobilization with crepe bandage	✓			
Marmani Gulika	✓			
Murivennataila pichu		✓		
Transcutaneous electric nerve stimulation (TENS)		✓		
Active assisted exercises		✓		
Abhyanga with *Murivennataila*			✓	
Shashtikashali Pinda Sweda			✓	
Ultrasound therapy			✓	
Inferential therapy			✓	
Muscle strengthening exercises			✓	✓
Balaarishta			✓	

1) Transcutaneous electric nerve stimulation (TENS) - 10 minutes daily once
2) Inferential therapy – 20minutes in daily once
3) Ultrasound therapy – 5 minutes daily once
4) Exercise therapy

a) Toe curls and Toe abduction (3 sets x 10 to 12 repetitions)
b) Single leg standing - (3 sets x 15 to 30 seconds) (starting with support, progressing to without support)
c) Lunges (Forward, backward and Side) (3 sets x 10 repetitions)
d) Heel Raises and Toe raises (3 sets x 10 to 15 repetitions)

Follow Up & Outcome

The patient was treated on an OPD basis, and the assessments were done during follow up period of day 45 and day 60 until the complete regression of the swelling, pain, tenderness, range of motion, and loss of function. Improvements were seen in all the parameters (Table 2) during follow up period and now the patient has returned to play. He was advised not get injured during the recovery period and to avoid excessive training and vigorous activities.

Table 2: Showing changes in the assessment parameters at different time points

Parameters	27/8/21	1/9/21	7/9/21	13/9/21	20/9/21	27/9/21	10/10/21	25/10/21
VAS	9 /10	3/10	0/10	0/10	0/10	0/10	0/10	0/10
VDS	8 /10	2/10	0/10	0/10	0/10	0/10	0/10	0/10
Temperature	101.50F	98.20F	96.10F	96.10F	96.10F	96.10F	96.10F	96.10F
Swelling	55.5cm	51c	49cm	49c	49cm	49cm	49cm	49cm
Tenderness	Grade-4	Grade-1	Grade-0	Grade-0	Grade-0	Grade-0	Grade-0	Grade-0
Range of motion								
a)Dorsiflexion	7.5	15.8	20	20	20	20	20	20
b)Plantar flexion	8	25.5	32.8	32.8	32.8	32.8	32.8	32.8
c)Inversion	7	16.5	23.5	23.5	23.5	23.5	23.5	23.5
d)Eversion	0	13.8	20	20	20	20	20	20
(In degree)								
Manual muscle testing	0	3	4	4	4	4	4	4
Loss of Function	2	1	0	0	0	0	0	0

3. DISCUSSION

Proper treatment of ankle sprains and early rehabilitation minimise the risk of osteoarthritis development and other kinds of permanent sequalae, which are always a major concern. The standard treatment protocol is RICE (rest, immobilisation,

compression, and elevation), followed by rehabilitation. [6] In view of modern lines of treatment, *Ayurveda* can also manage and treat according to the severity of injury, from the initial stage to the complete remission of the disease. In the initial phase of an ankle sprain, the application of *lepa* helps reduce inflammation and pain through its *Sheeta Virya* qualities. *Manjisthadi Lepa* is a blend of four drugs that make up *Tridoshasamaka*. *Manjistha* and *Yastimadhu* possess *Vedanahara* properties, whereas *Manjistha* and *Raktachandana* have *Raktaprasadaka* properties. Due to the *Ushna Virya* of *Manjishta*, the medicine may have absorbed quickly into the hair follicles and aided in the early decrease of pain, swelling, and temperature. [7] Bandages are commonly used for musculoskeletal injuries.. In order to repair damaged tissue and restore lost strength, bandaging helps to minimize swelling, limit joint movements, and inhibit blood flow from a specific area by applying continuous compression. [8]

Murivenna oil, which contains coconut oil, promotes skin permeability, which increases medication absorption. *Murivenna's* active principle has a synergistic effect on soft tissue injury symptoms. *Marmanigulika's* main ingredients, such as *Pashanabheda*, *Varahikanda*, and *Raktachandana*, have anti-inflammatory properties and aid in pain relief. [9] Non-noxious afferent nerve fibres (A fibers) are activated by TENS and the activation of these fibres is hypothesised to affect A and C fibre-mediated nociceptive transmission in the spinal cord, which is consistent with the 'gate control hypothesis of pain. [10] Interferential treatment is known to inhibit pain transmission by producing endogenous opioids such as endorphin and enkephalin at the spinal level. [11] The rehabilitation process, which includes exercises and mobilisation strategies, helps to recover from pain, swelling, and range of motion. It also reduces muscle atrophy and improves tissue oxygenation and nutrition. Massage with *Murivenna* oil and *Shastikashali Pinda Sweda* (SSPS) (bolus fomentation of boiling rice grains knotted in a piece of cloth) helps in the reduction of heaviness and stiffness in muscles. Applying pressure rhythmically (*Abhyanga*) with the hands in a methodical manner relaxes muscles, and reduces pain by mechanically stimulating soft tissues. SPSS increases blood flow to the affected part, reduces stiffness, and the flexibility of joints. *Balarishta* is often prescribed for *Vata*-predominant diseases like arthritis, spondylosis, etc. as it works as a nerve tonic and also helps in strengthening muscles and bones. [12]

Strengths – It was case of acute ankle injury treated with integrated approach which is the need of hour. Standard parameters were used to assess the results and under one setup the patient was treated.

Limitations – It was a single case study of integrated approach and the results cannot be generalised to treat all ankle joint injuries.

Take away lesson – Integrated approach in the present case has given promising results. Integrated approach is the need of hour to provide complete patient care.

4. CONCLUSION – An integrated approach was used to treat a lateral ankle injury for two months. Throughout the course of treatment, no adverse effects were noticed. The key findings were pain, edema, local

temperature, range of motion, and loss of function. To achieve the expected treatment outcome, a multifaceted approach to diagnosis and therapy is necessary. Throughout the intervention and one-month follow-up period, improvements were seen in every evaluated parameter. The use of an integrated therapy approach has produced encouraging outcomes and allowed the patient to play earlier. In the field of integrated research, more research with randomized clinical trials and a bigger sample size is necessary to produce evidence-based findings, formulate policies, and create guidelines for treating ankle sprains.

Declaration of Patient Consent – The authors confirm that they have acquired a patient consent form, in which the patient or caregiver has granted permission for the publication of the case, including accompanying images and other clinical details, in the journal. The patient or caregiver acknowledges that their name and initials will not be disclosed, and sincere attempts will be undertaken to safeguard their identity. However, complete anonymity cannot be assured.

Patient perspective:

Patient was satisfied with the treatment and care provided in the hospital. He was feeling happy as he has recovered from the injury and has returned for play.

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