

An Innovative Single-stage Approach of High-tension Keloid Excision and Reconstruction Using Acellular Dermal Matrix and Epidermal Skin Grafting

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Abstract

The treatment of keloids, particularly in high-tension areas, is challenging due to their extension beyond the original wound boundaries and high recurrence rates, thereby rendering traditional treatments ineffective. In this study, we investigated the effectiveness of a novel single-stage treatment approach that combines acellular dermal matrix (ADM) with keloid-specific epidermal skin grafting. To further prevent recurrence after neo-skin formation, the treatment was followed by fractionated laser and radiation therapy (LCR). Seven patients with high-tension keloids, including one with keloids at two locations, were treated and followed-up for an average of 15.9 months. The patients showed significant improvements in wound healing and skin appearance, with a marked reduction in the Patient and Observer Scar Assessment Scale (scores from 91.1 ± 5.6 to 23.8 ± 6.1 [$p < 0.001$]). This approach effectively minimizes tension, reduces the likelihood of keloid recurrence, and serves as a viable alternative to conventional methods that often involve challenges related to donor-site acquisition. No recurrence was observed during the follow-up period, indicating a promising innovation in the management of extensive keloids and offering improved healing and aesthetic outcomes, particularly in high-tension areas.

Keywords:

Keloids, acellular dermal matrix, keloid epidermal skin grafting, single-stage treatment, high tension