



Patient Reported Outcomes and 3D imaging to Evaluate the Efficacy of an FDA-Approved Hyaluronic Acid Filler to Treat Infraorbital Hollowing

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INTRODUCTION

Soft tissue filler injections are the second most common non-surgical cosmetic procedure performed in the U.S, with over 3.2 million procedures reported in the 2022 Plastic Surgery Statistics Report, of which about 76% are HA-based fillers.¹ According to the Aesthetic Society in 2022, the use of fillers has increased by 13% when compared to that in 2021.²

This study assesses 3D photogrammetry and patient reported outcomes (PRO) to evaluate the efficacy of the recently FDA-approved hyaluronic acid filler Juvéderm Volbella XC to treat infraorbital hollowing (IOH).

OBJECTIVES

- Investigate the precise volumetric response in patients with small volume Volbella XC injection to the IOH utilizing 3D photogrammetry
- Better understand how Volbella XC injection may contribute to overall patient satisfaction using patient reported outcomes and validated infraorbital pretreatment severity scales

METHODS

- A prospective study at a single-center institution was conducted on 11 females between ages 22-65 who consented to and received infraorbital filler injections (up to 1 cc) by a single plastic surgeon.
- IOH was evaluated using the Allergan Infraorbital Hollow Scale (AIHS) and Tear Trough Rating Scale (TTRS).
- Changes in right and left infraorbital volume were independently measured with 3D photogrammetry (VECTRA-M3) between pre- and immediate post-, 14-, 30-, and 90- days.
- The validated PRO measure, FACE-Q, was administered at all time points.
- Subjects were compensated \$15 when each follow-up visit and questionnaire completed

Disclosures: No disclosures relevant to this study.

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METHODS (CONTINUED)

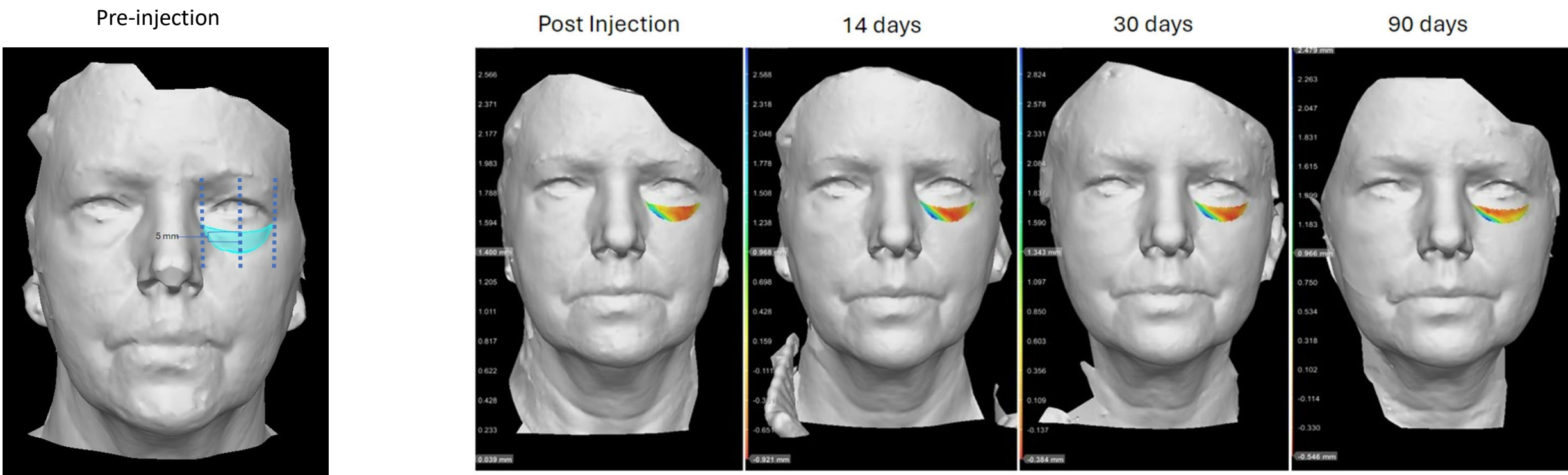


FIGURE: Color Gradient of Area of Interest for VECTRA 3D Imaging. 57-year-old female, photos taken at baseline prior to injection (1 cc HA filler injection in infraorbital region). Width of the area was defined by the distance between the medial and lateral canthi. Height of the area was 5 mm above and below the tear trough and lid-cheek junction. The peak curvature of the area occurred mid-pupil. Photos were taken at four different time points (post-injection, 2 weeks, 4 weeks, and 12 weeks). All photos were registered to pre-injection photos.

RESULTS

- Eleven patients participated with a 100% retention rate over 90 days.
- Infraorbital HA volume maintenance was 70-81% at 30 days and 50-70% at 90 days.
- Tissue Displacement Factor (TDF) and Effective Volume were calculated.

Infraorbital Region	TDF	EV
Open, Frontal Gaze	N=11	
Right	0.29	0.93
Left	0.28	0.97
Closed	N=7	
Right	0.3	0.96
Left	0.23	0.90
Upward Gaze	N=7	
Right	0.18	0.94
Left	0.21	0.81
Tissue displacement correction factor (TDF) was calculated by dividing post-volume injections (cc) by injected HA filler volume. Effective volume was calculated by dividing 2-week volume by immediate post-volume injection		

TABLE: Median Tissue Displacement Correction Factor and Effective Volume

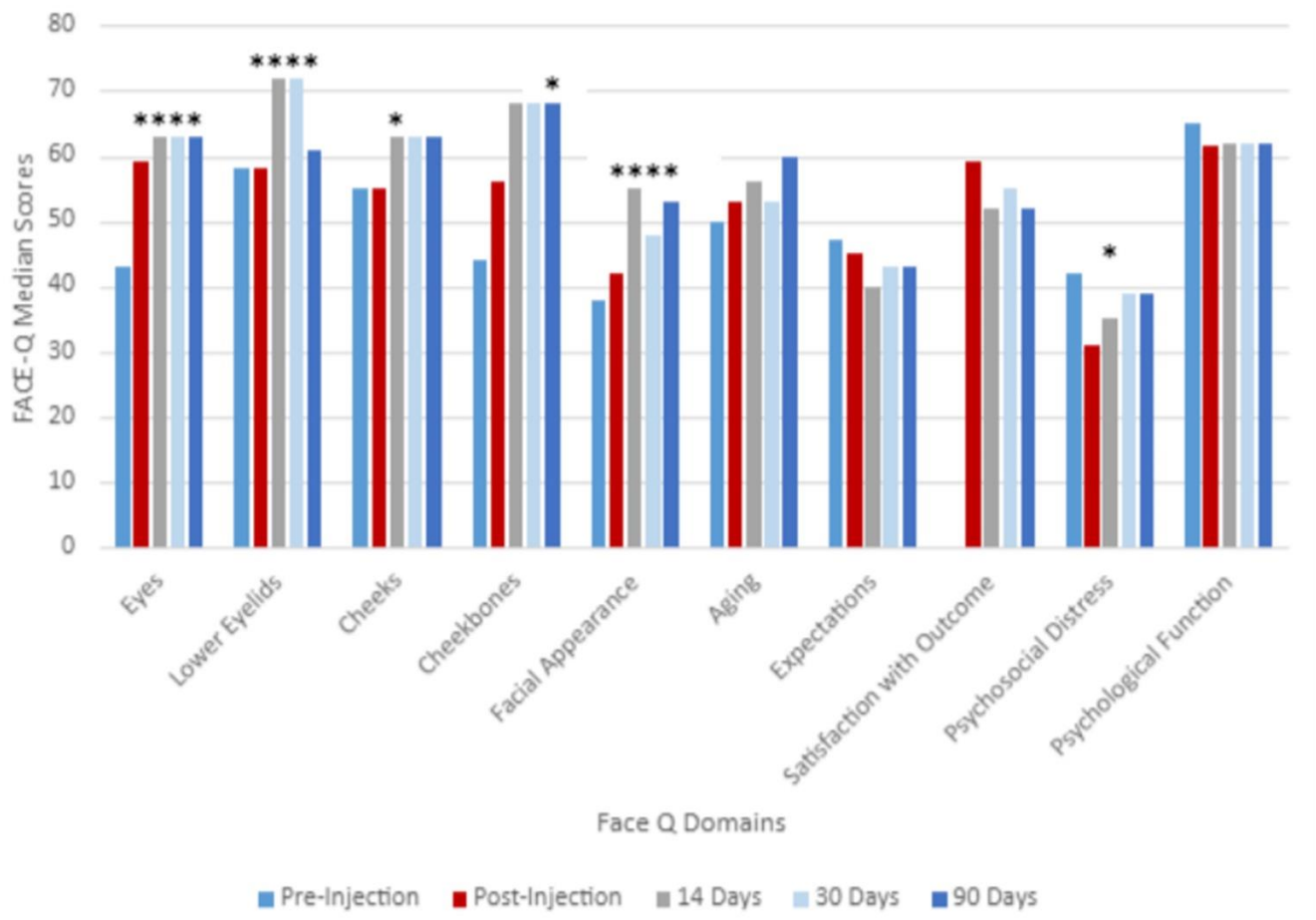
Infraorbital Region and Views	Median Volume (cc)	Median Volume Change (cc)	Volume Maintenance
Open, Frontal Gaze (right)	N = 11		
Post	0.25	-	1.00
14 days	0.23	-0.01	0.93
30 days	0.19	-0.04	0.85
90 days	0.14	-0.11	0.59
Open, Frontal Gaze (left)	N = 11		
Post	0.23	-	1.00
14 days	0.23	-0.01	0.97
30 days	0.14	-0.09	0.70
90 days	0.12	-0.12	0.50
Closed (right)	N = 7		
Post	0.41	-	1.00
14 days	0.40	-0.02	0.96
30 days	0.32	-0.07	0.80
90 days	0.29	-0.08	0.72
Closed (left)	N = 7		
Post	0.31	-	1.00
14 days	0.23	-0.03	0.90
30 days	0.21	-0.06	0.79
90 days	0.21	-0.10	0.68
Upward Gaze (right)	N = 7		
Post	0.26	-	1.00
14 days	0.24	-0.01	0.94
30 days	0.22	-0.05	0.82
90 days	0.17	-0.08	0.66
Upward Gaze (left)	N = 7		
Post	0.22	-	1.00
14 days	0.20	-0.03	0.81
30 days	0.18	-0.05	0.80
90 days	0.14	-0.09	0.63

Abbreviations. cc, cubic centimeter
Bold Italics. Statistically significant (p<0.05)

TABLE: Median Volume Change and % Filler Maintenance

RESULTS

FIGURE: FACE-Q Domain Scores at Post-, 14 Days, 30 Days, and 90 Days in Comparison to Pre-Injection Scores. Significant improvement was noted in the eyes, overall facial appearance, and cheekbones (p<0.05) with FACE-Q outcomes, irrespective of pretreatment severity.



CONCLUSIONS

- Small volume infraorbital filler injections effectively augment undereye volume to diminish infraorbital hollowing in a stable manner with significant improvement in PROs of facial and eye appearance, as well as satisfaction with cheekbones.
- Compared to previous studies, we present an analysis of a more precise area of interest, corresponding more accurately to the clinical scenario of isolated IOH treatment.
- Our analysis includes novel measurements of differential eyelid positioning to reflect the contribution of orbicularis oculi muscle activity to the infraorbital region, with associated clinical treatment recommendations.

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