

# Case Report

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## Minimally-invasive facial rejuvenation using pneumatic injection of hyaluronic acid

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### Introduction

The growing demand for facial rejuvenation procedures with low risk and minimal downtime has promoted the development of minimally invasive methods such as radiofrequency, lasers, botulinum toxin and ultrasound.<sup>1</sup> These procedures, however, still cannot achieve immediate, short-term and long-term aesthetic results with no downtime.

This report describes the use of jet volumetric remodeling (JVR) technology for non-surgical facial rejuvenation. The needle-free system

pneumatically accelerates a carrier fluid jet containing high-mass HA molecules into the tissue. The particles spread laterally within the dermis, and stimulate fibroblasts to promote the formation of new collagen fibers by accelerating the wound-healing process as well as increasing skin thickness.<sup>2,3</sup> This technology has developed into a novel therapeutic modality for dermal remodeling procedures involving neck wrinkles, décolleté, keloids, and scars due to acne or herpes zoster.<sup>2-7</sup>

### Case Report

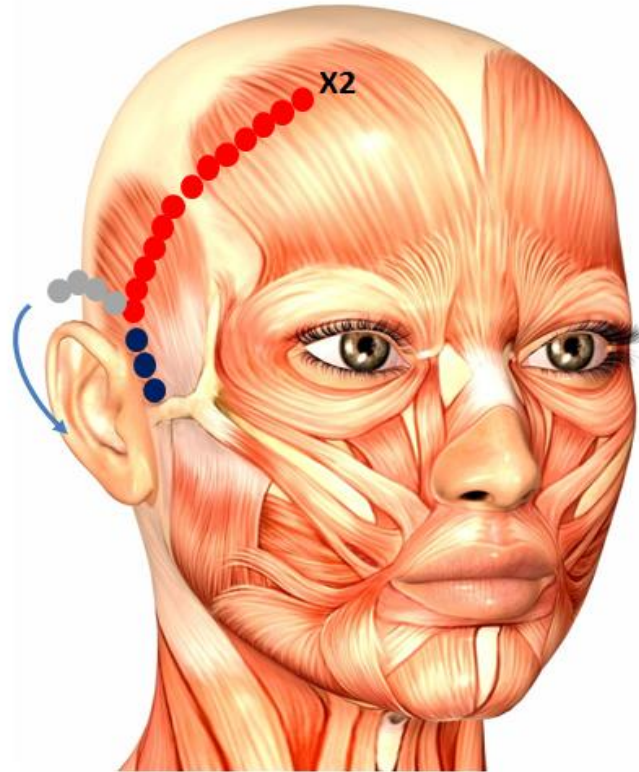
A 51-year-old woman (Fitzpatrick skin type III) presented with a desire to tighten the lax facial contour and improve the skin's appearance. JVR technology (EnerJet, PerfAction, Inc., Rehovot, Israel) was used to deliver cross-linked Hyaluronic Acid (SMS

solution, Biopolymer, Germany).

Pre-treatment included cleaning the skin with 70% isopropyl alcohol. Afterwards, photographs were taken using a Canfield Omnia System (Fairfield, NJ). A lidocaine-based topical anesthetic cream was applied for 30

minutes prior to treatment. At each treatment session, the pneumatic injections were applied along the temporal hairline and the auricular superior and anterior muscle, beginning

in the front and continuing towards the rear (retro auricular). Two parallel lines were performed (Figure 1). 70 injections were delivered at each treatment.



**Figure 1:** Treatment protocol

The patient underwent two treatments with an interval of one month between treatments. Skin thickness was measured by 10 MHz Antares Acuson 11343 (Siemens Medical Solutions USA, Inc, Malvern, Pennsylvania) before the first treatment, and 12 months post the final treatment.

The procedure was well accepted by the patient, without any adverse events. Immediately following

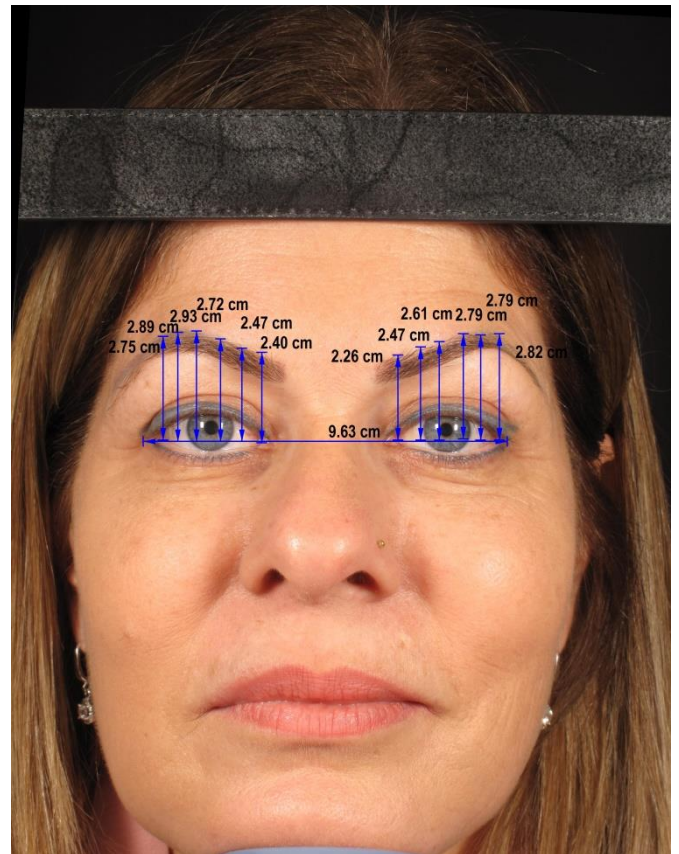
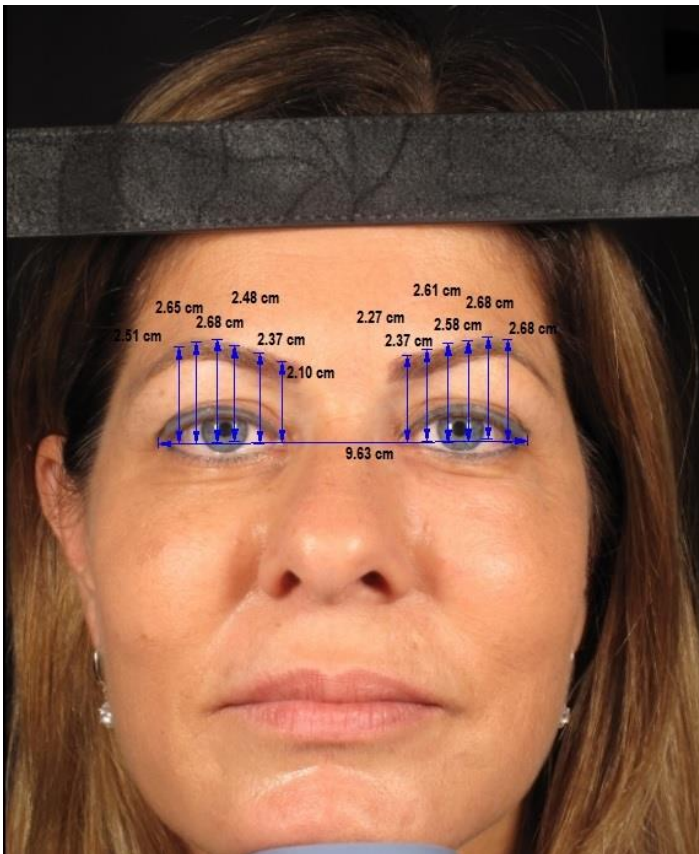
treatment, the skin showed focal elevations at the injection sites, which were fully resorbed within three hours.

Despite minor differences in positioning, there is visible improvement in jaw-line contour, midface profile, and nasolabial folds after treatment. An increase in measured vertical brow height of 1.16 mm (Figure 2) and an average increase in skin thickness of 1.4 mm along the temporal hairline (Table 1)

were observed. The patient reported satisfaction of 3.5 on the GAIS (global aesthetic improvement scale).

Pretreatment	Post-treatment
0.8	1.7
2.2	3.5
1.1	2.7
1.1	2.9
0.9	2.3
1.6	2.8
1.7	2.9
2.1	3.6

**Table 1.** Skin Thickness (mm), Pre-treatment, Six Months Post-treatment



**Figure 2.** Patient before (left) and 12 months after (right) EnerJet treatments

## **Discussion**

Radiofrequency and laser devices are able to induce collagen remodeling and new collagen formation, due to thermal stimulation with a dermal wound healing response. Dermal fillers, such as HA, also induce neocollagenesis. The EnerJet system combines the benefits of HA injections with those of mild dermal wound healing. The needleless pneumatic delivery of the HA causes controlled dermal trauma and allows to treat extended areas of skin quickly and efficiently.<sup>2</sup>

Furthermore, this pneumatic injection technique may be superior to the heat-induced ones by the virtue of stimuli application to the subcutaneous tissues, including the SMAS and temporal fascia, inducing an optimal face lifting effect.

The EnerJet system is a unique, non-invasive method for moderate facial rejuvenation in the appropriately selected patient with minimal risk and no downtime. The jet lateral dispersion of HA produces both instant dermal augmentation and specific wound-

healing processes, leading to its long-term dermal thickening. Results are immediate, and last as long as 12 months post-treatment. Larger clinical studies

are necessary to determine more accurate treatment parameters as well as the frequency and number of treatments required for optimal clinical results.

## References

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