e-ISSN 3050-8460
Journal of Dermatology Research

ATHENAEUM SCIENTIFIC PUBLISHERS

Case Report

A Minimally Invasive Approach to Cosmetic Management of Facial Changes in Acromegaly

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Citation: Kent JA, et al. A Minimally Invasive Approach to Cosmetic Management of Facial Changes in Acromegaly. J Dermatol Res. 2025;6(3):1-4.
https://doi.org/10.46889/JDR.2025.6319

Received Date: 19-11-2025
Accepted Date: 23-11-2025
Published Date: 31-12-2025

Abstract

Background: Acromegaly is characterized by growth hormone excess leading to progressive soft-tissue hypertrophy and distinctive facial changes. Even after successful endocrine treatment, many patients experience persistent disfigurement that negatively affects quality of life. Despite this, data on minimally invasive cosmetic approaches for post-treatment acromegaly are limited.

Case Presentation: We report the case of a 41-year-old man with persistent acromegalic facial features approximately 12 months after achieving biochemical remission following pituitary adenoma resection. Preoperative Insulin-Like Growth Factor 1 (IGF-1) levels were markedly elevated (774 ng/mL on 8/4/2022), with progressive normalization following surgery (IGF-1 219-262 ng/mL in August 2023 and 164 ng/mL by March 2025). Growth Hormone (GH) levels similarly declined from 31.5 ng/mL preoperatively to <0.2 ng/mL on serial postoperative testing. The patient expressed significant distress regarding forehead heaviness, deepened nasolabial folds, midface deflation and lower-face disproportion. Prior to his diagnosis of acromegaly, he had undergone limited cosmetic treatment with botulinum toxin injections and topical tretinoin but had not received any fillers or surgical aesthetic procedures. A staged treatment plan using hyaluronic acid fillers and botulinum toxin type A (abobotulinumtoxinA) was implemented to restore facial balance while maintaining natural contours. Neuromodulator treatment with abobotulinumtoxinA (Dysport®, Ipsen Biopharm Ltd, Wrexham, UK) was first performed to soften frontalis and glabellar muscle activity (total dose 180 units; dilution 3 U/0.1 mL). Fine-line filler consisting of a cross-linked hyaluronic acid filler approved for lip augmentation (Restylane Kysse®, Galderma, Fort Worth, TX, USA) was injected into the forehead to soften deep creases, followed by midface volumization with a moderately firm hyaluronic acid filler designed for cheek augmentation (Restylane Contour®, Galderma, Fort Worth, TX, USA) delivered with a cannula and correction of nasolabial folds with a flexible filler approved for nasolabial fold correction (Restylane Defyne®, Galderma, Fort Worth, TX, USA). Adjunctive botulinum toxin was used to enhance symmetry and reduce dynamic rhytids. The patient demonstrated marked improvement in facial harmony and rated his satisfaction as 5/5 ("very satisfied"). No adverse events occurred.

Conclusion: This case highlights the utility of a minimally invasive, filler-based approach to address persistent facial changes in treated acromegaly. Hyaluronic acid fillers, combined with botulinum toxin, offer a safe, customizable alternative to surgical correction with immediate aesthetic benefit and minimal downtime. Careful selection of filler rheology and injection technique, tailored to the thickened soft tissue and altered bony framework seen in acromegaly, may help optimize outcomes and minimize risk. As cosmetic concerns increasingly influence long-term well-being in patients with acromegaly, additional research is needed to establish best practices for non-surgical facial restoration in this population.

Keywords: Acromegaly; Cosmetic Dermatology; Hyaluronic Acid Filler; Botulinum Toxin; Soft Tissue Hypertrophy

Abbreviations

Growth Hormone (GH); Botulinum Toxin Type A (BTX- A).

Introduction

Acromegaly is a rare disorder caused by an excess of Growth Hormone (GH), often due to a pituitary adenoma. People with acromegaly frequently develop distinctive facial features, such as a prominent forehead, a larger jaw, thicker lips and deep facial folds. After controlling hormone levels, these facial changes often remain and might cause aesthetic concerns. The literature on non-surgical cosmetic treatments for this population is limited. In this report, we present a case of a 41-year-old man with acromegaly who underwent targeted and minimally invasive cosmetic procedures to improve the symmetry of his face and address volume loss, aiming to improve his psychological well-being.

Case Report

The patient had previously undergone transsphenoidal resection of the pituitary adenoma on September 29, 2022. Preoperative IGF-1 levels were elevated at 774 ng/mL (8/4/2022) and 660 ng/mL immediately prior to surgery (9/29/2022). Postoperatively, IGF-1 levels declined to 221 ng/mL by December 2022 and stabilized within or near the age-adjusted reference range thereafter (219-262 ng/mL between August 2023 and February 2024, with continued decline to 161–164 ng/mL by 2025). Growth hormone levels mirrored this trend, decreasing from a preoperative value of 31.5 ng/mL (8/4/2022) to 0.55 ng/mL immediately postoperatively and remaining consistently suppressed (<0.2 ng/mL) on subsequent testing. Based on these laboratory trends, the patient was considered to be in sustained biochemical remission as of September 2023. Past medical history was notable for eczema, cystic acne and seasonal allergies, but he had no known diabetes, connective-tissue disease or other systemic conditions expected to significantly impair skin quality or wound healing. He was a former smoker who consumed less than one alcoholic drink per day and he denied any prior cosmetic procedures or facial surgery. When the patient presented to the clinic, he was frustrated with the coarsening of his facial features, which had not improved.

On examination, the patient demonstrated several facial changes typical for acromegaly, including prominent supraorbital ridges, a widened nasal bridge and deepened nasolabial folds. His lower face was significantly enlarged due to mandibular prognathism, contributing to facial asymmetry. The perioral region showed thickened lips and soft tissue hypertrophy, further accentuating the disproportionate facial features. Additionally, generalized soft tissue overgrowth, particularly in the midface and forehead, gave his face a coarse and exaggerated appearance (Fig.1).

Given the patient's unhappiness with his facial appearance, a staged filler-based approach was implemented to restore facial balance while preserving his natural features. The treatment sequence began with neuromodulation to reduce upper-face muscle activity, imprinting into the already thickened forehead skin. AbobotulinumtoxinA was reconstituted at a concentration of 3 U/0.1 mL and a total of 180 units was injected using a fine-gauge needle into the frontalis and glabellar complex, taking care to avoid excessive weakening that might worsen brow heaviness.

At his first follow-up visit, once the neuromodulator effect had stabilized, 1 cc of a fine line type of hyaluronic acid filler approved for use in the lips and upper lip etched lines (a cross-linked hyaluronic acid filler formulated for subtle augmentation; Restylane Kysse) was injected into the forehead using a serial puncture needle technique in a dermal to subdermal plane. The goal was to soften the deepened forehead creases and counteract the pronounced brow ridge. A very superficial technique was used, carefully trying to avoid vascular structures visualized with a vein imaging device to promote safety. A fine-gauge needle was used to allow precise placement of small aliquots while minimizing the risk of intravascular injection.

At his second follow-up appointment, a combination filler approach was used to address midface volume loss and deepened nasolabial folds, which were significantly exaggerated due to acromegalic changes. To restore midface volume, 4 cc of a moderately firm hyaluronic acid filler approved for cheek augmentation (a resilient, projection-capable cross-linked hyaluronic acid filler; Restylane Contour) was injected into the malar and zygomatic region using a 25G cannula in a supra-periosteal and subdermal plane, with 2 cc per side. To correct the pronounced nasolabial folds, 2 cc of a flexible hyaluronic acid filler approved for nasolabial fold correction (Restylane Defyne) was injected with a needle technique in a subdermal plane, delivering 1 cc per side to smooth the deep creases. The patient also received botulinum toxin type A injections to reduce dynamic muscle movement and support filler longevity. Standardized pre- and post-treatment photographs were obtained at each visit and both the treating physician and patient rated the overall change using the Global Aesthetic Improvement Scale (GAIS), with a final rating of "very much improved." The patient also rated his satisfaction with facial appearance as 5 out of 5 on a simple Likert scale. During the follow-up, the patient was very satisfied with the results, stating that his face looked more balanced and natural. Clinical

assessment and side-by-side photographs reveal a softer, more balanced midface, reduced brow and forehead heaviness and improved nasolabial fold contour (Fig. 1). Importantly, there were no adverse events, including vascular occlusion or prolonged edema.

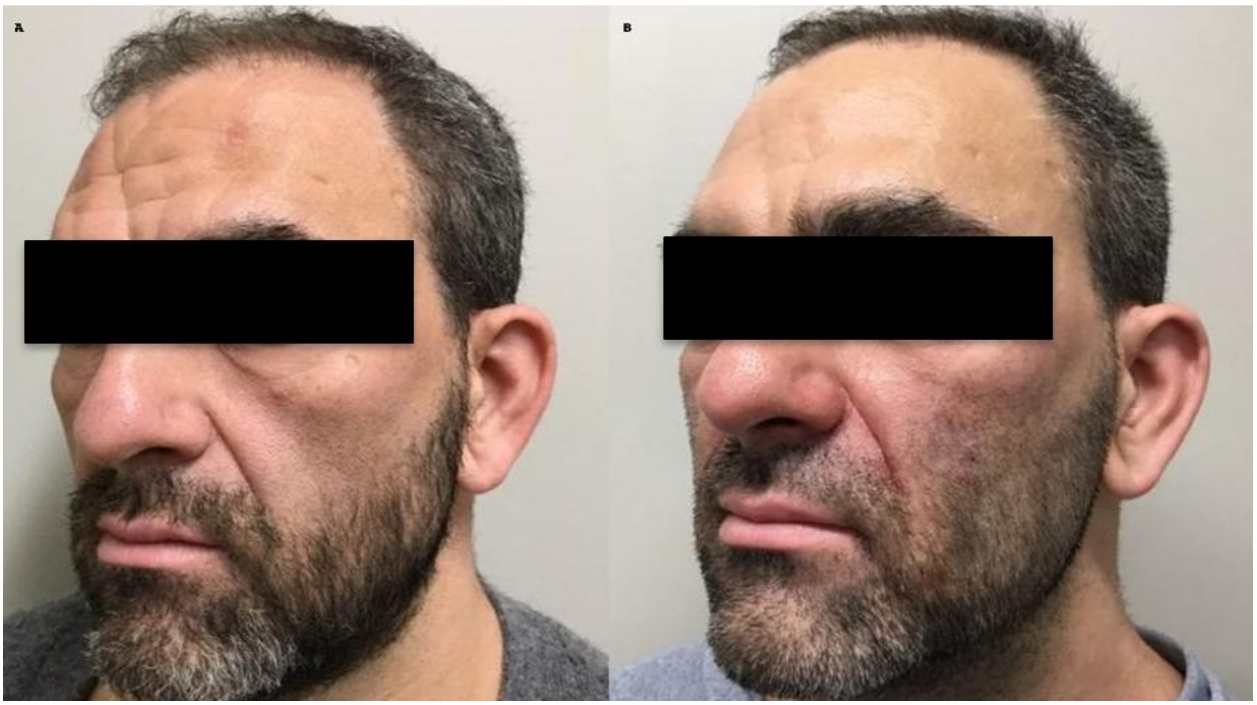

Figure 1: (A) Pre-treatment photo of the patient at initial consultation, demonstrating characteristic facial changes associated with acromegaly; (B) Post-treatment photo of the patient.

Discussion

While the primary focus of acromegaly treatment addresses GH elevation, persistent facial changes can impact self-perception, social interactions and quality of life. Surgical interventions for acromegaly, such as bimaxillary orthognathic surgery (Le Fort I osteotomy and bilateral sagittal split osteotomy) and partial glossectomy, are often used to correct mandibular prognathism, macroglossia and other dentofacial abnormalities [1,2]. In some instances, open rhinoplasty may be performed to reshape the nose, which can become disproportionately large due to GH-induced hypertrophy [3]. While surgery can improve structural balance and function, it also has a significant risk for potential complications, such as hematoma, infection, asymmetry and prolonged recovery time [4]. This case illustrates how non-surgical minimally invasive interventions, such as hyaluronic acid-based fillers, can improve facial symmetry and volume loss in post-treatment acromegaly patients. Unlike surgery, injectable fillers offer in-office minor-procedure alternatives with immediate results, minimal downtime and precise customization. Botulinum Toxin type A (BTX-A) also played a key role in this case by softening dynamic muscle movement and enhancing filler longevity. Carruthers, et al., demonstrated that the co-treatment of hyaluronic acid with BTX-A significantly extended filler longevity [5]. While laser resurfacing was not used in this case, it can be a helpful additional therapy to address static etched lines, particularly in the glabellar, lateral canthal and forehead regions. In acromegaly, soft tissues are often thicker, heavier and more fibrotic than in the general population and the underlying bony architecture is enlarged, especially in the supraorbital ridges and mandible. These features influenced our product selection by favoring a fine, moldable hyaluronic acid filler in the forehead to avoid over-bulking; a more robust, lifting filler in the midface to counteract soft tissue descent and a flexible filler in the nasolabial folds to accommodate perioral movement without creating stiffness. We also used a cannula in the cheeks to navigate the dense, hypertrophic tissues while reducing the risk of intravascular injection and bruising.

Conclusion

Patients with acromegaly may carry unique risks with cosmetic procedures, including altered vascular patterns, increased tissue weight contributing to gravitational descent and potential sleep apnea or cardiometabolic comorbidities that could influence peri-procedural safety. Although our patient did not have such high-risk comorbidities, we approached treatment conservatively, staging sessions, avoiding overcorrection and closely monitoring for signs of vascular compromise. Given the

rarity of the disease and the unique issues faced by patients, more studies are needed to determine best practices for minimally invasive therapies in acromegaly.

Conflict of Interest
Authors declare no conflict of interest.

Authors' Contributions
All authors have contributed equally to this work and have reviewed and approved the final manuscript for publication.

Funding Details
None.

Acknowledgements
None.

Consent for Publication
Informed consent for publication was obtained from the patient involved in this case report, as documented in the manuscript

Informed Consent Statement
Informed consent was obtained from the participant involved in this study.

Ethical Statement
Not applicable

Data Availability Statement
Not applicable

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