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Randomized Controlled Trial [J Cosmet Dermatol.](#) 2025 Jun;24(6):e70271.

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Poly-L-Lactic Acid Combined With CO₂ Fractional Laser for the Treatment of Acne Scars

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Abstract

Background: The treatment of acne scars has always been challenging. In the past, its gold standard treatment was carbon dioxide (CO₂) fractional laser, but its efficacy rate was only 51%–70%. The use of poly-L-lactic acid (PLLA) has provided a new treatment strategy. In this study, a novel PLLA material was used in combination with a CO₂ fractional laser to treat acne scars, and its safety and effectiveness were evaluated.

Aims: To determine the safety and effectiveness of PLLA (Loviselle) combined with a CO₂ fractional laser in the treatment of acne scars.

Methods: In this study, 60 patients were randomly divided into two groups, with 30 patients in each group. Group A received only CO₂ fractional laser treatment, whereas Group B received injections of PLLA 1, 3, and 5 months after CO₂ fractional laser treatment. Both groups were followed up for 6 months after the CO₂ fractional laser treatment.

Results: There were statistically significant differences in the Quantitative Global Scarring Grading System (GSS) scores between the two groups before and after treatment. Group B had lower GSS scores than Group A. In the treatment of different types of acne scars using the Acne Scar Rating Scale, the improvement in rolling scars was greater than that in boxcar scars, and both were greater than those in ice-pick scars. Whether evaluated by independent physicians' assessment of treatment improvement or patients' satisfaction questionnaire, the combined treatment group showed better results than the single treatment group, and there were statistically significant differences between the two groups. Adverse reactions included transient redness, bruising, and pigmentation.

Conclusions: The combination of CO₂ fractional laser and PLLA can safely and effectively treat acne scars, especially rolling and boxcar depressed scars.

Keywords: CO₂ fractional laser; PLLA; acne scar; poly-L-lactic acid.

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Figures

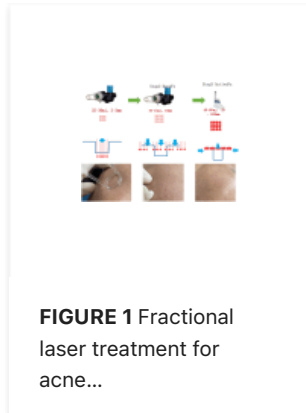


FIGURE 1 Fractional laser treatment for acne...



FIGURE 2 Poly-L-lactic acid injection for acne...

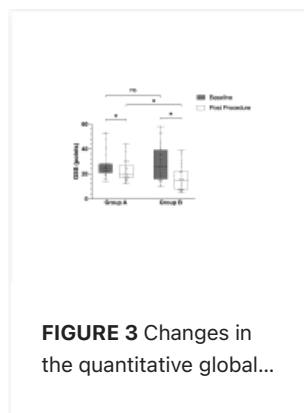


FIGURE 3 Changes in the quantitative global...

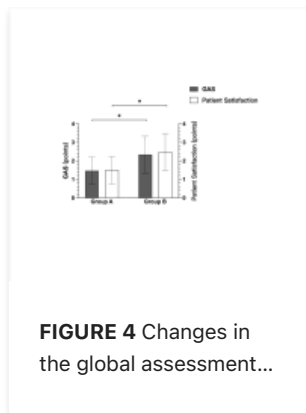


FIGURE 4 Changes in the global assessment...

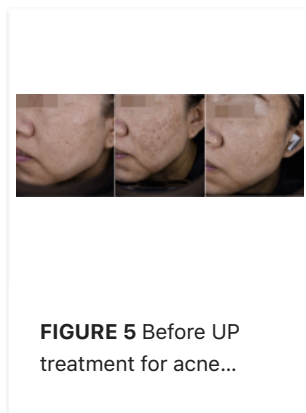


FIGURE 5 Before UP treatment for acne...

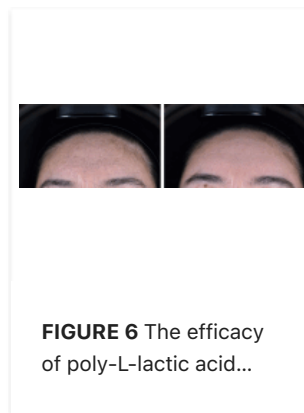


FIGURE 6 The efficacy of poly-L-lactic acid...

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