



Combined treatment for infraorbital depression: hyaluronic acid filler and polydioxanone threads

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ABSTRACT

Introduction: The periorbital region plays a critical role in facial expression and is one of the earliest areas to exhibit clinical signs of aging, particularly infraorbital hollowing. Effective rejuvenation of this region requires comprehensive strategies that simultaneously address structural volume loss and localized tissue laxity. Hyaluronic acid fillers are widely utilized to soften deep infraorbital grooves and optimize the transition at the eyelid-cheek junction through precise volume restoration and tissue hydration. Concurrently, polydioxanone threads provide mechanical support, promote mild tissue repositioning, and stimulate localized neocollagenesis, contributing to long-term structural reinforcement and skin quality improvement. This paper explores the clinical combination of Hyaluronic acid fillers and polydioxanone threads for advanced infraorbital rejuvenation, highlighting their complementary mechanisms of action, specific clinical indications, and potential therapeutic advantages over isolated monotherapies.

Objectives: To report and analyze a clinical case demonstrating a combined, conservative approach using hyaluronic acid fillers and polydioxanone threads to correct severe infraorbital depression, assessing patient self-image improvement and procedural pain perception.

Case Report: A patient presented for clinical evaluation reporting aesthetic discomfort regarding pronounced dark circles, under-eye hollows, and localized loss of skin quality in the perioral and infraorbital zones. Clinical mapping identified prominent anatomical landmarks, including the Palpebromalar Groove, Tear Trough, and a discrete Malar Bag formation. A multi-modality conservative treatment plan was proposed to restore volume and enhance superficial dermal tension.

Methods: The therapeutic intervention was performed sequentially in a minimally invasive outpatient setting. Volume restoration was achieved through deep bolus and retrograde injection of 1 mL

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of hyaluronic acid filler (Rennova®) per side (1 mL in the right side and 1 mL in the left side), targeting the periosteal plane of the infraorbital depression. Dermal optimization was subsequently performed by subdermal insertion of eight polydioxanone Filler i-THREADS (MedBeauty®), distributed bilaterally along the infraorbital region to stimulate collagen production and improve skin texture. Patient pain perception was assessed using a visual analog scale (VAS, 0–10) both during and after each stage of the procedure. Self-image perception was longitudinally monitored across four distinct phases: pre-treatment (before hyaluronic acid), post-hyaluronic acid injection, post-polydioxanone thread insertion, and final follow-up.

Results: The combined protocol was successfully performed without adverse events. Patient-reported outcomes demonstrated high tolerability and clinical efficacy. Both the hyaluronic acid injection and polydioxanone thread insertion were associated with remarkably low pain scores during the procedures, which decreased to nearly zero in the immediate postoperative period. Visual analysis and subjective assessment also demonstrated a progressive, stepwise improvement in the patient's self-image. Self-perception scores increased substantially following the initial volumetric hyaluronic acid treatment, reached their highest levels after the subsequent placement of polydioxanone threads, and remained stable at an optimized level throughout the final clinical follow-up.

Conclusion: Conservative infraorbital rejuvenation focused on non-surgical, minimally invasive treatments effectively addresses volumetric hollowing, dark circles, and localized skin laxity. This synergistic, multi-modality approach combining Hyaluronic acid fillers and polydioxanone threads provides highly natural, durable, and structurally harmonized aesthetic outcomes. When appropriately indicated and precisely executed, this technique maintains a highly favorable safety profile with high patient satisfaction and minimal clinical morbidity.
