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An OPD base *Agni Karma* (An *Ayurvedic* therapeutic burn) intervention in Plantar Corn: A case study

Case study

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Abstract

A Corn is a specially-shaped callus of dead skin that occurs on the thin or glabrous surface of the toe. It presses upon the adjacent tissues and causes severe pain when pressed due to pressure on the nerves. Plantar corns are recalcitrant to the medical line of treatment and being very painful need surgical intervention. Surgery is rarely indicated since the rate of recurrences is as high as with conservative therapy The management of *Kadara* is aimed at the removal of the hyperkeratosis lesion by *Snigdha Agni Karma* along with *Shastra Karma.* Here, we demonstrated an OPD base simple and effective ancient technique in corns as described in *Samhita* which found to be very beneficial.

Keywords: *Agni karma,* footcare, *kadara* , plantar corn, *shastra karma.*

Introduction

Callosity is a French word meaning a local thickened or hardened part of the skin. A corn or clavus is an area of well circumscribed hyperkeratosis of the skin with a dry, smooth and slightly convex surface caused by intermittent direct pressure exerted on a small area(1,2). Its size varies from 1 mm to 2 cm and it is conical in shape. It is composed of a cone shaped wedge of compressed hyperkeratotic stratum corneum with the base of the cone towards the surface of the skin and the apex pointing inwards. It presses upon the adjacent tissues and causes severe pain when pressed due to pressure on the nerves(3,4). Corns are mainly classified as soft corns occurring between the toes and hard corns occurring on the exposed plantar surface or dorsolateral surface of the small toe. Plantar corns are recalcitrant to the medical line of treatment and being very painful need surgical intervention. However, before undertaking surgery, the underlying orthopaedic problems, if any, should be corrected lest they recur (2,3,5). *Kadara*, as described by the *Samhitas*, can be closely related to lesions of the skin caused by hyperkeratosis. The management of *Kadara* is aimed at removal of the hyperkeratosis lesion by *Snigdha Agni Karma* along with *Shastra Karma.* Here We demonstrated a OPD base simple and effective ancient technique of *snigdha agni karma* along with *shastra karma* (excision) in corns as described in *Samhita* which found to be very beneficial.

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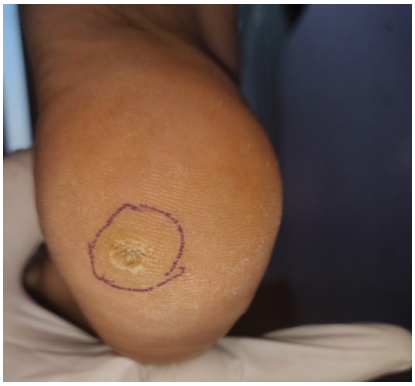
Case Presentation

A 22 year male patient came to our outpatient clinic for a complaint of painfull corn at right sole and elevated cystic swelling present on dorsal aspect of right sole near heal due to rough and hard foot wear. There was no history of direct trauma except that the patient was used to play cricket daily . There was a history of excision of elevated layers of corn done repeatedly by the patient himself, before visiting us. On the basis of clinical examinations the patient was diagnosed as a case of corn at the right sole. On examination, we observed approx 2 x 2 cm large hyperkeratotic hard calus on the heel of his right sole. After careful assessment and examination, patient was selected for *Agnikarma* by *Panchadhatu shalaka*. (Fig no. 1)

Figure 1: Corn of 2-4 Cm At Right Sole



Materials and Methods

Materials: The materials used are *Panchadhatu shalaka*, *Panchaguna taila*, *Kumari sva-rasa*, *Haridra churna,* Gas Stove, *Triphala* decoction, surgical blade no.15, Gauze pieces, Sponge holding forceps, Artery forceps. (Fig no 2)

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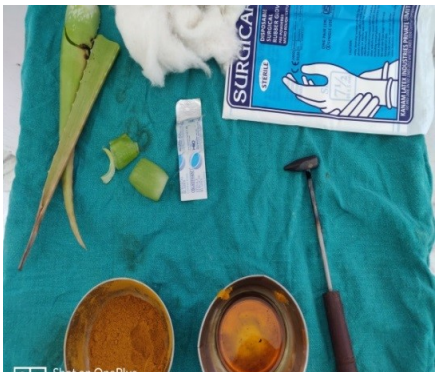
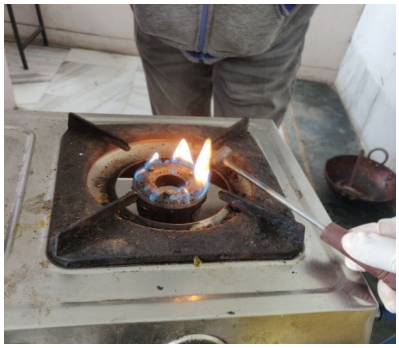
Figure 2 : Material Required For Agni Karma (Therapeutic Cautery)



Procedure

Purva karma (Pre-operative): Patient was advised to take *Snigdha* and *Pichchhila* diet on the day of *Agni karma*. Informed consent of the patient was taken. The local part of the patient was painted with *Triphala Kwatha*. *Shalaka* was heated up to red hot (approximately for 5–10 minutes) (fig no. 3)

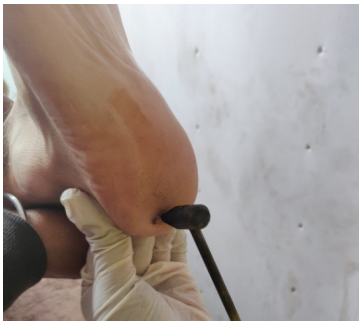
Figure 3 : Heating *Panchadhatu shalaka* till red hot



Pradhan karma (operative procedure)

After wash with triphla decoction, part was massage with *Pancha Guna taila* Red Hot *Pancha dahtu shalaka* was applied over the corn. The hyperkeratotic tissue surrounding and over the corn area is debrided with no. 15 sterile surgical blade in between. The central core or kernel of the corn is visible more clearly after the above procedure. The *shlaka* was reheated and reapplied to the lesion. The *Dahana* (cauterization) procedure was stopped when the *Samyaka Dagdha Lakshanas* were observed. This leads to the complete extraction of the corn bed. (Fig no. 4)

Figure 4 : Application of hot *shalaka* over corn



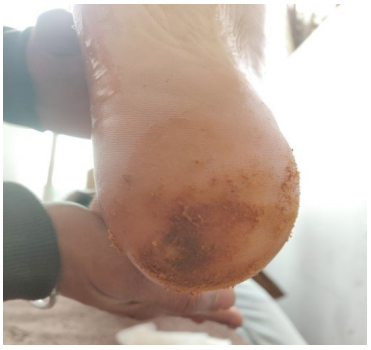
Precaution:

The patient is explained that at the point when he feels pain sensation or an increase in the pain sensation, he should immediately inform. The procedure will be stopped immediately, if it is pushed deep into the tissue it may lead to severe pain, deep tissue injury and deep wound which may heal with a delay.

Pashchat karma (Post operative)

Aloe Vera pulp is applied over after every touch of Agni karma to avoid burning sensation. Haridra Churna (powder of Curcuma longa L. rhizome) was used for dusting after Agnikarma as vrana shodhana and Ropana (wound healing property) . (Fig no 5)

Figure 5 : Application of *Haridra Choorna* after *Agni karma*



After complete Agni Karma, Triphla Ghrita is applied after that pressure bandage is applied over the wound and the patient is instructed to use soft foot wear. There was no recurrence of the lesion in any of the patients and no patient was having pain at the site of the enucleated corn during walking or resting position.

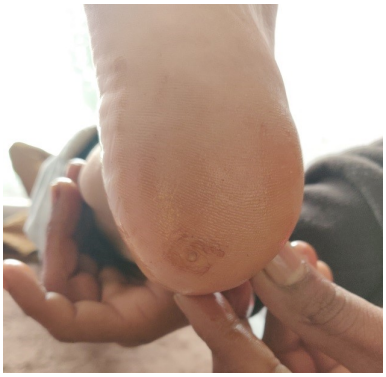
Frequency of *Agni karma:*

A total of 1 sittings of *Agni karma* was done .

Observation & Results :

After 7 days patient reported with very minimal pain & reduction in lesion dimensions. **(Fig no 6)**

Figure 6 : Healed corn after 7 days of *Agni karma*



Advantage of procedure

This is a simple and safe OPD procedure. The incidence of recurrence is reduced as the whole corn with the central core is cauterized and excised in to. Multiple corns can be removed in a single session.

There is immediate pain relief, no requirement of rest and the patient can return to the workplace immediately. This is a minimally invasive and less messy technique with minimal blood loss. No local anaesthesia is required, so the pain associated with the injection of local anaesthesia on the plantar or palmar site is eliminated. There is minimal requirement of surgical instruments and no surgical expertise is required. Above all this is a very economical method for corns.

Disadvantages

This method cannot be used for the removal of very large corns. We conclude that this technique immediately relieves the pain of the patient and removes the corn in to preventing recurrences. This technique is used for small plantar and palmar corns.

Discussion

Corns and calluses arise from hyperkeratosis, a normal physiological response to chronic excessive pressure or friction on the skin. Inappropriate shoes, abnormal foot mechanics, and high levels of activity produce pressure and friction that lead to corns and calluses.

Factors that may lead to development of callosities :
Extrinsic factors :

- Poor footwear Tight shoe Irregularities in shoe Open shoes
- Activity level Athletes

Intrinsic factors

- Bony prominences Prominent condylar projection Malunion of a fracture
- Faulty foot mechanics Cavovarus foot Toe deformity (claw, hammer, mallet) Short first metatarsal Hallux rigidus Transfer lesion from osteotomy or removal of adjacent metatarsal head

Most lesions can be managed conservatively by proper footwear, orthoses, and, if necessary, regular paring. The lesions usually disappear when the causative mechanical forces are removed. Surgery is rarely indicated since the rate of recurrences is as high as with conservative therapy, and the resulting scars may lead to the same complaints and it should be specifically aimed at correcting the abnormal mechanical stresses. Treatment should therefore not only provide symptomatic relief (such as by regular paring or using keratolytic agents) but should also alleviate the underlying mechanical cause.

Ayurvedic mechanism

Shalyatantra is one of the eminent branches of *Ayurveda*, which consists of major therapies like *Bheshaja karma*, *Kshara Karma*, *Agnikarma*, *Shastrakarma* and *Raktamokshana*.

Kadara has been enumerated and described in the classical literature under the heading of *Kshudra Roga (6,7,8).* According to *Madhava* , it is said that repeated injuries & friction to the sole with thorns, stones etc leads to this condition(9). *Acharya Sushruta* is described its clinical features as *Keelavat* (lesion have a central core) *kathin* (hard), *granthi* (knotted), *Madhyo Nimna* (depressed in the central) or *Unnat* (elevated in the central) *Kolamatra* (seed of plum) in size, painful and sometimes with *Srava* (dis-charge)(10). *Agni Karma* and *Shastra karma* (surgical excision) has been mentioned for the proper management of *Kadara (11,12,13)*. *Kadara* has been considered as a *Vatadosha Pradhana Vyadhi. Vata* & *Kapha* are mainly responsible *Dosha* and *Dushya Meda* and *Rakta* in the patho-genesis of *Kadar.*

Agni karma is superior among all Para surgical procedures and has proved to be a boon where local involvement of *Vata* and *Kapha* doshas are observed in the disease(14). *Panchadhatu shalaka* (rod) is used in this case which contains:*Tamra* (copper) → 40%, *Loha* (iron) → 30%, *Yashada* (zinc) → 10%, *Rajata* (silver) → 10%, *Vanga* (tin) → 10%. *Acharya Charaka* described that *Agni* is the best treatment for *Shoola* (pain)(15).

Ushna Guna of *Agni* helps to removes the *Avarana* effectively and stabilizes the movement of *Vata*, which provide relief from *Shoola*. The use of local heat (thermotherapy) may provide relief of pain and painful muscle spasm by acceleration of metabolic processes whereby the concentration of pain inducing toxic metabolites is reduced. This is accomplished primarily by an increase in local circulation. Acceleration of the inflammatory response to resolution may initially exacerbate discomfort, but will shorten the time course to resolution of inflammation.

***Agni karma* and Callus**

Callused skin has been shown to be markedly different from normal plantar skin in the study.(16) Callus was found to be 2-3 times thicker ($p < 0.001$) than normal plantar stratum corneum. The callus corneocytes had a similar surface area to normal plantar corneocytes. However, their volume was increased and their density was decreased. The greater number of cell layers present in callused stratum corneum indicates increased proliferation and the decreased density of the cells and indicates that the cells are not as well differentiated as normal plantar corneocytes in this layer (16). It could be suggested that the increased rate of cell production in callus is a factor in the poorer cell differentiation as they are not given sufficient time to fully mature. It is possible that it *Agni karma* may have burns the plantar corneocytes which further does not go for proliferation and reduce the reoccurrence.

Pada Abhayanga (foot massage) to Prevent Reoccurrence:

It is recommended to have daily *Pada Abhyanga* (foot massage). Massage with *Ayurvedic vata hara* oils over feet to soften skin and prevent the recurrence of corns. One can use *jeevantyadi yamakam* herbal oil every day. The skin barrier is provided by lipids which help to prevent water loss from the skin and protect it from external chemical insults(17) thus the skin's barrier function is dependent on its lipid profile. The lipids are expressed during maturation of corneocytes and have several roles. They are situated in the

intercellular spaces and regulate the permeation of water to prevent desiccation through their multi-lamellar organisation (which contributes to the skin's water holding and barrier function); as well as assisting in corneocyte cohesion in the stratum corneum(18, 19) Decreased barrier function (and resulting decreased hydration) can also directly result from mechanical insults to the skin.(20) If there is a link between callus and external loading, the delivery of the loads to the callused site may directly affect the skin barrier prior to causing alterations in chemical triggers.

Conclusion

Agni Karma was observed to be effective in reducing pain and improve walking function on very first sitting. This is a minimally invasive and less messy technique with minimal blood loss. It is possible that, Agni karma burn the plantar corneocytes which further does not go for proliferation and reduce the reoccurrence. Proper foot care and comfortable footwear further prevent it. Daily foot massage (Pada abhyanga) has definite role in prevention.

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