

# 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  $91.1 \pm 5.6$  to  $23.8 \pm 6.1$  [ $p < 0.001$ ]). 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