The study of composite skin grafting with human acellular dermal matrix scaffold for treating diabetic foot ulcers: A randomized controlled trial

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Background: Composite split-thickness skin grafting (STSG) with acellular dermal matrix (ADM) has been successfully used in burn injuries and traumatic defects, but its use in treating diabetic low extremity ulcers rarely has been reported. This study investigated the efficacy and safety of composite STSG with ADM in the treatment of diabetic foot ulcers.

Study Design: Fifty-two patients with diabetic foot ulcers were randomized divided into experimental and control groups. Patients in the experiment group received compositing STSG over ADM; the control group received STSG. The primary endpoint was the recurrence rate 12 months after grafting. The secondary endpoint was the healing quality of grafted site by Manchester Scar Scale (MSS), and the percentages of subjects that achieved complete wound and complications.

Results: The number of patients suffering from recurrence was significantly less in the experiment group compared to control group (1/23 versus 5/22, p=0.02). The autografted sites of the experimental group had better appearance with lower MSS scores [9 (8, 10.25) versus 11 (10, 12), p=0.006]. The rates of complete wound closure by weeks 2, 4, and 8 were similar, as were the rate of complications by post-grafting week 4 (10/26 versus 7/26, p=0.38).

Conclusions: These results suggest that composite STSG over an ADM scaffold provide an effective method to treat diabetic foot ulcers, with lower recurrence rate and better physical attributes compared with the traditional STSG method. Complete wound closure and complication rates were comparable between these methods.