

ANATOMICAL IDENTIFICATION OF THE IDEAL *AGNI-KARMA* SITE IN CHRONIC PLANTAR FASCIITIS

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ABSTRACT

Background Chronic plantar fasciitis is a common cause of plantar heel pain, usually associated with repetitive mechanical loading and degenerative changes near the proximal attachment of the plantar fascia. In *Ayurveda*, its clinical presentation may be correlated with *Vatakantaka*, a painful disorder of the heel produced by aggravated *Vata Dosha*, particularly after improper placement of the foot or walking over irregular surfaces. *Agni-Karma* is described as an important para-surgical procedure for painful disorders involving *Twak*, *Mamsa*, *Sira*, *Snayu*, *Sandhi* and *Asthi*.

Aim To anatomically identify the ideal site for *Agni-Karma* in patients with chronic plantar fasciitis.

Objectives To review the classical concept of *Vatakantaka* and its management through *Agni-Karma*. To study the anatomy and biomechanics of the plantar fascia. To identify the principal pathological and tender region in chronic plantar fasciitis. To correlate the site of *Vatakantaka* pain with the proximal attachment of the plantar fascia.

Materials and Methods A structured narrative review of classical *Ayurvedic* texts, anatomical literature, clinical guidelines and published studies related to *Vatakantaka*, *Agni-Karma* and plantar fasciitis was undertaken. The origin, course and insertion of the plantar fascia and the position of nearby nerves, vessels, fat pad and muscles were analysed. The probable therapeutic site was determined through anatomical-pathological correlation and clinical tenderness mapping.

Discussion and Conclusion The ideal *Agni-Karma* site in chronic plantar fasciitis is the clinically tender proximal plantar fascial region immediately distal to its attachment at the medial calcaneal tubercle. Accurate palpation, anatomical localisation and appropriate thermal depth are necessary to maximise clinical benefit and minimise complications.

KEYWORDS *Agni-Karma*; *Vatakantaka*; plantar fasciitis; medial calcaneal tubercle; plantar fascia; heel pain

INTRODUCTION

Plantar fasciitis is one of the most frequent causes of pain beneath the heel. It commonly presents as sharp or stabbing pain during the first few steps after getting out of bed or after a prolonged period of rest. Although the term “fasciitis” suggests an inflammatory condition, chronic cases more commonly demonstrate degeneration, collagen disorganisation, microtearing and thickening at the proximal attachment of the plantar fascia. For this reason, chronic plantar fasciitis is also described as plantar fasciopathy or plantar fasciosis. The condition may interfere with standing, walking, occupational activities and exercise, thereby reducing the patient’s functional capacity and quality of life.¹

The plantar fascia is a strong fibrous structure extending from the calcaneus toward the toes. Its central band is the thickest and most functionally important part. Proximally, it is attached mainly to the medial process of the calcaneal tuberosity. During standing and walking, the fascia supports the medial longitudinal arch and contributes to the windlass mechanism. Excessive or repetitive tension at its proximal attachment may produce microtrauma and progressive degenerative changes. Consequently, the patient usually experiences maximum tenderness near the medial plantar aspect of the calcaneus rather than throughout the entire length of the fascia.²

In *Ayurveda*, plantar heel pain resembling chronic plantar fasciitis may be correlated with *Vatakantaka*. It is described as a painful condition caused by the aggravation of *Vata Dosha* following improper positioning of the foot or walking over irregular surfaces. The name suggests a thorn-like pain felt in the heel. As pain is primarily associated with aggravated *Vata*, therapeutic measures possessing *Ushna*, *Tikshna* and *Vata-Shamaka* properties are considered useful. *Agni-Karma* is one such para-surgical procedure and is particularly indicated in painful conditions involving structures such as *Snayu*, *Sandhi* and *Asthi*.³

The success of *Agni-Karma* depends on proper patient selection, accurate localisation of the diseased structure, selection of the heating instrument, control of temperature and achievement of appropriate *Samyak Dagdha Lakshana*. Applying heat merely over the general heel region may fail to treat the pathological fascial attachment and may unnecessarily injure the heel pad, skin, nerves or vessels. Therefore, anatomical identification of the ideal treatment site is important for standardising the procedure and improving its safety, reproducibility and clinical effectiveness.⁴

AIM AND OBJECTIVES

Aim

To anatomically identify the ideal site for *Agni-Karma* in patients with chronic plantar fasciitis.

Objectives

1. To review the classical concept of *Vatakantaka* and its management through *Agni-Karma*.
2. To study the anatomy and biomechanics of the plantar fascia.
3. To identify the principal pathological and tender region in chronic plantar fasciitis.
4. To correlate the site of *Vatakantaka* pain with the proximal attachment of the plantar fascia.

MATERIALS AND METHODS

The present work was conducted as a structured narrative review. Classical descriptions of *Vatakantaka*, *Agni-Karma*, *Dahana*, *Dahanopakarana*, *Dagdha Bheda* and *Samyak Dagdha Lakshana* were reviewed from the *Sushruta Samhita*, *Charaka Samhita*, *Ashtanga Hridaya* and relevant commentaries. Modern information concerning the origin, insertion, thickness, biomechanics, innervation and pathology of the plantar fascia was collected from standard anatomy books, clinical guidelines, peer-reviewed articles and musculoskeletal imaging studies. The location of maximum tenderness in chronic plantar fasciitis was correlated with the proximal attachment of the central plantar fascial band. Particular attention was given to the medial calcaneal tubercle, heel fat pad, medial and lateral plantar nerves, calcaneal nerve branches, posterior tibial neurovascular bundle and intrinsic muscles of the sole. On the basis of this correlation, an anatomically guided therapeutic region and safety boundaries for *Agni-Karma* were proposed.

CONCEPTUAL STUDY

Concept of *Vatakantaka*

Vatakantaka is a painful condition affecting the heel region. The term consists of two components: *Vata*, representing the predominant aggravated *Dosha*, and *Kantaka*, meaning thorn. Thus, the disorder is characterised by a thorn-like or pricking pain in the heel. Classical descriptions associate *Vatakantaka* with abnormal placement of the foot, walking over irregular surfaces, excessive strain or faulty pressure over the heel. Such activities produce aggravation of *Vata Dosha* in the structures of the foot. The aggravated *Vata* becomes localised in the heel and causes severe pain during standing or walking.⁵ The clinical similarity between *Vatakantaka* and plantar fasciitis is based on the following features:

Dosha Involvement

The predominant *Dosha* in *Vatakantaka* is *Vata*. Among the subdivisions of *Vata*, disturbance of *Vyana Vata* may affect movement and circulation in the foot, while altered *Apana Vata* may influence the lower extremities. Localised aggravation of *Vata* produces pain, stiffness, restricted movement and functional difficulty. In chronic cases, *Kapha* may become associated with *Vata*, producing stiffness, thickening, heaviness and persistence of symptoms. Local *Pitta* association may be suspected when tenderness, warmth or burning sensation is prominent. However, the primary pathological factor remains aggravated *Vata*.⁶

Dushya Involvement

The probable *Dushyas* involved are:

- *Mamsa*: intrinsic muscles and soft tissues of the sole.
- *Meda*: heel fat pad and surrounding adipose tissue.
- *Asthi*: calcaneus and its attachment region.
- *Majja*: deeper osseous and neural components.
- *Snayu*: plantar fascia, ligaments and related fibrous structures.
- *Sira*: local vascular and neural channels.

Among these, *Snayu* is particularly important because the plantar fascia behaves as a dense fibrous structure transmitting mechanical tension between the heel and forefoot.

Nidana of *Vatakantaka*

Probable causative factors include:

Mechanical Factors

- Walking over uneven or hard surfaces
- Improper placement of the foot
- Prolonged standing
- Excessive walking or running
- Repetitive pressure on the heel
- Use of hard, worn-out or unsuitable footwear
- Sudden increase in physical activity
- Repeated jumping or impact activity

Vata-Prakopaka Factors

- Excessive physical exertion
- Excessive walking
- Fasting or inadequate nutrition
- Consumption of dry, cold and light food
- Exposure to cold
- Irregular daily routine
- Inadequate rest
- Age-related tissue degeneration

Purvarupa

Specific *Purvarupa* may not always be separately described. Probable early manifestations include:

- Mild discomfort beneath the heel
- Transient pain after prolonged standing
- Stiffness after rest
- Occasional pricking sensation
- Tenderness following excessive walking
- Early morning heel discomfort

Rupa

The principal manifestations include:

- *Ruja*: pain
- *Toda*: pricking pain
- *Stambha*: stiffness
- *Spandana*: occasional throbbing
- *Akunchana-Prasarana Vedana*: pain during movement
- Difficulty in standing or walking
- Local tenderness over the heel
- Pain after rest or during initial steps
- Recurrence of pain after prolonged weight-bearing

Samprapti Ghataka

Component	Probable Involvement
<i>Dosha</i>	Predominantly <i>Vata</i> , with possible <i>Kapha</i> association
<i>Dushya</i>	<i>Snayu</i> , <i>Mamsa</i> , <i>Meda</i> , <i>Asthi</i> and <i>Sira</i>
<i>Agni</i>	Variable, with possible <i>Dhatvagni Mandya</i> in chronic degeneration
<i>Ama</i>	May be present in associated inflammatory or metabolic states
<i>Srotas</i>	<i>Mamsavaha</i> , <i>Medovaha</i> , <i>Asthivaha</i> and <i>Majjavaha Srotas</i>
<i>Srotodushhti</i>	<i>Sanga</i> and localised structural disturbance
<i>Udbhava Sthana</i>	Systemic <i>Vata</i> aggravation or local mechanical stress
<i>Adhishthana</i>	<i>Pada Parshni</i> , particularly the plantar heel
<i>Rogamarga</i>	<i>Madhyama Rogamarga</i>
<i>Vyadhi Swabhava</i>	Painful and potentially chronic
<i>Sadhyasadhyata</i>	Generally manageable when treated early; chronic cases may be difficult

Importance of Agni-Karma

Agni-Karma is a therapeutic procedure in which controlled heat is applied to a selected body site using an appropriate heated instrument or substance. It has been described as especially useful in conditions involving severe pain, stiffness and diseases affecting deeper structures.

Its major therapeutic attributes include:

- *Ushna Guna*

- *Tikshna Guna*
- *Sukshma Guna*
- *Ashukari Guna*
- *Vata-Kapha Shamaka Karma*
- *Local Srotoshodhana*
- Relief of *Ruja* and *Stambha*
- As *Vata* is naturally cold and dry, the controlled application of heat may counteract *Sheeta Guna* and reduce pain and stiffness.

Indications of Agni-Karma According to Tissue Involvement

Classical descriptions support the use of *Agni-Karma* in disorders involving:

- *Twak*
- *Mamsa*
- *Sira*
- *Snayu*
- *Sandhi*
- *Asthi*

Selection of Dahanaopakarana

The instrument used for *Agni-Karma* should be selected according to the depth and nature of the involved tissue. Instruments and materials described for thermal application include:

- *Pippali*
- *Aja Shakrit*
- *Godanta*
- *Shara*
- *Shalaka*
- *Jambavaushtha*
- Metallic instruments
- Heated liquids or semi-solid substances in selected conditions

Dahana Vishesha

The shape of cauterisation may vary according to the disease and site. Classical patterns include:

- *Bindu*
- *Valaya*
- *Vilekha*
- *Pratisarana*

Samyak Dagdha Lakshana

Appropriate thermal application is indicated by:

- Controlled and limited burning sensation
- Formation of a properly defined local mark
- Absence of deep charring
- Relief in pain after the procedure
- No excessive blistering or tissue destruction
- Uneventful healing

Ayoga and Atiyoga

Ayoga

Inadequate heating or superficial contact may result in:

- Absence of the desired mark
- Failure to reduce pain
- Early recurrence
- No meaningful local response

Atiyoga

Excessive heat, pressure or duration may cause:

- Severe burning pain
- Large blister formation
- Ulceration
- Infection
- Tissue necrosis

- Delayed healing
- Injury to nerves or vessels
- Painful scar formation

Contraindications and Precautions

Agni-Karma should be avoided or used with great caution in:

- Severe peripheral vascular disease
- Peripheral neuropathy or loss of protective sensation
- Uncontrolled diabetes mellitus
- Active skin infection
- Ulceration or open wound
- Bleeding disorders
- Severe anaemia or debility
- Acute traumatic heel injury
- Suspected calcaneal fracture
- Tumour or unexplained swelling
- Pregnancy, depending on the clinical situation
- Patients unwilling or unable to follow wound-care advice

SAMPRAPTI OF VATAKANTAKA⁷: FLOW CHART

Improper placement of foot, walking on uneven surfaces, excessive standing, running, jumping or repeated heel loading

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Excessive strain over *Pada* and *Parshni*

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Aggravation of *Vata Dosha* due to overuse, pressure and tissue dryness

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Localisation of aggravated *Vata* in *Parshni Pradesha*

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Involvement of *Snayu*, *Mamsa*, *Meda* and *Asthi*

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Local *Srotorodha* and disturbed movement of *Vata*

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Loss of normal elasticity and functional stability of the heel structures

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Production of *Ruja*, *Toda*, *Stambha* and tenderness

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Pain during standing, walking and the first steps after rest

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Chronic *Vatakantaka*

MODERN REVIEW

Plantar Fasciitis

Plantar fasciitis is a painful disorder affecting the plantar fascia, particularly near its proximal attachment to the calcaneus. It is characterised by pain beneath the medial heel, which is generally worse during the first few steps after waking or after prolonged inactivity. In chronic cases, the lesion is considered predominantly degenerative rather than purely inflammatory. The term plantar fasciopathy is therefore increasingly used to describe the condition.⁸

Gross Anatomy of the Plantar Fascia

The plantar fascia, also called the plantar aponeurosis, is a strong fibrous structure situated deep to the skin and superficial fascia of the sole. It extends from the calcaneus to the forefoot and toes.

It is divided into three main components:

1. Medial band
2. Central band
3. Lateral band

The central band is the thickest, strongest and most clinically important part. It arises proximally from the medial process of the calcaneal tuberosity and becomes wider as it passes toward the forefoot.⁹

Proximal Attachment

The proximal attachment of the central plantar fascia is located near the medial calcaneal tubercle. This region is the major site of traction during weight-bearing and is also the most common site of tenderness and structural abnormality in plantar fasciitis. The pathological area is usually not the entire heel. It is concentrated at or just distal to the enthesis, where the fascia attaches to the calcaneus.

Distal Attachment

Distally, the central plantar fascia divides into slips that pass toward the toes. These slips blend with the fibrous digital sheaths, deep transverse metatarsal ligament and tissues near the bases of the proximal phalanges. This arrangement allows the fascia to support the foot arch and assist in stabilising the forefoot during propulsion.

Histological Structure

The plantar fascia is composed primarily of dense collagen fibres arranged in a longitudinal direction. Its structural arrangement permits it to resist tensile loading while maintaining the shape of the longitudinal arch.

Chronic repetitive loading may produce:

- Collagen disorganisation
- Mucoïd degeneration
- Fibroblast proliferation
- Microtearing
- Increased fascial thickness
- Altered vascularity
- Reduced mechanical quality of the tissue

Functional Anatomy

Support of the Medial Longitudinal Arch

The plantar fascia behaves like a tension band extending from the calcaneus to the forefoot. During weight-bearing, it resists separation between the heel and metatarsal heads and helps maintain the medial longitudinal arch.¹⁰

Windlass Mechanism

During dorsiflexion of the toes, especially the great toe, the plantar fascia winds around the metatarsal heads. This increases fascial tension, elevates the arch and converts the foot into a rigid lever for propulsion.

Disturbance of this mechanism may increase strain at the proximal fascial attachment.

Shock Absorption

The fascia contributes to energy storage and release during walking and running. Repetitive loading beyond the tissue's capacity may lead to microdamage and pain.¹¹

Anatomical Relations of the Plantar Heel

Skin

The plantar heel skin is thick and adapted for weight-bearing. It is connected to deeper tissues by fibrous septa that limit excessive movement.

Heel Fat Pad

The heel fat pad lies between the skin and calcaneus. It consists of fat chambers separated by fibrous septa and functions as a shock absorber.

Direct thermal application over the centre of the weight-bearing heel should be avoided because injury to the fat pad may produce prolonged pain, fibrosis or reduced cushioning.

Flexor Digitorum Brevis

The flexor digitorum brevis arises partly from the calcaneus and lies deep to the central plantar fascia. Excessively deep thermal application may affect the underlying muscle or periosteal region.

Abductor Hallucis

The abductor hallucis lies along the medial side of the foot. Its fascial margins are related to neural tunnels through which branches of the tibial nerve pass.

Quadratus Plantae

This muscle lies in the second layer of the sole. Its medial head arises from the medial surface of the calcaneus and is deeper than the proximal plantar fascia.¹²

Nerve Supply of the Heel

The heel receives sensory supply from several neural branches, including:

- Medial calcaneal branches of the tibial nerve
- Lateral plantar nerve branches
- Inferior calcaneal nerve, often referred to as the first branch of the lateral plantar nerve or Baxter's nerve
- Variable contributions from the sural nerve in the lateral heel region

The inferior calcaneal nerve passes near the medial plantar aspect of the calcaneus and may itself become compressed. Deep or incorrectly placed thermal application may irritate this nerve and worsen neuropathic pain.

Vascular Relations

The posterior tibial artery divides into medial and lateral plantar arteries near the tarsal tunnel. These vessels and their accompanying nerves lie on the medial side of the ankle and foot. The principal posterior tibial neurovascular bundle lies proximal and posterior to the usual plantar fascial treatment region. However, excessive medial extension of the procedure should be avoided.¹³

Common Site of Pathology

The typical lesion is located at the proximal attachment of the central plantar fascial band, close to the medial calcaneal tubercle. Ultrasound may demonstrate:

- Fascial thickening
- Reduced echogenicity

- Loss of normal fibrillar appearance
- Perifascial fluid
- Increased vascularity in some cases
- Local calcification or enthesophyte formation

Clinical Presentation

Common features include:

- Plantar medial heel pain
- Maximum pain during the first steps in the morning
- Pain after prolonged sitting or rest
- Temporary reduction after walking for a short period
- Recurrence after prolonged standing or walking
- Local tenderness near the medial calcaneal tubercle
- Pain on passive dorsiflexion of the toes
- Tightness of the calf or limited ankle dorsiflexion
- Difficulty in walking barefoot on hard surfaces

Risk Factors

Potential contributing factors include:

- Prolonged standing
- Repetitive walking or running
- Sudden increase in training
- Obesity or increased body mass
- Limited ankle dorsiflexion
- Tight gastrocnemius-soleus complex
- Abnormal foot posture
- Unsuitable footwear
- Hard occupational surfaces
- Reduced intrinsic foot muscle strength
- Age-related degeneration
- Poor recovery between repeated loading activities

Clinical Diagnosis

Diagnosis is mainly clinical. Important examination findings include:

- Localised tenderness at the medial plantar heel
- Pain near the proximal plantar fascia
- Pain reproduced by stretching the fascia
- Positive windlass-type provocation
- Reduced calf flexibility
- Pain after rest and during initial steps
- Absence of findings suggestive of neurological or osseous disease

Differential Diagnosis

Before performing *Agni-Karma*, the following conditions should be excluded:

- Calcaneal stress fracture
- Heel fat-pad syndrome
- Baxter's nerve entrapment
- Tarsal tunnel syndrome
- S1 radiculopathy
- Achilles tendinopathy
- Retrocalcaneal bursitis
- Calcaneal apophysitis in adolescents
- Inflammatory arthritis
- Gout
- Infection
- Soft-tissue tumour
- Referred pain from the lumbar spine

Imaging

Imaging is generally not required in uncomplicated cases but may be helpful in chronic, recurrent or atypical presentations.

Ultrasonography

Ultrasound can identify fascial thickening, hypoechogenicity, loss of fibrillar pattern and surrounding fluid. It can also assist in marking the exact pathological region before treatment.

Radiography

A radiograph may identify a calcaneal spur, fracture, bony lesion or other abnormality. A heel spur may coexist with plantar fasciitis but does not necessarily represent the direct source of pain.

Magnetic Resonance Imaging

MRI may be used when the diagnosis remains uncertain or when fascial rupture, stress fracture, tumour, infection or deep soft-tissue pathology is suspected.

PATHOGENESIS OF CHRONIC PLANTAR FASCIITIS: FLOW CHART

Prolonged standing, running, obesity, poor footwear, limited ankle dorsiflexion or abnormal foot mechanics

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Repeated tensile loading of the plantar fascia

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Concentration of stress at the proximal attachment near the medial calcaneal tubercle

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Recurrent microscopic tearing and failure of normal tissue recovery

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Collagen disorganisation and fibroblastic response

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Fascial thickening and degenerative alteration

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Reduced elasticity and impaired load distribution

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Local nociceptor sensitisation and perifascial irritation

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Pain during the first steps after rest and prolonged weight-bearing

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Chronic plantar fasciopathy

ANATOMICAL IDENTIFICATION OF THE IDEAL AGNI-KARMA SITE

The principal landmark is the medial calcaneal tubercle, located on the plantar-medial aspect of the calcaneus. The central plantar fascial band arises from this region. The target should not be selected merely by identifying the bony tubercle. The final site must be confirmed by finding the point of maximum tenderness along the proximal plantar fascia.¹⁴

Proposed Ideal Therapeutic Region

The ideal region is:

- Over the proximal central plantar fascial band
- Immediately distal and slightly anterior to its calcaneal attachment
- Close to the medial calcaneal tubercle
- Centred over the point of maximum palpatory tenderness
- Positioned away from the central weight-bearing heel pad
- Kept lateral to the highly medial neurovascular region
- Limited to the symptomatic fascial attachment rather than the entire sole
- Clinically, this region is commonly located approximately 0.5 to 1.5 cm distal to the palpable medial calcaneal tubercle. This distance is only an approximate surface guide and should not replace individual palpation or imaging.

Stepwise Clinical Localisation

Step 1: Patient Position

The patient may lie prone with the foot extending beyond the examination table, or supine with the hip and knee positioned to allow easy access to the sole.

Step 2: Relaxation of the Foot

Initially, the ankle and toes should remain relaxed to permit palpation of the calcaneal contours.

Step 3: Identification of the Calcaneus

The examiner palpates the posterior, medial and plantar borders of the calcaneus.

Step 4: Identification of the Medial Calcaneal Tubercle

The thumb is moved toward the plantar-medial surface of the calcaneus to identify the medial process of the calcaneal tuberosity.

Step 5: Palpation of the Proximal Fascia

The examiner palpates from the medial calcaneal tubercle in a distal direction along the proximal central band of the plantar fascia.

Step 6: Toe Dorsiflexion

Passive dorsiflexion of the great toe tightens the plantar fascia and makes the central band more prominent.

Step 7: Tenderness Mapping

The point producing the patient's familiar heel pain is marked. Tenderness should be mapped rather than assuming that the same fixed point is affected in every patient.

Step 8: Exclusion of Other Pain Sources

The examiner should distinguish fascial pain from:

- Central heel-pad pain
- Calcaneal compression pain
- Burning or tingling due to nerve involvement
- Posterior heel pain
- Diffuse inflammatory pain
- Pain associated with a skin lesion

Step 9: Ultrasound Confirmation

In recurrent, chronic, obese, anatomically unclear or previously treated cases, ultrasound may be used to confirm the proximal fascial attachment and mark the region of maximum thickening.

Step 10: Site Marking

The final selected region is marked over the tender proximal fascia. Small *Bindu*-type applications may then be planned over the affected area according to the adopted protocol.

Suggested Safe Zone

The probable safe therapeutic zone may be defined as a small area:

- Centred on the maximum tender point of the proximal central plantar fascia
- Slightly distal to the medial calcaneal tubercle
- Not extending into the central heel pad
- Not extending excessively toward the medial border of the foot
- Not extending far laterally toward possible neural structures
- Not extending proximally onto the non-fascial posterior heel
- This safe zone must remain patient-specific because the position of tenderness, thickness of soft tissue and course of small neural branches may vary.

Structures to Be Avoided

The following structures should be protected:

1. Central weight-bearing heel fat pad
2. Calcaneal periosteum and bone
3. Medial calcaneal nerve branches
4. Inferior calcaneal nerve or Baxter's nerve
5. Medial and lateral plantar neurovascular structures
6. Posterior tibial neurovascular bundle
7. Open fissures, ulcers or infected skin
8. Areas with reduced sensation
9. Prominent superficial veins or vascular lesions
10. Previously scarred or poorly healed tissue

Depth Consideration

The plantar fascia lies beneath thick plantar skin and the superficial fat layer. However, *Agni-Karma* should not be interpreted as a procedure requiring direct thermal penetration into the fascia. Controlled superficial thermal stimulation is preferred. Excessive pressure or prolonged contact may transmit heat into the fat pad, underlying muscle, periosteum or neural structures.

Suggested Application Pattern

For a small, localised tender point:

- A limited *Bindu* pattern may be used.

For an elongated tender fascial region:

- Multiple small *Bindu* applications may be placed along the painful proximal fascial fibres.

For diffuse plantar heel pain:

- The diagnosis should be reconsidered before increasing the treatment area.
- The pattern should be determined by the anatomical distribution of pain rather than by routine application over the whole heel.

PROBABLE MECHANISMS OF ACTION OF *AGNI-KARMA*

Counter-Irritation

Controlled thermal stimulation activates cutaneous thermal receptors and may temporarily reduce the transmission or perception of deeper pain.

Pain-Gate Modulation

Strong thermal sensory input may influence the processing of nociceptive signals at spinal and supraspinal levels, thereby reducing the sensation of pain.

Local Vascular Response

Heat produces local vasodilatation, which may improve superficial circulation and assist tissue metabolism in the surrounding region.

Reduction of Stiffness

Thermal stimulation may reduce local fascial and muscular stiffness and make stretching more comfortable.

Neuromodulation

Controlled heat may alter the excitability of peripheral nerve endings and reduce local pain sensitivity.

Vata-Kapha Shamana

From the *Ayurvedic* perspective, the *Ushna* and *Tikshna* properties of *Agni* counteract *Sheeta*, *Ruksha*, *Stambha* and *Gaurava*. It may therefore reduce pain and stiffness caused by aggravated *Vata* and associated *Kapha*.

Interruption of the Pain-Spasm Cycle

Persistent pain may produce protective contraction of the intrinsic foot and calf muscles. Reduction in pain may interrupt this cycle and improve movement.

RESULT AND FINDINGS

- Chronic plantar fasciitis most commonly affects the proximal attachment of the central plantar fascial band.
- The principal anatomical landmark is the medial process of the calcaneal tuberosity.
- The point of maximum clinical tenderness is usually located at or immediately distal to the plantar fascia's calcaneal attachment.
- The ideal *Agni-Karma* site is not the centre of the heel and should not be selected solely on the basis of general heel pain.
- The proposed therapeutic site lies slightly distal and anterior to the medial calcaneal tubercle over the proximal central plantar fascia.
- An approximate surface guide of 0.5 to 1.5 cm distal to the tubercle may assist localisation, but palpation-based confirmation is essential.
- Passive dorsiflexion of the great toe tightens the plantar fascia and helps identify the affected central band.
- The involvement of the plantar fascia can be conceptually correlated with *Snayu Dushti* near its attachment to *Asthi*.
- Controlled thermal application may relieve pain through counter-irritation, neuromodulation, local vascular responses and reduction of tissue stiffness.
- Anatomical standardisation may improve the safety, reproducibility and clinical effectiveness of *Agni-Karma* in chronic plantar fasciitis.

DISCUSSION

Chronic plantar fasciitis is primarily an enthesopathic and degenerative condition affecting the proximal central band of the plantar fascia. The maximum pathological stress occurs near its attachment to the medial calcaneal tubercle. This explains why patients usually report focal plantar-medial heel tenderness rather than uniform pain across the sole. Therefore, performing *Agni-Karma* over the entire heel is neither anatomically necessary nor clinically justified.¹⁵ The treatment should be directed toward the tender proximal fascial attachment, which can be identified through palpation, passive toe dorsiflexion and, where necessary, ultrasonography. A point located slightly distal to the calcaneal attachment is preferable to direct treatment over the most prominent weight-bearing surface because it targets the affected fascial fibres while reducing the risk of injury to the heel pad and periosteum.¹⁶

The clinical presentation of plantar fasciitis closely resembles *Vatakantaka*, in which aggravated *Vata* becomes localised in *Parshni Pradesha* after repeated strain or improper foot placement. The plantar fascia may be functionally correlated with *Snayu* because it is a dense fibrous structure that connects, supports and transmits mechanical force. Its calcaneal attachment also indicates the combined involvement of *Snayu* and *Asthi*. The *Ushna*, *Tikshna* and *Vata-Kapha Shamana* actions of *Agni-Karma* provide a rational basis for its use in pain, stiffness and chronic tissue dysfunction. However, the therapeutic effect should not be attributed merely to burning the painful area. Accurate selection of the affected anatomical structure, controlled thermal dosage and proper post-procedure care are essential components of the intervention.¹⁷

The proposed ideal site is an anatomically defined region rather than a universally fixed point. Individual differences in foot shape, fascial attachment, thickness of the heel pad and distribution of neural branches make clinical localisation necessary in every patient. The examiner must also exclude calcaneal stress fracture, fat-pad

syndrome, nerve entrapment, inflammatory arthritis and other causes of heel pain. Ultrasound-guided marking may be particularly useful in recurrent or diagnostically uncertain cases. Future cadaveric and clinical studies should measure the distance of the plantar fascia from surface landmarks, determine skin-to-fascia depth, map nearby neural structures and compare palpation-guided with ultrasound-guided *Agni-Karma*. Such investigations could establish a more reliable procedural safe zone and standardise the number, spacing, temperature and duration of thermal applications.¹⁸

CONCLUSION

The ideal anatomical site for *Agni-Karma* in chronic plantar fasciitis is the point of maximum tenderness over the proximal central plantar fascia, located at or immediately distal to its attachment near the medial calcaneal tubercle. The therapeutic application should preferably be placed slightly distal and anterior to the bony attachment rather than over the centre of the weight-bearing heel. Accurate identification requires palpation of the medial calcaneal tubercle, tensioning of the fascia through great-toe dorsiflexion and reproduction of the patient's characteristic pain. Broad, deep or excessively medial application should be avoided to protect the heel fat pad, periosteum, nerve branches and vascular structures. Thus, anatomically guided and patient-specific site selection can improve the safety, precision and probable effectiveness of *Agni-Karma* in the management of chronic plantar fasciitis.

CONFLICT OF INTEREST - Nil.

SOURCE OF SUPPORT- None.

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