

Hyaluronic Acid-based Fillers for Facial Rehabilitation in Inherited Neuropath

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Summary: Charcot–Marie–Tooth (CMT) disease is the most prevalent inherited neuromuscular disorder. It commonly leads to various musculoskeletal deformities, profoundly impacting the quality of life. The present case report explores the often under-recognized body image dissatisfaction in CMT, highlighting the potential benefits of a multidisciplinary approach to enhance aesthetic satisfaction. We present a case of a 54-year-old woman with CMT, who experienced chronic facial asymmetry, significantly impairing her quality of life. Seeking cosmetic enhancement, she underwent two sessions of facial treatment using hyaluronic acid-based fillers. The first session focused on correcting right mandibular hypoplasia and other facial asymmetries, whereas the second session focused on enhancing perioral aesthetics. The treatment resulted in significant aesthetic improvements, as demonstrated by high ratings in both the Physician Global Aesthetic Improvement Scale and the Subject Global Aesthetic Improvement Scale. Besides, there was a marked reduction in lip corner asymmetry, the patient's primary concern. The role of hyaluronic acid fillers in facial aesthetic enhancement is well established, and their application in the context of CMT is a promising under-investigated field, to our knowledge. This case study highlights the importance of considering body image in CMT patients and suggests that minimally invasive aesthetic procedures can be a valuable addition to the multidisciplinary care of patients with inherited neurological disorders. Despite being a single-case study, the significant improvement in the patient's aesthetic satisfaction requires further research in this field. (*Plast Reconstr Surg Glob Open* 2024; 12:e5836; doi: [10.1097/GOX.0000000000005836](https://doi.org/10.1097/GOX.0000000000005836); Published online 22 May 2024.)

INTRODUCTION

Charcot–Marie–Tooth (CMT) is currently considered the most prevalent inherited neuromuscular disorder worldwide. Subtype 1A is the most frequent and clinically presents with musculoskeletal deformities, significantly impairing patients' quality of life.¹

Body image concern is an under-recognized theme that impacts quality of life, and a multidisciplinary approach can possibly offer a multitude of therapeutic options, potentially enhancing the overall aesthetic satisfaction.²

Minimally invasive injectable procedures are linked to improvement in overall body image concerns.

Nevertheless, aesthetic dissatisfaction management in the context of inherited neuropathies is a subject that has received limited research attention.³

We report the case of a middle-aged woman diagnosed with CMT who underwent cosmetic procedures with hyaluronic acid-based fillers and experienced significant improvement. Therefore, we discuss the potential impact of aesthetic procedures in patients living with neuromuscular disorders and the importance of considering body image dissatisfaction in their multidisciplinary treatment.

CASE REPORT

We present the case of a 54-year-old woman who has been dealing with chronic facial asymmetry resulting from CMT type 1A. This condition significantly impacted her quality of life. Upon conducting a comprehensive facial

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assessment, we noted the following: a shortened and less voluminous right hemiface, a lower left labial commissure, noticeable asymmetry in facial grooves with greater prominence on the left hemiface, a visibly narrower and thinner upper right lip and a dental occlusion with rotation of the upper arch to the right. After formal approval from her neurologist, the patient underwent two sessions of facial hyaluronic acid fillers, with a 6-month gap between them.

In the first treatment session, five syringes of hyaluronic acid-based fillers comprising a total of 7 mL were used. Products applied were as follows: Rennova Ultravolume (23 mg/mL), Rennova Deep Line Lido (23 mg/mL), and Rennova Fill Lido (23 mg/mL). This treatment aimed for correction of right mandibular hypoplasia, bilateral improvement of nasolabial and marionette folds, left side midface structural support, and correction of upper lip asymmetry.

Cosmetic dissatisfaction in the perioral area, which was the patient’s primary concern, persisted following this procedure. Therefore, a second injection session was performed 6 months later, primarily aimed at enhancing the results in this region. [See Video 1 (online), which shows a before-and-after comparison at a 45-degree angle comparison of the patient’s dynamic evaluation through smiling, following the second treatment session.] [See Video 2 (online), which shows a before-and-after frontal view of the patient’s dynamic evaluation through smiling, following the second treatment session.] The fillers used in this second treatment session were Rennova Deep Line Lido, Rennova Fill Lido and Rennova Lips Lido (20 mg/mL), totaling 4.25 mL. Both treatment sessions included skin antiseptis with alcoholic chlorhexidine and topical anesthesia with 4% lidocaine. Filler placement at both sessions was

accomplished using 22G and 25G 50-mm microcannulas, and a detailed injection protocol is available in the illustrations below (Fig. 1).

Changes in facial asymmetry following the procedure were objectively evaluated by two board-certified dermatologists using the Physician Global Aesthetic Improvement Scale comparing before-and-after photographs (Fig. 2B). Patients’ cosmetic satisfaction was also assessed three months after the last treatment session using the Subject Global Aesthetic Improvement Scale.⁴

Evaluations using the Physician Global Aesthetic Improvement Scale yielded “much improved” ratings from both blind evaluators, whereas the Subject Global Aesthetic Improvement Scale assessment resulted in “very much improved” ratings. Notably, a significant reduction in lip corner asymmetry, which was the patient’s primary concern, was observed. No major adverse events were reported following the cosmetic procedure. The only events reported were erythema at the injection sites and minor ecchymosis, which resolved within two weeks.

For the follow-up plan, new filler injections should be performed based on annual reassessments. The patient was advised that results are expected to be temporary but did not want to undergo a surgical procedure.

DISCUSSION

HA-based fillers are currently regarded as the most frequently used cosmetic fillers for aesthetic enhancement. HA is a completely biodegradable molecule that confers great overall safety.⁵

Myomodulation, achieved through strategic filler positioning, is an additional benefit that can enhance cosmetic outcomes in dynamic evaluations and potentially

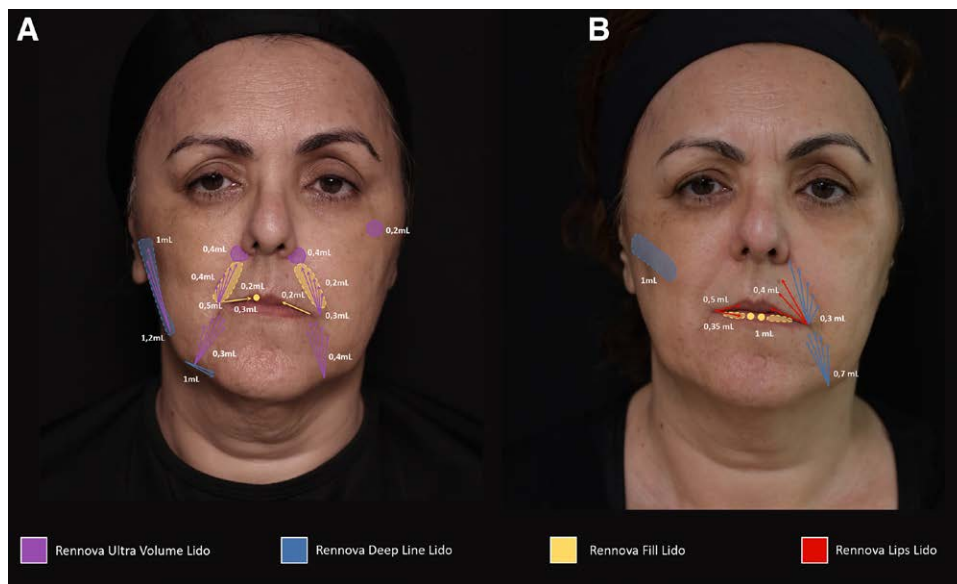


Fig. 1. Illustration of the facial areas treated, detailing the volume used (mL) and the injectable products used for each specific facial region. A, The first treatment session. B, The second session conducted 6 months later.



Fig. 2. This figure presents two key photographs for comparison. A, Baseline photograph taken before any treatment. B, Postprocedure photograph captured after completing the second treatment session.

complement volume loss correction. Periorificial regions, such as the perioral area, are among the areas that benefit the most from myomodulation with HA.⁶ Even minor imbalances in this anatomical area can have a significant impact on patients' well-being, which happened in the reported case.⁷

Autologous fat transplantation has been previously proposed for cosmetic enhancement of the dorsum of the hands for CMT patients.⁸ Fat grafting offers possible permanent results with a favorable safety profile, considering that it uses a biocompatible solution. The primary disadvantage of this method is that it requires a more invasive surgical intervention compared with synthetic cosmetic fillers. Therefore, hyaluronic acid-based fillers may be more suitable for patients seeking cosmetic improvements through minimally invasive procedures.⁹

Our case shows that a resorbable product can possibly provide good aesthetic results through a nonsurgical procedure. An additional advantage is the safety associated with hyaluronic acid, which can be dissolved by hyaluronidase. However, results are typically temporary. Therefore, patients should be advised that annual assessment and potential new filler injections should be part of the follow-up plan.⁵

Facial asymmetry has a substantial impact on the quality of life for patients. In cases resulting from neurological disorders, such as facial nerve paralysis, the use of botulinum toxin for cosmetic enhancement has demonstrated promising outcomes.¹⁰ However, the treatment of cases attributed to inherited neurological disorders using only HA-based dermal fillers remains, to our knowledge, an unexplored area within the field of aesthetics.

To the best of our understanding, this is the first published case study that evaluates the cosmetic outcomes and their impact on quality of life in this particular scenario. Although the extrapolation of results from this

single-patient study is limited, the high level of cosmetic satisfaction achieved and its substantial impact on the patient's life warrant further investigation in future, large sample-sized studies. Moreover, minimally invasive aesthetic procedures should be considered as part of a comprehensive, transdisciplinary approach for patients with inherited neurological disorders.²

CONCLUSIONS

Cosmetic concerns are not uncommon among patients with severe comorbidities affecting facial features. However, there is a lack of studies in this field, due to concerns regarding adverse events associated with injectable implants. This case represents a successful outcome with no major adverse events following the procedure. Correcting facial asymmetries requires a high level of professional expertise, but this treatment has the potential to provide significant benefits for patients with long-standing facial asymmetries caused by inherited disorders.

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DISCLOSURES

In this study, the injectable fillers used were supplied by Innovapharma Brasil Farmaceutica, a known private company in the cosmetic industry. Thamires Silva Cavalcante de Almeida, MD recently signed a contract as a speaker with Innovapharma Brasil, the distributor of Rennova products in Brazil. Dr. Bravo receives financial contribution from this company. However, Innovapharma Brasil Farmaceutica did not play any role in the study design, data collection, interpretation of data, or writing of

the article. All the authors have no financial interest to declare in relation to the content of this article.

PATIENT CONSENT

The patient provided written consent for the use of her image.

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