Journal of Surgery and Trauma 2024; 12(2):79-84.
jsurgery.bums.ac.ir

CASE REPORT

A Successful Case of Facial Rejuvenation Surgery in a Patient with Neurofibromatosis: A Two-Stage Approach

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Received: June 13, 2024 ***Revised: October 20, 2024*** ***Accepted: October 29, 2024***

Abstract

Facial neurofibromatosis causes disfigurement and aesthetic challenges due to the development of facial nodules. Managing this requires a tailored approach considering the condition's impact on self-esteem and quality of life. This article explores midface lift and forehead lift surgeries in addressing facial neurofibromatosis, highlighting their rejuvenating effects on facial skin and contours. A case study is presented, providing insights into the efficacy of surgical correction in improving aesthetic outcomes and patient well-being. A 48-year-old woman with neurofibromatosis and facial nodules underwent a two-stage surgical intervention involving midface lift and forehead lift. The midface lift involved repositioning underlying tissues and removing excess skin, resulting in improved appearance. The forehead lift elevated eyebrows and smoothed wrinkles and furrows. Postoperatively, the patient experienced significant improvements in facial symmetry, contour, self-esteem, and quality of life. The surgical outcomes were successful, with no major complications observed during recovery. This case study demonstrates the efficacy of combining surgical techniques to restore facial symmetry and contour in patients with neurofibromatosis. The study highlights the importance of individualized care and the potential for surgical intervention to improve well-being. Further research and long-term follow-up studies are recommended to optimize treatment outcomes in craniofacial surgery for neurofibromatosis.

Key words: Neurofibromatosis, Rejuvenation, Surgery

Introduction

Neurofibromatosis is a genetic disorder that affects the nervous system, causing tumors to form on nerve tissue. The cause of neurofibromatosis is genetic, and it is typically inherited in an autosomal dominant pattern, which means that only one copy of the affected gene is necessary for the condition to develop (1). In some cases, however, the condition can occur due to spontaneous genetic mutations. When neurofibromatosis affects the face, it can lead to the development of multiple nodules, or neurofibromas, on the skin. These nodules can cause disfigurement, asymmetry, and distortion of facial features (1, 2).

In some cases, the tumors may also affect underlying soft tissues and bones, leading to functional impairments and aesthetic challenges. The impact on facial skin can significantly influence the patient's self-esteem and quality of life, making the management of facial neurofibromatosis a critical aspect of care for affected individuals (3, 4). Among its various manifestations, neurofibromatosis can also present with facial involvement, leading to

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[DOI: 10.61186/jsurgtrauma.12.2.79]

significant aesthetic and functional challenges for affected individuals. In the realm of plastic and reconstructive surgery, addressing facial disfigurement in patients with neurofibromatosis poses a unique set of challenges that require a tailored and meticulous approach (3-5).

A midface lift, also known as a cheek lift or a lower eyelid lift, is a surgical procedure designed to address the signs of aging in the middle region of the face. This procedure primarily targets the area between the lower eyelids and the mouth, often focusing on lifting sagging tissues, improving the appearance of the cheeks, and addressing nasolabial folds. During a midface lift, incisions are typically made in inconspicuous locations (e.g., within the hairline or inside the mouth) to minimize visible scarring. The underlying tissues are then repositioned, and excess skin may be removed to achieve a more youthful and refreshed appearance. The midface lift can help restore volume and contour to the midfacial region, resulting in a rejuvenated and harmonious facial aesthetic (6, 7).

During the surgical procedure, upon reaching the skin, the SMAS layer is encountered. The superficial musculoaponeurotic system, known as SMAS, is commonly characterized as a structured fibrous network encompassing the platysma muscle, parotid fascia, and fibromuscular layer that envelops the cheek. In facelift surgery, alongside skin removal, manipulation of the SMAS is essential, and this can be achieved through two distinct methods, namely Imbrication and Plication. Imbrication entails the overlapping or folding of the SMAS layer onto itself, wherein a section of the SMAS is elevated and subsequently sutured in a manner that creates an overlap with an adjacent segment of the same layer. On the other hand, Plication involves the folding and suturing of the SMAS layer without generating an overlap. The surgeon employs a series of sutures to fold the SMAS layer in place, thereby tightening it without incorporating additional bulk from overlapping tissue (6-8).

On the other hand, a forehead lift, also known as a brow lift, is a surgical procedure aimed at addressing sagging or drooping of the brow and forehead area. This procedure can elevate the eyebrows to a more youthful position, smooth out forehead wrinkles and furrows, and improve the overall symmetry and balance of the upper face. Various techniques, including traditional surgical methods and endoscopic approaches, may be employed to perform a forehead lift, with the goal of achieving natural-looking and long-lasting results. By repositioning the underlying tissue and adjusting the muscles and skin of the forehead, a forehead lift can create a more alert, rested, and refreshed appearance (9, 10).

The trichophytic method is a technique used in forehead lift surgery to address sagging brows and forehead wrinkles. In this approach, the incision is made along the hairline, typically within the hair-bearing scalp. The unique aspect of the trichophytic method is that the incision is made in such a way that it allows hair follicles to grow through the scar, helping to camouflage its visibility. By incorporating hair follicles into the scar line, the trichophytic method aims to minimize the appearance of scarring post-surgery, making it a popular choice for individuals concerned about visible scars after forehead lift procedures. This technique can provide a more natural-looking result, compared to other methods that may leave more noticeable scars along the hairline. Overall, the trichophytic method is a valuable approach in forehead lift surgery for those looking to achieve a rejuvenated appearance with minimal scarring along the hairline. It combines aesthetic considerations with surgical precision to deliver satisfactory outcomes for patients seeking facial rejuvenation (9-11).

Both the midface lift and the forehead lift can have significant effects on the skin of the face. These procedures aim to address sagging, laxity, and aging-related changes in the facial skin and underlying tissues, ultimately leading to a more youthful, lifted, and rejuvenated appearance (10). Additionally, by repositioning and tightening the facial tissues, these surgeries can enhance facial contours, reduce the prominence of wrinkles and folds, and contribute to a more harmonious and balanced facial aesthetic. Overall, the midface lift and forehead lift can have transformative effects on the skin and appearance of the face, helping patients achieve a more refreshed and revitalized look.

This article aims to elucidate the intricacies of managing facial neurofibromatosis through a detailed analysis of the diagnostic process, treatment planning, surgical techniques employed, and postoperative outcomes.

Case

We present the case of a 48-year-old woman with neurofibromatosis who presented with multiple nodules on her face. The patient's medical history was significant for neurofibromatosis, and she had been experiencing progressive facial asymmetry and disfigurement over several years. Upon physical examination, we noted multiple neurofibromas on the patient's face, primarily affecting the midface region. Interestingly, upon pulling the patient's skin, we noticed a significant

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improvement in the appearance of her face (Fig. 1). With this observation in mind, we decided to proceed with surgical intervention to correct the patient's facial asymmetry. We devised a two-stage surgical approach, which involved a midface lift and one step of forehead lift.

During the first stage, a midface lift was performed. This involved a traditional technique, with incisions made within the hairline and inside the mouth to minimize visible scarring. After creating access to the subcutaneous layer of the midface, we dissected the surrounding tissue for large fibrous nodules that could be palpably felt on the skin with digital manipulation. We then pulled the fibrous tissue to the extent possible until it could be removed, followed by its extraction. After reaching the SMAS layer, we removed a 3×3 square from it and then performed the Imbrication technique. The underlying tissues were repositioned, and excess skin was removed to achieve a more youthful and refreshed midface appearance (Fig. 2).



Figure 1: Initial photographs of the patient's facial features



Figure 2: Surgical incision for facelift procedures and the excision of SMAS tissue, along with the quantity of skin removed

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In the second stage (after 6 months), a one-step forehead lift was performed. This involved a triphotic approach, with small incisions made within the anterior of the hairline to access the underlying tissues. The muscles and skin of the forehead were adjusted to elevate the eyebrows and smooth out forehead wrinkles and furrows, resulting in a more alert and rejuvenated upper face. The forehead lift was performed using the trichophytic approach, and the reason for using it in this patient was the high forehead and the need for extensive access to dissect fibrous nodules and remove them. Similar to the previous midface lift surgery, the patient had large fibrous nodules that could be palpably felt on the skin with digital manipulation (Fig. 3).

We dissected the surrounding tissue and then removed them (Fig. 4). Postoperatively, the patient demonstrated significant improvements in facial symmetry and contour, with a more youthful and refreshed appearance. The patient's self-esteem and quality of life improved dramatically, as reported by her and confirmed through follow-up consultations (1-year follow-up). The patient did not experience any major complications during the recovery period, and the surgical outcomes were deemed successful (Fig. 5).



Figure 3: Comparison of the patient's mid-facial region before and after undergoing facelift surgery



Figure 4: The trichophytic incision method employed for surgery, involving the excision of substantial subcutaneous nodules, and the quantity of skin removed during the patient's subsequent forehead lift procedure

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Figure 5: Appearance of the patient after 3 months of the patient's second surgery

At the beginning of the study, informed consent was obtained from the patient after providing complete information. This case report was conducted as part of a research study to evaluate the systemic diseases prevalence in patients referred to the Surgery Department of Zahedan Dental School (IR.ZAUMS.REC.1400.426).

Discussion

The presented case of a 48-year-old woman with neurofibromatosis and multiple nodules on her face highlights the challenges and complexities associated with managing facial disfigurement in individuals with this genetic condition. The unique observation that the patient's condition improved upon pulling the skin underscored the potential for surgical correction and provided valuable insights into the underlying pathophysiology of facial asymmetry. The decision to perform a two-stage surgical approach, involving a midface lift and one step of forehead lift, was based on a thorough assessment of the patient's condition and the desired treatment outcomes. This approach allowed for a comprehensive correction of the facial asymmetry, addressing both the midface region and the upper face to achieve a harmonious and balanced aesthetic result (12, 13).

The successful outcome of the surgical intervention underscores the efficacy of utilizing a combination of surgical techniques to address the complex manifestations of neurofibromatosis on the face. By repositioning the underlying tissues and adjusting the skin, the midface lift and forehead lift effectively restored facial symmetry and contour, leading to a drastic improvement in the patient's appearance. Furthermore, the postoperative improvement in the patient's quality of life and self-esteem aligns with the broader goals of surgical intervention in individuals with facial neurofibromatosis. Beyond the physical changes, the psychosocial impact of the surgical outcomes cannot be understated, as the patient experienced a significant boost in confidence and well-being following the procedures (3, 12, 4).

This case study contributes to the existing literature by demonstrating the feasibility and efficacy of a staged surgical approach in the management of facial neurofibromatosis. The strategic planning and execution of the procedures, tailored to the specific needs of the patient, resulted in favorable outcomes and underscored the importance of individualized treatment in such cases. Moving forward, continued research and clinical observations in the field of craniofacial surgery for neurofibromatosis are warranted to further refine treatment algorithms and optimize patient outcomes. Long-term follow-up studies will also be valuable in assessing the durability of the surgical results and the impact on the patient's overall well-being (14, 15).

Conclusions

The case presented herein sheds light on the potential of surgical intervention, specifically

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midface lift and forehead lift, in addressing the facial manifestations of neurofibromatosis. The successful outcomes achieved in this case underscore the transformative impact of surgical correction on both the physical and psychosocial aspects of patients with facial neurofibromatosis, providing a foundation for further advancements in the field.

Acknowledgments

The authors express their gratitude to the Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Zahedan University of Medical Sciences, Zahedan, Iran.

Conflict of Interest

The authors have no conflict of interest.

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