Original Research

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Global facial rejuvenation with one treatment of incobotulinumtoxinA, hyaluronic acid, and calcium hydroxyapatite results in long-term patient-reported satisfaction

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ABSTRACT

Background: Global facial rejuvenation using injectables (neuromodulators and fillers) has reported patient satisfaction after 2 treatments: an initial and touch-up treatment at 2–4 weeks afterward. In practice, patients typically receive only 1 treatment and do not return for a touch-up treatment within a month.

Objective: The purpose of this study was to assess patient-reported satisfaction after only 1 treatment, thus mimicking real-world scenarios.

Methods: Patients with facial photoaging (Glogau facial aging scale ≥2) were treated with calcium hydroxyapatite, hyaluronic acid 22.5 mg/mL, and incobotulinumtoxinA injections for full facial rejuvenation, with no touch-up treatments. Patients completed the FACE-Q Satisfaction with Facial Appearance survey at baseline and 1- and 3-month post-treatment. The treating physician completed the Global Aesthetic Improvement Scale at 1- and 3-month post-treatment.

Results: Twenty-two patients were enrolled in the study, with 1 patient lost to follow-up. There was a significant improvement in mean FACE-Q scores at 1-month (80.1, $P = .01$) and 3-month (77.9, $P = .02$) compared to baseline (71.4). Mean Global Aesthetic Improvement Scale scores at 1-month (2.1) and 3-month (2.2) were not statistically significant, indicating sustained improvement at 3 months. The product amount used per patient varied and was not correlated with either score. Limitations included a lack of a control group and follow-up ending at 3 months. Strengths included assessment of patient satisfaction after only 1 treatment, compared to other studies allowing 2 treatments.

Limitations: Limitations include a small sample size and lack of a control group.

Conclusion: Global full facial rejuvenation using 1 treatment of calcium hydroxyapatite, hyaluronic acid 22.5 mg/mL, and incobotulinumtoxinA provides sustained patient-reported satisfaction at 3 months.

Keywords: aesthetics, calcium hydroxyapatite, cosmetic, FACE-Q, facial rejuvenation, fillers, GAIS, hyaluronic acid filler, incobotulinumtoxinA, neuromodulators, patient-reported outcomes

Introduction

Facial and neck aging is multifactorial, resulting from changes in anatomical aspects and skin integrity.[2] Prior studies evaluating patient-reported satisfaction after global rejuvenation treatments investigated satisfaction after 2 treatments, typically consisting of a primary treatment plus a touch-up treatment approximately 2–4 weeks afterward.[1] However, in a real-world setting, patients rarely present for a second treatment and hold expectations of seeing satisfactory results after 1 treatment. Despite the necessity for a 1-treatment option, there remains a paucity of literature examining patient satisfaction after a single treatment of the face and/or neck using noninvasive injectables.

What is known about this subject in regard to women and their families?

- In prior clinical studies, injectable aesthetic treatments (neuromodulators, fillers) have been shown to increase quality of life after 2 treatments.

What is new from this article as messages for women and their families?

- In the real-world practice setting, patients rarely come back for a second treatment, with most procedures done in 1-treatment setting.
- This study presents patient-reported outcomes data showing patient satisfaction after only 1 injectable aesthetic treatment with neuromodulators and fillers.
- This satisfaction was sustained at 3-month follow-up.

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Injectables, in particular incobotulinumtoxinA, hyaluronic acid (HA), and calcium hydroxyapatite (CaHA), have grown in popularity over the past decade due to their safety profiles, favorable results, and longevity,[3–7] together holding great potential as an effective 1-session global rejuvenation treatment. While incobotulinumtoxinA allows for correction of rhytides, HA and CaHA allow for lifting, contouring, and overall revolumization.[8,9] CaHA, effectively restores volume and can improve skin texture due to its biostimulatory effects of increasing collagen type I, elastin, and angiogenesis.[10–14] As such, 1 treatment of incobotulinumtoxinA, HA, and CaHA can possibly both meet patient satisfaction standards and alleviate the need for follow-up treatments, though further real-world evidence remains lacking.

This study evaluated patient satisfaction after 1 facial and neck rejuvenation treatment using CaHA, CPM-HA 22.5 mg/mL, and incobotulinumtoxinA.

Methods

This study prospectively enrolled patients with facial and neck photoaging who presented to an aesthetic dermatology practice between August 2021 and December 2021. Inclusion criteria include age >21 years, no neuromodulator or filler treatments within the last 6 months, no laser or light-based energy device treatments within the past 6 months, and photoaging of at least 2 or greater on the 4-grade Glogau photoaging scale. Exclusion criteria include pregnancy, breastfeeding, allergy to prior CaHA, botulinum toxin, or HA products, and inability to make follow-up visits.

Determination of which facial and/or neck areas to be treated were made after assessment by the physician and discussion with the patient. All treatments were performed by the same physician. Patients were treated with a combination of CaHA (Radiesse, Radiesse(+), Merz North America, Inc., Raleigh, NC), CPM-HA 22.5 mg/mL (Belotero Balance with lidocaine, Merz Pharma GmbH & Co. KGaA, Frankfurt, Germany) 22.5 mg/mL of HA, and incobotulinumtoxinA (Xeomin, Merz Pharma GmbH & Co. KGaA, Raleigh, NC).

Treatment areas using CaHA included temples, cheeks, melolabial folds, and jawline. Hyperdilute CaHA (1:3 ratio diluted with preserved sodium chloride and 0.2 cc 1% lidocaine) was used to treat the neck. Neck injections were performed using a cannula via a retrograde fanning technique. Treatment areas using CPM-HA22.5 included lips, oral commissures, perioral lines, and/or radial cheek lines. Treatment areas using incobotulinumtoxinA included the forehead, glabella, crow's feet, mentalis, levator labii superioris alaeque nasalis, and depressor anguli oris. Filler products were injected first, followed by incobotulinumtoxinA. All treatments were performed at 1 visit by the same physician, and patients did not receive filler and incobotulinumtoxinA in the exact same area. No touch-up treatments were performed.

Canfield Visia images were taken pretreatment, immediately after treatment, at 1-month, and at 3-month follow-up visits. Patients completed the 10-item FACE-Q Satisfaction with Facial Appearance questionnaire baseline, and at 1- and 3-month follow-up visits. The physician completed the 5-point Global Aesthetic Improvement Scale (GAIS) at 1- and 3-month follow-up visits. At each visit, the physician assessed patients for adverse events. This study was approved by the Allendale IRB and registered on www.clinicaltrials.gov (NCT05039723).

Analysis was conducted using Stata 14.2 (College Station, TX) using the χ^2 and Wilcoxon rank sum tests. $P \leq .05$ were considered significant. For analysis, patients were divided into 2 age groups (<52 vs ≥52 years old).

Results

Twenty-two patients were enrolled. All patients were female, with an average age of 52.2 years (standard error [SE], 2.3; range 35–75). All patients were Fitzpatrick skin types I–III. The mean amount of product used were: CaHA, facial: 2.6 cc (SE, 0.8), neck, hyperdilute CaHA (1:3 ratio with preserved sodium chloride and 0.2 cc 1% lidocaine): 6.2 cc (SE, 2.8); CPM-HA22.5: 1.4 cc (SE, 0.2), incobotulinumtoxinA: 69.4 units (SE, 12.3). The amount of product used did not correlate with FACE-Q or GAIS scores.

Patients ≥52 years old received a larger volume of filler and incobotulinumtoxinA compared to those <52 years old (P = .04). Both age groups had similar FACE-Q and GAIS scores. All patients received CaHA to the cheeks and incobotulinumtoxinA to at least 2 areas (Fig. 1). Fourteen percent (3/22) of patients received hyperdilute CaHA to the neck. Twenty-seven percent (6/22) of patients received CPM-HA22.5 to the lips (Fig. 2). Forty-one percent (9/22) of patients received CPM-HA22.5 to the oral commissures, perioral lines, and/or radial cheek lines.

At baseline, the mean patient-reported FACE-Q satisfaction score was 71.4 (SE, 3.4). At 1-month, mean FACE-Q scores improved to a mean of 80.1 (SE, 3.6; P = .01). Three-month FACE-Q scores (77.9; SE, 1.8) showed sustained improvement compared to baseline scores (P = .02) (Fig. 3). Differences in mean GAIS scores at 1-month (2.1; SE, 0.14) and 3-month (2.2; SE, 0.17) were not significant, indicating maintained improvement between the 1- and 3-month timepoints.

No serious adverse events were reported during the trial. One patient (5%) reported nodules of the cheeks at the 1-month

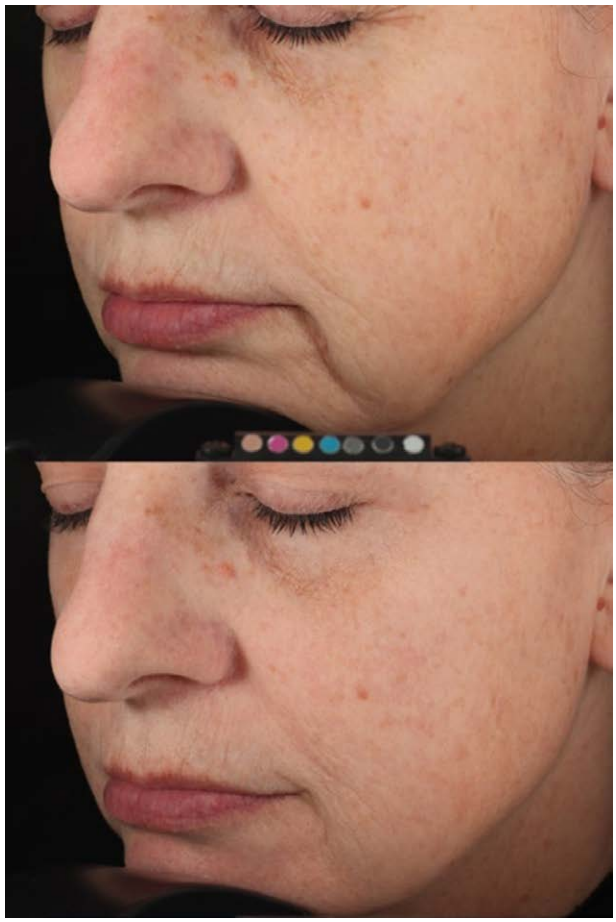

Fig. 1. Baseline and 3-month follow-up. A 58-year-old woman presented for unhappiness with folds around the mouth. Patient received 2.7 cc of calcium hydroxyapatite to the cheeks. IncobotulinumtoxinA was used to treat the frontalis, glabella, and orbicularis oculi. Notable improvement of the melolabial fold is seen with natural results. Written permission for photograph reproduction was obtained from the patient.

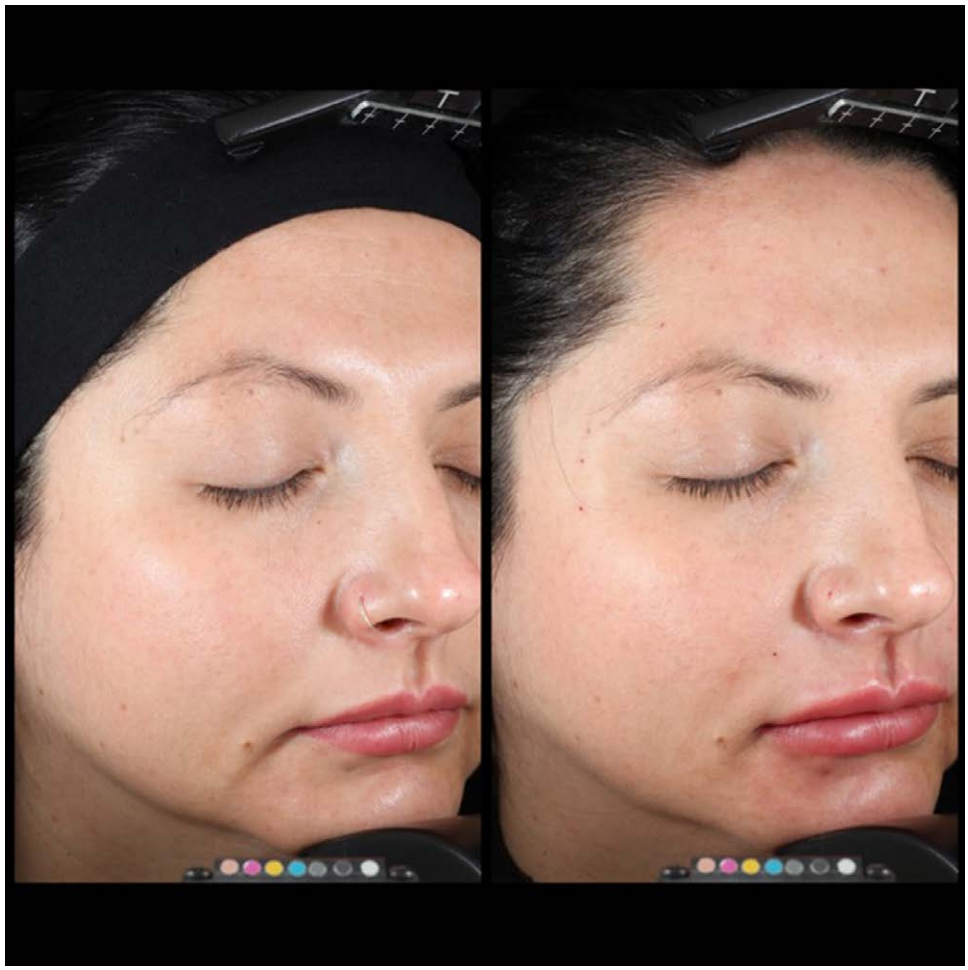

Fig. 2. Baseline and immediately post-treatment. A 39-year-old woman presented for overall facial rejuvenation and a desire to look "fresh." Patient received 2.1 cc of calcium hydroxyapatite to the cheeks and 1 cc hyaluronic acid 22.5 mg/mL to the lips. IncobotulinumtoxinA was used to treat the crow's feet, forehead, and glabella. Improvement in the melolabial folds and lip augmentation is visible. Written permission for photograph reproduction was obtained from the patient.

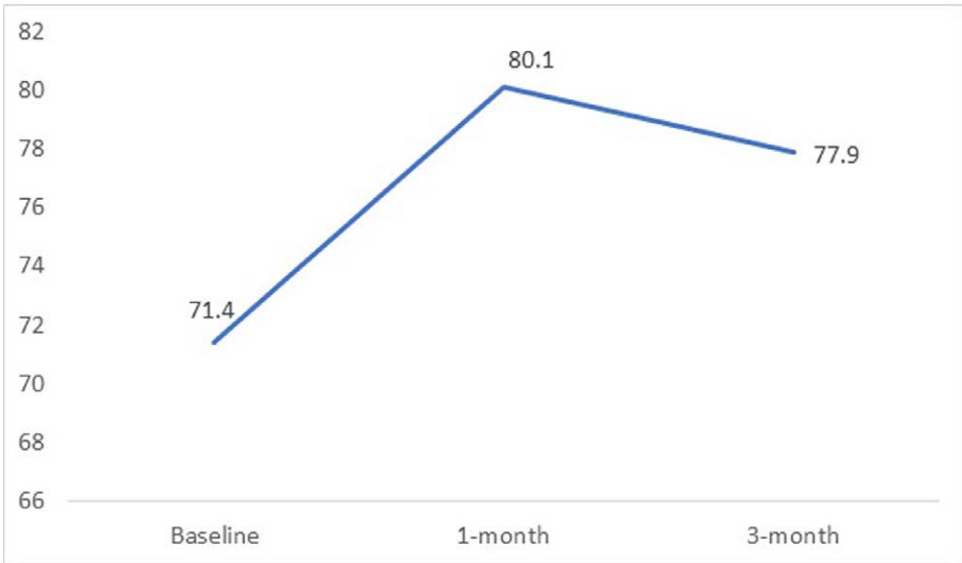

Fig. 3. FACE-Q Satisfaction with Facial Appearance. There was a significant improvement in FACE-Q scores at 1-month ($P = .01$) and 3-month ($P = .02$) compared to baseline. There was no statistical difference in mean scores between 1- and 3-month, demonstrating a sustained improvement in patient-reported outcomes. The FACE-Q score is rated from 0 to 100 with 100 being the highest satisfaction.

follow-up, which resolved without intervention by the 3-month visit. One patient (5%) was lost to follow-up at the 3-month visit.

Discussion

This study demonstrates sustained patient-reported satisfaction after 1 treatment with incobotulinumtoxinA, HA 22.5 mg/mL, and CaHA. FACE-Q scores demonstrate a high degree of long-term patient satisfaction after treatment with filler and neuromodulators. The physician-reported outcome measure, GAIS, found sustained improvement at 1- and 3-month follow-up. Adverse events were minimal. This study was designed to reflect real-life treatment conditions: 1 treatment using multiple injectable products such as neuromodulators, HA filers, and CaHA fillers.

Prior global facial rejuvenation studies have investigated the impact of these treatments on patient-reported outcomes. The HARMONY study was a multicenter, 4-month, prospective study that investigated patient-reported satisfaction after global facial rejuvenation.[1,19] HA filler injections were administered at baseline and onabotulinumtoxinA injections were at 3 months. In addition, patients received touch-up HA treatments at 2-week follow-up for further correction. In that study, over half of patients (57%) received a touch-up HA treatment.[1,19] At 4 months, the mean FACE-Q Satisfaction with Appearance score was 72.9, which is comparable to our FACE-Q Satisfaction with Appearance mean of 77.9 at 3 months.[20]

In contrast to the abovementioned HARMONY study, patients only received 1 treatment in our study. No touch-up filler or neuromodulator treatments were performed. In addition, the average volume of product used per patient was lower in our study compared to HARMONY. Other studies have also demonstrated high patient satisfaction for up to 8 months after global facial rejuvenation in 1 treatment using nonvalidated scales.[21]

Volume enhancement with CaHA and HA is an indispensable part of nonsurgical rejuvenation for patients seeking aesthetic enhancement.[15,16] While these fillers can address volume loss, they need to be combined with neuromodulators to relax hyperactive muscle movement.[17] Facial aging is a result of changes to all layers of the skin, including atrophy of bone resulting in loss of underlying support for the overlying structures. Treatment of both deep and superficial structures best recreates natural volume and contour. Global rejuvenation with only 1 treatment can result in a more aesthetically desirable outcome, providing an overall improvement to the entire face instead of isolated cosmetic units.[15,18]

Facial rejuvenation improves quality of life, specifically in relation to social life and self-confidence. Individuals who received dermal fillers were perceived by onlookers as having significantly higher ratings of personal and physical qualities, including facial symmetry, confidence, likeability, youthfulness, trustworthiness, attractiveness, intelligence, approachability, and happiness.[22] While greater physical attractiveness can confer more self-confidence and thus encourage generosity and socially likable behaviors, the Halo effect also plays a role. Studies of the Halo effect, the phenomenon in which a physically attractive person is perceived with more favorable traits (ie, trustworthiness), demonstrated that youthfulness, rather than gender or ethnicity, plays a larger role in positively influencing emotional well-being, relationships, and career success.[23]

Increasingly, minimally invasive injectables have become a popular cosmetic facial treatment. One treatment of global facial rejuvenation with CaHA, CPM-HA22.5, and incobotulinumtoxinA can result in sustained patient-reported satisfaction and physician-reported global improvement with minimal risks. By restoring facial volume and reducing rhytid appearance, such treatment may ultimately confer recipients more self-confidence and a higher quality of life.

Conflicts of interest

None.

Funding

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Study approval

This study was approved by Allendale IRB, #NCT05039723, https://clinicaltrials.gov/ct2/show/NCT05039723?term=NCT05039723&draw=2&rank=1.

Author contributions

KCL: Participated in research design, writing the manuscript, performance of research, and data analysis. JTL: Participated in writing the manuscript.

Patient consent

Informed, written consent was received from all patients for whom photographs are present in the manuscript.

Data availability

Access to data is available from the senior author upon request.

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