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Case Report

Facial Deformity in the Lower Third Due to a Gunshot Wound: Surgical Approach and Rehabilitation

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Abstract

Introduction: This case presents a 32-year-old male soldier who suffered a gunshot wound to the lower third of the face, resulting in the loss of more than two-thirds of the lower lip. He received emergency care at the Armed Forces Hospital in Addis Ababa, Ethiopia, and was later referred due to facial deformity secondary to the injury. The surgical intervention aimed to restore both function and aesthetics of the labial and nasal regions.

Objective: The main goal of this case was to restore lip function, reduce microstomia and scar retraction, and improve facial symmetry, particularly in the lower lip and nose region.

Methods: The surgical intervention included an incision in the upper and lower lip region along the residual scar to remove fibrosis and adhesions. A bilateral perialar flap was used to advance the tissues and reconstruct the anterior hemilabial region, combined with a Z-plasty to reposition the philtrum of the neolabium, reduce tension, and improve nasal asymmetry.

Results: The surgery significantly improved lip functionality (speech, eating) and aesthetics by reducing microstomia, repositioning the deviated nasal ala, and enhancing facial symmetry. Despite post-surgical challenges inherent to tissue loss, the patient achieved satisfactory functional and aesthetic recovery.

Conclusion: The restoration of the facial region following a gunshot wound to the lower lip requires a comprehensive surgical approach addressing both functionality and aesthetics. The use of perialar flaps, Z-plasty, and scar release techniques proved effective for facial reconstruction in this case, improving the patient's quality of life.

Keywords: Facial Deformity; Gunshot Wound; Surgical; Rehabilitation

Introduction

Gunshot wounds to the facial region, particularly the lower third of the face, pose a significant challenge due to their ability to cause both functional and aesthetic deformities. These injuries severely impact bone, muscle, and nerve structures, disrupting facial symmetry and impairing chewing, speech, and other vital functions. Reconstruction of this area requires not only advanced surgical skills but also meticulous planning to restore aesthetics and function while minimizing scarring and maximizing long-term results. The complexity of treating these injuries lies in the interaction of multiple factors, including the type of damage, the wound location, and the need for a multidisciplinary approach [1-3].

Additionally, scars resulting from gunshot wounds can have a profound psychological impact on patients due to the aesthetic alteration of such a visible area as the face. Surgical treatment must consider not only physical repair but also the patient's emotional rehabilitation to restore overall well-being. Preoperative planning and collaboration between different specialists are essential to achieving optimal outcomes and improving the patient's quality of life.

Objectives

- Describe the clinical presentation of a facial deformity in the lower third secondary to a gunshot wound.
- Identify the challenges in treating a facial injury resulting from a gunshot wound.

Case Background

A 32-year-old male patient sustained a gunshot wound to the lower third of the face during a confrontation in the context of the war in Ethiopia. He suffered the loss of more than two-thirds of the lower lip and received emergency care at the Armed Forces Hospital in Addis Ababa, Ethiopia. He was diagnosed with a comminuted mandibular fracture and a significant lower lip defect due to tissue loss (>50%). The initial intervention included wound debridement and primary closure.

Months later, the patient presented for consultation, referred from the emergency hospital, due to a facial deformity secondary to the gunshot wound, which caused both functional and aesthetic alterations.

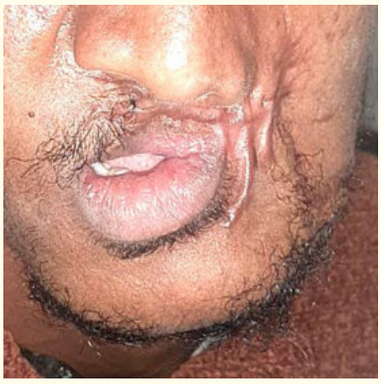

Figure 1: Patient with squamous cell carcinoma of the buccal mucosa.

Case Description

On clinical examination, the patient presented with extensive hypertrophic scarring in the upper and lower lip regions, along with deviation of the nasal ala due to scar retraction. Labial microstomia was also observed, significantly impairing speech and eating. Facial asymmetry and restricted lip movement were evident, affecting the patient's quality of life.

Discussion

Challenges and surgical considerations

One of the primary challenges in this case was designing a combined surgical approach that would not only remove the extensive hypertrophic scar but also efficiently reorganize and reposition the facial structures. The extensive hypertrophic scar interfered with lip function and facial symmetry, and its release was crucial to achieving a satisfactory functional and aesthetic outcome [3-5].

A key concern during treatment planning was ensuring that necessary incisions were strategically placed to camouflage scars while also reducing tension in the lower lip, an area particularly vulnerable due to tissue loss and commissural deviation. By doing so, microstomia was avoided, and the patient's oral aperture improved, positively impacting speech and eating abilities [6-8].

A critical aspect of treatment was reorganizing the neolabium to restore both aesthetics and function of the lower lip. Using techniques such as Z-plasty, the neolabium's philtrum was properly repositioned, ensuring facial symmetry and correcting nasal ala deviation [9,10].

Figure 2

This combined approach was essential to achieving the ultimate goal of optimal patient recovery, not only in terms of lip and nasal function restoration but also in facial aesthetic improvement.

Surgical approach and planning

The surgical procedure was carefully planned to address facial defects secondary to the gunshot wound and was carried out in multiple stages to ensure proper functional and aesthetic reconstruction [11,12].

Incision in the upper and lower lip region

- A surgical incision was made along the residual scars of the upper and lower lips. This incision allowed for the removal of residual fibrosis and the release of adhesions causing scar retraction. This step was crucial in preparing the area for defect correction and improving lip mobility.

Bilateral perialar flap

- A bilateral perialar flap was designed to advance and reconstruct the anterior hemilabial region. This flap provided an adequate supply of living tissue to cover the labial defect and enhance both function and aesthetics of the lower lip [13-15].

Z-plasty for philtrum repositioning

- As part of lower lip reconstruction, Z-plasty was performed to reposition the philtrum of the neolabium. This technique not only restored the shape and symmetry of the lip but also helped camouflage incisions between the flap and the original defect [3-5].

Tension and microstomia reduction

- Z-plasty, along with flap advancement, helped decrease lip tension and correct microstomia, improving oral opening and facilitating chewing and speech.

Repositioning of the deviated nasal ala

- The nasal asymmetry caused by scar-induced retraction was also addressed during surgery. The deviated and flattened nasal ala was repositioned, restoring facial symmetry. This was fundamental to improving the aesthetic proportion of the lower facial third [13-15].

Figure 3

Conclusion

This case highlights the importance of detailed surgical planning, the use of modern reconstruction techniques, and the ability to adapt to the challenges of post-traumatic scarring in the facial region. It also underscores the relevance of addressing both functional and aesthetic aspects of patients to ensure comprehensive recovery and improve postoperative quality of life. Continuous advancements in surgical techniques and proper postoperative management are crucial for the successful restoration of complex traumatic facial defects.

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Bibliography

1. López-Pousa P., *et al*. "Local flaps in the reconstruction of traumatic lip defects". *Journal of Oral and Maxillofacial Surgery* 79.10 (2021): 1894-1903.

2. Yamada Y., *et al*. "Optimization of Z-plasty in facial reconstructive surgery". *Plastic and Reconstructive Surgery* 150.3 (2022): 533-541.

3. Peterson S., *et al*. "Treatment of hypertrophic scars in the facial region: a combined surgical and laser approach". *Dermatologic Surgery* 48.4 (2022): 705-711.

4. Sohn T., *et al*. "Treatment of postsurgical microstomia with advancement flaps: a 3-year review". *Journal of Craniofacial Surgery* 34.6 (2023): 1324-1329.

5. Wang H., *et al*. "Post-traumatic nasal reconstruction in complex facial wounds: advances in cartilage grafting and local flap techniques". *Journal of Craniofacial Surgery* 32.5 (2021): 1243-1251.

6. Ferguson J., *et al*. "Impact of facial scars on patients' quality of life: long-term outcomes in reconstructive surgery". *Journal of Craniofacial Surgery* 35.2 (2023): 506-511.

7. Thompson B., *et al*. "Use of Z-plasty and local flaps for traumatic lower lip reconstruction". *Journal of Oral and Maxillofacial Surgery* 80.8 (2022): 1553-1561.

8. Chen S., *et al*. "Perial flaps in the reconstruction of post-traumatic facial defects". *Journal of Craniofacial Surgery 33*.7 (2022): 1784-1790.

9. Ali K., *et al*. "Skin grafting techniques in the reconstruction of gunshot wounds in the facial region". *Plastic and Reconstructive Surgery-Global Open* 10.5 (2022): e4142.

10. Zhou X., *et al*. "Long-term outcomes of microstomia reconstruction with advancement flaps and release techniques". *Journal of Oral and Maxillofacial Surgery* 80.4 (2022): 789-797.

11. Roberts S., *et al*. "Combined surgical strategies in the repair of ballistic trauma-related lip defects". *Journal of Craniofacial Surgery* 32.6 (2021): 1432-1438.

12. Kato T., *et al*. "Advances in post-traumatic facial reconstructive surgery: a multidisciplinary approach". *Journal of Plastic, Reconstructive and Aesthetic Surgery* 76.1 (2023): 1-8.

13. Goh BK., *et al*. "Reconstruction of post-traumatic perioral region using local flaps and scar release techniques". *Annals of Plastic Surgery* 91.3 (2023): 350-356.

14. Zhang J., *et al*. "Repair of postsurgical microstomia with bilateral advancement flaps: outcomes and current techniques". *Journal of Craniofacial Surgery* 33.3 (2022): 803-809.

15. Williams D., *et al*. "Advancement flaps and Z-plasty in the restoration of the labial region after severe traumatic injuries". *Plastic and Reconstructive Surgery* 148.2 (2021): 320-326.