



LASERS

OBJECTIVE ANALYSIS FOR TREATMENT EFFICACY OF FRACTIONAL CO₂ LASER AND COMBINATION TREATMENT ON ATROPHIC SCAR

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Introduction: Fractional CO₂ laser is widely used for the treatment of atrophic acne scar but previous studies have not quantitatively and objectively evaluated the therapeutic effect of atrophic acne scars after treatment with fractional CO₂ laser. Additionally, human stem cell conditioned media is anticipated to enhance the treatment effect and to reduce down time.

Objectives: To analyze and objectively quantify how much the volume of the atrophic acne scar and skin pore improved in patients treated with fractional CO₂ laser and to analyze the effect of human stem cell conditioned media.

Materials and Methods: This is a randomized left-right split-face study with fifteen subjects. Patients received single treatment of fractional CO₂ laser on both cheeks. After randomization, each patient was assigned to apply one side of the face with 100% human adipose-derived stem cell conditioned media and another side with normal saline. For the next 6 days, a solution containing 80% human adipose-derived stem cell conditioned media and hyaluronic acid was applied twice a day in the side of the face with 100% human adipose-derived stem cell applied before. In the opposite side, only the hyaluronic acid component except the stem cell component was applied twice a day. To evaluate the effect of the treatment, we objectively measured volume and erythema by using Antera 3D CS at the 0, 2, 4, and 8 weeks.

Results: It showed 15.0 and 23.5% improvement in scar volume (P-value = .143, independent t-test) and 15.9 and 37.6% improvement in skin pore volume (P-value = .006, independent t-test) after two months of one treatment session, both of which showed more improvement in the human stem cell conditioned media applied side. The erythema increased by 2.8% (human stem cell conditioned media applied side) and 3.1% human stem cell conditioned media not applied side) after two months of one treatment session (P = .934, independent t-test).





Conclusion: Fractional CO₂ laser in atrophic acne scar was estimated to be about 15% improvement at one treatment session and with human stem cell conditioned media, the clinical outcomes could be enhanced.

