Effects of Autologous Fibroblast Transplantation and Low-Level Laser Therapy in Healing Process of Grade Three Burn wounds in Diabetic Patients

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ABSTRACT

Objective: This case series describes successful management grade 3 burn ulcers in 10 diabetic patients using Autologous Fibroblast Transplantation along with Low-Level Laser Therapy.

Background: Low Level Laser Therapy (LLLT) has been used as an effective therapeutic modality since the mid-sixties. Although there are several clinical studies using LLLT in wound healing, especially diabetic, pressure and venous ulcers, but there are rare reports of using this technique in burn ulcers. In this study, for the first time we used LLLT along with antilogous fibroblast skin transplantation to treat grade 3 burn ulcers in diabetic patients.

Material and Methods: Ten diabetic patients with grade 3 burn ulcer, candidate for skin graft surgery entered the study. 1 Cm2 was biopsied using a punch. Fibroblasts were extracted and cultured in-vitro. Patients were treated using LLLT in 3-4 weeks that took time for fibroblast cultures to become ready to use. Laser irradiation was done using a red laser, 650 nm, 2 J/Cm2 for the bed of ulcer and 6 J/Cm2 for the margins every other day for 7-10 sessions. When cultured

fibroblasts were ready, a thin layer of fibroblast suspension was applied to the base of ulcer and was fixed using dressing. Patients were evaluated every other day until complete healing.

Conclusion: We conclude that this method can be used as an effective method for treating large wounds, especially in complicated patients including diabetics.

Keywords: Low Level laser Therapy, Wound Healing, Burn Ulcer, Regenerative Medicine