Fibrotic Mechanisms in Skin Inferred from Vascular Basement Membrane Structures in Keloids

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Keloids are fibroproliferative skin disorders arising from injuries or infections extending into the reticular dermis. Their appearance, pain, and pruritus significantly impair patients' quality of life. Treatments include intralesional corticosteroids, topical steroid tapes, surgical excision with radiotherapy, among others, but recurrence is common and treatment duration long.

A deeper understanding of keloid pathogenesis is essential. Keloids are considered a chronic inflammatory state localized to the reticular dermis and may represent pathological fibrosis due to sustained wound healing activation.

Wound healing proceeds through hemostasis, inflammation, proliferation, and remodeling. The vascular system plays a critical role during the early phases. In this study, we used electron microscopy to examine—for the first time—the vascular basement membrane structures in keloid tissue. We discuss the implications of these architectural changes and outline future research directions to uncover the mechanisms of keloid-related skin fibrosis.