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The 675 nm laser for the treatment of keloids and different types of scars in dark skin type

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Ethics approval and consent to participate: this study is a retrospective case series based on data collected during routine clinical practice. No activities were carried out outside the scope of the device's intended purpose, and no additional invasive or burdensome procedures were performed compared to those conducted under normal conditions of use of the device. Ethics committee approval was not required for this retrospective analysis of fully anonymized clinical data, as the study device has been CE-marked since 2019. Written informed consent was obtained from all subjects involved in this study.

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Dear Editor,

Laser resurfacing has grown in popularity, largely replacing traditional aesthetic procedures such as chemical peels and dermabrasion. Modern non-ablative lasers stimulate dermal fibroblasts to produce collagen, improving skin texture and reducing wrinkles, while minimizing downtime and side effects compared to earlier ablative and intense pulsed light lasers.[1]

Evidence indicates that the 675 nm wavelength is effective for treating pigmented lesions and for skin resurfacing, including in individuals with darker skin types.[2-6]

Its strong collagen affinity makes the 675 nm laser particularly promising for facial rejuvenation. Real-world case series have shown significant improvement in skin texture after treatment. Moreover, by activating dermal fibroblasts and stimulating collagen production, this technology is also useful for remodeling atrophic acne scars.[7] Recent studies confirm the safety and efficacy of high-power 675 nm laser systems in managing various skin conditions.[8]

Laser-based therapies have been increasingly adopted for the management of keloids and pathological scars because of their ability to improve scar appearance and symptoms while maintaining a favorable safety profile. Especially, the combination of non-ablative laser therapy and corticosteroids is a common clinical approach for keloids and scars.[9]

Furthermore, recent studies have confirmed the usefulness of pulse dye laser-based treatments for keloids. In a retrospective case series, Cavalli *et al.* reported good clinical outcomes, high patient satisfaction, and a favorable safety profile following pulsed dye laser treatment of pediatric keloids, supporting the role of lasers in scar management.[10]

Building on these findings, the present study aimed to evaluate the safety and effectiveness of the developed high-power 675 nm laser system combined with corticosteroids for the treatment of keloids and other scar types in patients with darker skin tones.

This study was designed as a retrospective case series. A total of 21 subjects (13 women and 8 men, mean age 27.5±7.8 years), with Fitzpatrick IV-V skin types affected by keloids or scars on the body/face area, who were treated with a 675 nm laser (RedtouchPRO, Deka M.E.L.A, Calenzano, Italy) combined with corticosteroids, were included in this retrospective case series evaluating the clinical outcomes of patients treated in routine dermatological practice. The laser settings included a power range of 3-7 W, a dwell time of 75-100 ms, and spacing of 1000-2000 μm. Patients underwent between one and six treatment sessions, with intervals of 15-30 days between sessions.

Pain intensity was evaluated using a 5-point scale (0 = no pain; 1 = mild pain; 2 = moderate pain; 3 = marked pain; 4 = severe pain). The Vancouver Scar Scale (VSS), the Patient Scar Assessment Scale (PSAS), and the Observer Scar Assessment Scale (OSAS) were assessed before treatment and at 3

months follow-up (3MFU). In addition, a photographic evaluation was performed before treatment and at 3MFU. All possible adverse effects were monitored. All scoring scales showed a decrease of mean values for each pathology, indicating an improvement following treatment (Figure 1).

In particular, a significant reduction ($p<0.05$) was observed for keloids across all assessment scales. The mean VSS score for keloids significantly decreased from 8.73±1.68 at baseline to 4.64±2.01 at the 3MFU. Similarly, the mean OSAS score for keloids significantly decreased from 16.09±1.81 at baseline to 8.18±3.34 at 3MFU. The mean PSAS score for keloids also showed a significant reduction, decreasing from 34.82±8.68 at baseline to 19.64±7.32 at the 3MFU. This improvement was also confirmed by photographic investigation. Some clinical cases are shown in Figure 2.

Regarding pain perception, 52% of patients reported no pain, 24% reported mild pain, 10% reported moderate pain, and 14% reported marked to severe pain.

In this retrospective case series, treatment with the 675 nm laser combined with corticosteroids was associated with improvements in clinical scar assessment scores and photographic appearance in patients with darker skin types affected by keloids and scars. The treatment was generally well tolerated, with only mild and transient adverse effects reported. Although these preliminary findings suggest that this combined approach may represent a useful option for scar management, they should be considered exploratory and hypothesis-generating rather than confirmatory due to the small sample size, retrospective design, and lack of a control group.

Further prospective controlled studies with larger patient populations and longer follow-up are needed to confirm these observations.

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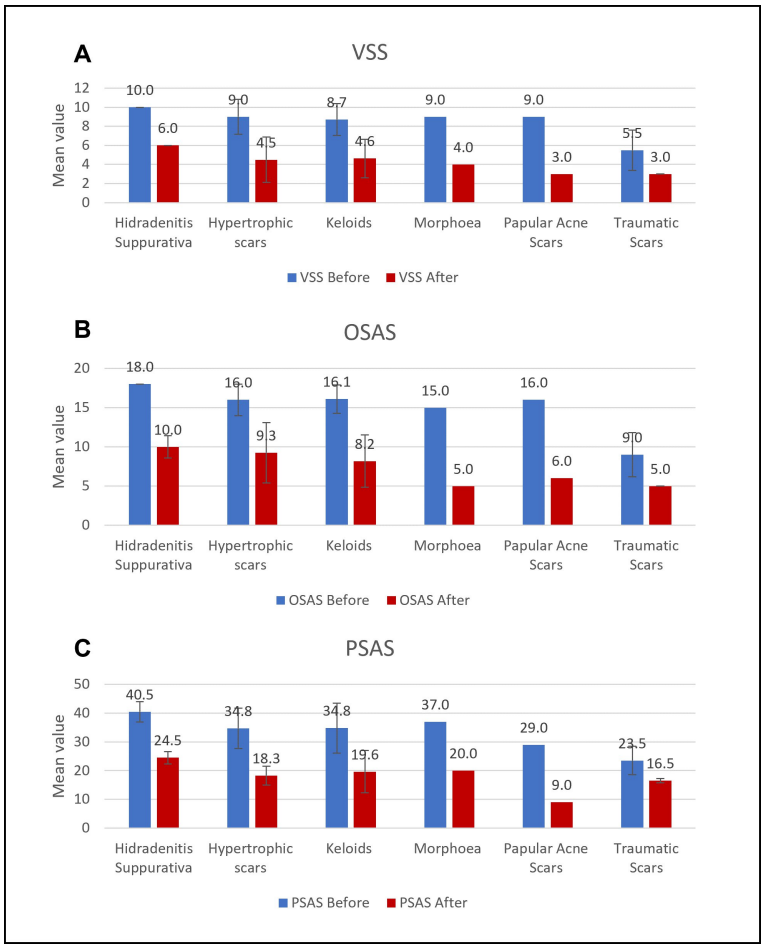
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Figure 1. The VSS (A), OSAS (B), and PSAS (C) for each type of scar before and at follow-up. The scales are consistent with an improvement for each type of scar following treatment.



VSS, Vancouver Scar Scale; OSAS, Observer Scar Assessment Scale; PSAS, Patient Scar Assessment Scale.

Figure 2. Female patient with keloid in the prexternal area before treatment (A) and after two laser sessions (B). Male patient with keloid in the chest area before treatment (C) and after three laser sessions (D). Male patient with traumatic scar on forehead before treatment (E) and after three laser sessions (F). Following treatment, the lesions appear completely flat and without redness.

