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# Ayurvedic Surgical Management of Plantar Keratoderma

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## ABSTRACT

Plantar Keratoderma, a common clinical entity in podiatric department is considered to be a pre-cancerous condition. The condition is best managed by employing guidelines directed in Ayurvedic treatises. Sushruta opines to debride the unhealthy tissue and improve the local conditions by employing *Rakta shodhana* and *Doshaghna* modalities. Surgical debridement supplemented with topical application of *Kshara* advances the healing rate and also improves the local pathology. Surgical and chemical debridement by using *Tankana kshara* was done. Internally *Rakta shodhaka* and *Vatakaphaghna dravyas* were administered. *Manjishtadi Ghana vati* 1 tab TID, *Gandhaka Rasayana* 2 tab TID and *Triphala Guggulu* 2 TID after food were the medicines administered. Abnormal thickened skin was removed and pathological events at the site were corrected with the help of *Tankana kshara* by its action of autolytic, chemical debridement, wound cleansing and healing properties. Complete normal epithelialisation was achieved. The Plantar Keratoderma is a condition equivalent to *Vatakaphaja* variety of *Kushta* and is managed with surgical excision of the unhealthy tissue, and topical application of *Tankana kshara*.

## KEYWORDS

Debridement, *Kshara*, Plantar Keratoderma

## PICTORIAL ABSTRACT



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## 1. Introduction

Palmoplantar Keratoderma is a condition of abnormal thickening of the skin of the palms and soles<sup>[1-3]</sup>. Hereditary<sup>[4]</sup> and acquired are the two varieties of this condition, among which, hereditary form is caused by excess of mutations of many genes<sup>[5-7]</sup>. The causes of acquired variety being infective either bacterial or fungal and secondary to certain skin ailments like psoriasis<sup>[8,9]</sup>, dermatitis<sup>[10,11]</sup>, lupus erythematosus<sup>[12]</sup>, lichen planus<sup>[13]</sup> etc.<sup>[14]</sup>. Arsenic poisoning is also reported to be a potent cause for this condition<sup>[15-17]</sup>. Diffuse hyperkeratosis in palm and soles are prominent clinical feature of this condition<sup>[18]</sup>.

In Ayurvedic viewpoint all the skin ailments are grouped under the umbrella of *Kushta roga*. Palmoplantar Keratoderma can be considered under *Vata kaphaja* variety of *Kushta*<sup>[19,20]</sup> with features matching the textual descriptions like thick skin lesion, pain, contraction and breaking of skin, itching sensation. The skin lesions will be blackish to brown in colour<sup>[21-23]</sup>. Though in contemporary

sciences arsenic poisoning is said to be potent cause of Plantar Keratoderma, Ayurveda proposes the correction of this ailment by using arsenic compounds which were prepared as per the textual guidelines<sup>[24-25]</sup>.

## 2. Case presentation

A 55 year old female visited the OPD with complaints of chronic skin lesions of the foot with pain, itching sensation and difficulty to walk since 12 years. Patient had reported to had consulted many clinicians especially dermatologists with no significant results. Patient was able to manage the regular daily activities except sleep which was disturbed during night due to pain. She was taking some skin medications and corticosteroids irregularly for 7 years both topically and orally details of which has lost by her. Past history of any other surgical or medial ailments apart from the presenting complaints were not reported by the patient. Patient had her menopause 12 years back and no untoward events are reported from her obstetric history. On examination, she was moderately built with poor

nourishment. All the vital parameters were within the normal limits. Local examination revealed hallux varus deformity in right foot with chronic pedal oedema and thick callus formation over both soles proximal to great toes (Figure 1.1-1.3). The varus deformed fifth toe of right foot was clearly visible. There were visible deformed angulations of first metatarsal bones and chronic indurations over dorsal surface of both feet. Bone discontinuity was felt during palpation of both tarsal and phalange bones which was confirmed by radiological investigation. In the left foot fracture with displacement of distal interphalangeal joint of great toe and fracture with

displacement of 5<sup>th</sup> metatarsal bone was seen (Figure 1.4). In the right foot displaced fracture of first metatarsal bone was noted. No external wound on dorsum of the foot. On the sole hyperkeratosis with callus formation was verified by inspection and palpation of the part. The lady ignored the condition at the early phase and went on with her daily activities which resulted in pathological fractures of metatarsals and phalanges. The orthopaedician opined absolute dermatological care prior to planning for surgical correction of the fractured bones. All the biochemical and haematological reports were within normal limits.

### 3. Results and discussion

Plantar Keratoderma is condition said to be inherited<sup>[26,27]</sup> and certain acquired causes also precipitate like arsenic poisoning, infection, drug interaction etc<sup>[28,29]</sup>. The condition was diagnosed as per Ayurvedic lines of doshic assessment of the condition to be of *Vata* and *Kaphadosha* predominance. The plan of treatment was aimed at surgical debridement, correcting these two *doshas*, *rakta shodhana* (blood purifying drugs) and to rectify the local pathological changes (Figure 1.5, 1.6). A combination of *lekhana* (surgical debridement) and *chedana* (excision) of the unhealthy part is advised by Sushruta. A lesion of this kind with thick edges and hard tissues should be scrapped evenly<sup>[30]</sup>. Surgical debridement is the line of treatment advocated in dermatological texts of contemporary sciences<sup>[31]</sup>. Many research works have indicated that *Manjishtadi Ghana vati* is a potent blood purifier and *Gandhaka rasayana*, *Triphala guggulu* facilitate early healing. Patient was prescribed with *Manjishtadi ghana vati*<sup>[32]</sup> 1 tablet (500 mg) thrice a day, *Gandhaka Rasayana*<sup>[33]</sup> 2 tablets (each tablet 250 mg) thrice a day and *Triphala Guggulu*<sup>[34]</sup> 2 tablets (each 500 mg) thrice a day after food. After complete debridement of the hyper keratosed and callus tissue the wound was cleaned with *Panchavalka kashaya*<sup>[35]</sup> and topical application with *Jatyadi taila* mixed with *Tankana kshara* was done. *Tankana kshara*<sup>[36-38]</sup> was preferred for debriding, cleansing and healing actions. The debridement was performed twice (first at the onset of treatment and second after a gap of 7 days) again to remove the scab formed [Figure 1.7, 1.8]. The daily cleansing and topical application was continued for 21 days. Topical application of *Kshara* has yielded significant results in relation to wound cleansing and healing (Figure 1.9, 1.10). The planned medications appreciably reduced the pathological changes. The patient was advised to continue medications even after discharge and was followed up for one month. The complete healing was observed after 30 days of the treatment, thereafter, the patient was referred to orthopaedician for correction of the fracture.

Figure 1. Plantar Keratoderma surgical management



1.1 Plantar view of the foot with lesions on the first day of visit



1.2 Dorsal view of the foot

1.3 Dorsal view of the foot



1.4 Radiological view of feet showing multiple fractures with displacement of metatarsals and phalanges



1.5 Right foot after Chedana and Lekhana of lesion

1.6 Left foot after Chedana and Lekhana of lesion



1.7 After debriding the lesion during the follow up

1.8 During the follow up

1.9 During the healing phase

1.10 During the day of discharge

#### 4. Conclusion

The feature in the Plantar Keratoderma condition is similar to *Vatakaphaja* variety of *Kushta* wherein *bahalata* of skin (thickness of skin), *vedana* (pain), *kandu* (itching sensation), *charma avadarana* (cracking of skin) are present. This condition is a chronic skin ailment slowly progressive in nature and affects the quality of life of an individual. The early diagnosis and proper Ayurvedic surgical management will ensure the correction of the pathology. Surgical excision of thickened skin resulted in a wound and is treated by topical application of wound healing agent mixed with kshara to aid the wound healing and recurrence of the lesion. Thus from this case study it can be concluded that, a proper diagnosis of condition in lines with Ayurvedic fundamentals and employment of Ayurvedic modalities will surely yield best results.

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