

## Diabetic dermopathy: A vascular complication equivalent

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### Abstract

Diabetic dermopathy (DD) is a common complication of long-standing diabetes, and is often seen in association with chronic micro- and macro-vascular dysfunction. Hence, it can be considered an equivalent of vascular complications of diabetes. Our article focuses on a proactive approach to its management, involving both dermo-cosmetic and metabolic targeted therapies. A combination of occlusive and humectant moisturisers, with anti-inflammatory and pro-regenerative topical treatments, can help manage and minimize DD, while preventing its complications. We term such topical preparations as 'healing moisturisers' or 'regenerative moisturisers'.

**Keywords:** Dermatology, diabetes mellitus, epidermal barrier, healing moisturisers, regenerative moisturisers, vasculopathy.

**DOI:** <https://doi.org/10.47391/JPMA.22-72>

### Introduction

Diabetic dermopathy (DD) is the most common cutaneous manifestation of long-standing diabetes which is characterized as circumscribed, small, brownish atrophic skin lesions affecting lower extremities. Also known as shin spots, pigmented pretibial patches, DD is more frequent in men, and in those aged older than 50 years.<sup>1</sup> Diabetic dermopathy is reported to occur in between 0.2-5.5% of patients living with diabetes. Studies from South Asia have reported lower incidence of DD. The reason may be the darker skin complexion of our population.

### Clinical Features

Diabetic dermopathy (DD) lesions are asymptomatic so patients seldom complain of it in early stages. Lesions present as non-pruritic, non-painful, non-tender discolourations, and evolve over a few weeks into atrophic brown macules of ~ 1-2.5cm size (Figure). They fade away in 18-24 months, but may lead to permanent hyperpigmentation of involved skin. DD is usually bilateral, and occurs over the skin. Other bony surfaces such as forearms, lateral malleoli and thighs may be involved. DD is

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**Figure:** Diabetic dermopathy in a 56-year-old male with long standing diabetes, who had Non proliferative diabetic retinopathy (NPDR) and diffuse sensory neuropathy in foot with LOPS (loss of protective sensation).

more common in persons with microvascular complications, such as neuropathy, nephropathy and retinopathy as well as in persons with coronary artery disease. As a corollary, the presence of diabetic dermopathy may be an indicator of other more complex pathology,<sup>2</sup> and its occurrence should be viewed as an equivalent of both micro and macro vascular complications of diabetes.

### Histology and Pathogenesis

Diabetic dermopathy is diagnosed by clinical examination and biopsy is not indicated or avoided in most of the cases due to concerns about poor healing on the biopsy site. However, a histopathological examination may reveal features like atrophy or flattening with obliteration of the rete ridges, hyperkeratosis and variable pigmentation in the basal cells. Dermal changes may include fibroblastic proliferation, altered density of the collagen, and thickening of the collagen bundles and fragmentation or separation of the collagen fibres and dermal oedema. Other changes include hyalinization of dermal arterioles, endothelial proliferation, and narrowing or partial occlusion of the vessel lumen.

The etiopathogenesis of DD is uncertain. A disturbed response to trauma, deposition of melanin or haemosiderin, microangiopathy, and neuronal damage have been proposed to explain the development of DD. The pathogenesis, and associations suggests that DD should be considered a microvascular disease, along with retinopathy, neuropathy and nephropathy. It must be noted that pruritus is viewed as a neuropathic syndrome by some experts so ramifications of microvascular complications of diabetes in context with integumentary system still need further studies.

### Goals of Management

The aim of DD management is to ensure not only dermo cosmetic optimization, but also to prevent further episodes of DD and its complications. This is done along with metabolic management as well as lifestyle modification.

### Dermocosmetic Management

The epidermal barrier is an integral part of the stratum corneum, and serve to maintain skin health, while preventing rigidity and micro-fissuring in response to shear forces. Maintenance of skin hydration, and control of xerosis, is essential in prevention and management of DD.

Various topical agents used in dermatology practice have different roles for specific lesions (Table). Moisturizers are

**Table:** Topical therapy of diabetic dermopathy.

Class of drug	Subclass	Example
Moisturisers	Occlusive moisturiser Humectants	Lanolin, petrolatum, collagen polypeptides Glycerin, hyaluronic acid hydrolysed elastin
Barrier repair formulations	Physiologic ingredients Anti-inflammatory	Ceramides, essential fatty acids Neem oil (Azadirachta indica oil), colloidal oat (Avena sativa)
Derma anabolic drugs	Pro-epithelialisation, pro-angiogenesis Collagen and elastin promoter	Coconut oil (Cocos nucifera oil) Aloe vera
Cosmetic camouflage	Cosmetic agents and colours	

used to reduce trans-epidermal water loss and increase stratum corneum hydration. This include occlusive moisturizers (lanolin, petrolatum, collagen polypeptides) and humectant moisturisers (glycerin, hyaluronic acid, hydrolyzed elastin) Barrier repair formulations are composed of moisturiser (s) as well as physiologic ingredients (ceramides, essential fatty acids) which build the skin. Modern derma care products for DD also include anti-inflammatory constituents, e.g., neem oil (Azadirachta indica oil), colloidal oat (Avena sativa); and those which promote re-epithelialisation and angiogenesis, e.g.; coconut oil (Cocos nucifera oil). Aloe vera is a tropical cactus which has a multifaceted mode of action on

dermatological health. Aloe vera stimulates collagen and elastin production from fibroblasts. This makes the skin more elastic and resilient. As a humectant, it also softens hardened skin cells, and has a cohesive effect on superficial epidermal cells which otherwise flake apart. Laser therapy has also been tried in DD, with variable results.<sup>3</sup>

### Metabolic Management

DD is a complication of uncontrolled diabetes. Hence, glycaemic control is the foundation of all DD management. Comprehensive metabolic control, including normalisation of glucose, lipids and blood pressure, is important for DD management. Micro and macro-nutrient optimisation is also necessary for skin health.

Simple changes in lifestyle, such as preventing trauma to the skin, and avoiding excessive pruritus, are required to mitigate and manage DD. Superadded infection, whether bacterial, fungal or protozoal, must be treated appropriately, in a timely manner.

### Conclusion

A comprehensive approach, including dermo-cosmetic and metabolic optimisation, can help manage DD. A combination of emollient, humectant, anti-inflammatory and regenerative topical therapies help strengthen the epidermal barrier. Good metabolic management ensures

that the dermis remains well-supplied by healthy vasculature. Along with lifestyle modification, these help manage DD and its complications in persons with diabetes.

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