Commentary on a Canadian Study of the Use of Poly-\(l\)-Lactic Acid Dermal Implant for the Treatment of Hill and Valley Acne Scarring

The treatment of atrophic acne scars remains a challenge for dermatologic surgeons. Treatment modalities fall into the broad categories of resurfacing, excisional, and “lifting” procedures. Lifting procedures are optimal when significant atrophy is present but the skin quality overlying the scar is normal in color, texture, and pliability. Common lifting procedures are subcision, punch elevation, and filler injection. The advantages of fillers include prompt improvement, low risk of side effects, and minimal downtime, whereas the main drawback is the relatively short durability of response (6–12 months for most fillers). The only 2 permanent fillers available in the United States are polymethylmethacrylate microspheres in collagen (Bellafill; Suneva Medical Inc., Santa Barbara, CA) and liquid injectable silicone. They have efficacy in treating acne scars,\(^1\,^2\) but not all dermatologic surgeons are comfortable using permanent fillers.

Although poly-\(l\)-lactic acid is FDA-approved for treating HIV-associated lipoatrophy and is widely used for midfacial augmentation of the aging face, studies evaluating its usefulness for treating acne scars are limited. The published literature describes 2 different methods of injecting the poly-\(l\)-lactic acid solution for treating acne scars. The first is injecting small quantities of the solution superficially into the deep dermis or dermal-subcutaneous junction.\(^3\,^4\) The second is a more traditional technique in which the poly-\(l\)-lactic acid solution was injected into the subcutaneous or deeper layers using either a depot injection or fanning technique.\(^5\) The rationale for the traditional technique’s efficacy for acne scars is analogous to refilling a deflated beach ball in which indentations are minimized because the space inside the ball is filled and its wall is pushed outward, creating a smooth tight finish.

The current publication by Sapra and colleagues\(^6\) used a traditional technique in which the poly-\(l\)-lactic acid solution was injected in high volumes into the subcutaneous or deeper tissue to treat hill and valley (also known as “rolling”) acne scars. The authors present the results of an open-label, single-arm Phase II study of 22 subjects who were treated over 2 to 4 treatment sessions with a subcutaneous fanning technique using a 10-mL dilution of poly-\(l\)-lactic acid and/or a deep depot injection technique using a 5-mL dilution. The most prominent areas of acne scarring were injected, which were the malar cheeks and temples. The degree of improvement in the appearance of acne scarring compared with baseline photographs was evaluated by the study physician, a blinded evaluator, and patients using digital photographs at monthly visits and at the end of the study, which was 6 months after enrollment.

The mean volume injected during each session was 9.5 mL, and the mean cumulative amount injected into each patient was 37 mL. The study physician noted good to excellent improvement of acne scars in 64% of the patients when comparing photographs taken by the Visia CR system. When viewing the photographs taken by this same system, the blinded evaluator found good to excellent improvement in 68% of subjects. Patients (45.5%) evaluating their own photographs noted a good to excellent improvement. Interestingly,

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these high percentages of improvement were not obtained when the same evaluations were done of the photographs taken by the 2 other cameras systems in the study (Canon SLR and Fuji S2). Fifty-five percent of patients reported either good or excellent satisfaction with the treatment.

Consistent photography of acne scars can be challenging because subtle changes in lighting and camera angles can cause a dramatic difference in the appearance of acne scars. The strength of the study is that great effort was taken to provide high-quality digital photographs using the Visia CR system, which allows for control of lighting, zoom, and camera angle. This provided consistent images that could be more reliably scored by evaluators.

The authors acknowledge that this is a preliminary study attempting to establish the efficacy and safety of this technique using poly-L-lactic acid, and they recommend follow-up studies with larger numbers of patients to confirm or refute the findings of this study. In addition to studies with larger numbers, studies designed with more objectivity would also provide more reliable data. The ideal study for acne scars is a prospective, randomized split-face study in which unlabeled photographs are graded by multiple blinded investigators. Patient blinding is often difficult to achieve in acne scar studies. However, blinding could easily be achieved in a study of poly-L-lactic acid, because the side randomized to be the control could be injected with saline alone. Also, the physician evaluating the photographs should be a different physician from the one who performed the treatment, which adds additional blinding.

Although this study falls short of this ideal by being single-arm, single-physician, and unblinded, it does provide evidence of efficacy and safety for treating acne scars with the traditional technique of fanning or depot injections with high volume of the poly-L-lactic acid solution. Only 1 patient developed a palpable nonvisible nodule, and over half of the patients were satisfied or highly satisfied with the improvement.

The authors noted that the appearance of hill and valley acne scars tends to worsen with age. The mean age of subjects included in this study was 37 years. It would be interesting to perform a similar study on acne scarring in an older patient population that has more volume loss and sagging skin. It is possible that poly-L-lactic acid could have a greater benefit in acne scar patients in their 50s and 60s than in patients in their 20s or 30s.

Acne scarring can be extremely distressing to patients and significantly affect quality of life. Hill and valley acne scarring can be difficult to treat. Studies such as this that attempt to establish the efficacy and safety of another tool for the use of the acne scar surgeon should be applauded.

References


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