ORIGINAL RESEARCH PAPER
Volume - 13 | Issue - 05 | May - 2024 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

COMBINED LE-FORT II AND III FRACTURES: MANAGEMENT STRATEGIES AND OUTCOMES

Maxillofacial Surgery

Dr. Aamir Shaikh* Post Graduate, Department Of Oral And Maxillofacial Surgery, Yenepoya Dental College And Hospital, Managalore, Karnataka. 575018 *Corresponding Author

Dr. Akshit Batra Post Graduate, Department Of Oral And Maxillofacial Surgery, Yenepoya Dental College And Hospital, Managalore, Karnataka. 575018

ABSTRACT

Le-fort fractures represent severe trauma to the craniofacial region, posing significant challenges in management and functional recovery. This case report highlights the complexities of surgical intervention and multidisciplinary collaboration by providing a full account of a challenging Le-fort II and III in a male patient, fifty years of age. The patient was seen with severe facial trauma following a rear-end motorcycle accident. The injuries included orbital and nasal bone fractures as well as a mid-palatal split. Precise fracture delineation and treatment planning were made easier by pre-operative testing, which included clinical examination and sophisticated imaging. A phased strategy for surgical intervention was used, including soft tissue reconstruction, orbital floor repair, and open reduction and internal fixation. Following surgery, careful observation and therapy were implemented to treat soft tissue healing, psychological health, and occlusal irregularities. A long-term follow-up revealed good functional and cosmetic results, including the restoration of patient satisfaction, occlusion, and facial symmetry. This case study highlights the significance of a thorough, interdisciplinary approach in managing complicated Le-fort fractures and highlights the need for precise surgical skills, cutting-edge technology, and patient-centered care.

KEYWORDS

Le-fort fractures, maxillofacial trauma, nasal fracture; open reduction and internal fixation.

INTRODUCTION

René Le Fort, a French physician, first reported Le Fort fractures in 1901. These fractures are significant disturbances of the craniofacial bone brought on by high-energy trauma. Le Fort I, II, and III are the three unique patterns into which these fractures are divided. Le Fort II and III fractures include complex midfacial injuries that, because of their potential for considerable morbidity and mortality, frequently necessitate quick detection and comprehensive therapy [1,2].

When Le Fort II and III fractures are combined, the result is a distinct clinical situation where the midfacial bone is severely disrupted in both horizontal and vertical directions [2]. To treat the various anatomical and functional issues posed by this complicated injury pattern, a multidisciplinary strategy comprising maxillofacial surgeons, neurosurgeons, ophthalmologists, and otolaryngologists is required [3]. Timely identification, thorough pre-operative planning, and sophisticated surgical methods are necessary to maximize results and reduce long-term complications.

We report a case of a patient who had combined Le Fort II and III fractures in this context, including the patient's clinical presentation, diagnostic assessment, surgical therapy, and post-operative results. By presenting this case, we hope to draw attention to the complexity of these injuries and emphasize how crucial a thorough, interdisciplinary approach is to attaining successful therapeutic outcomes and regaining the appearance and functionality of the face [4].

Case Report

A 50-year-old male trauma victim involved in RTA (bike v/s bike) sustaining blunt facial trauma reported to the Emergency Room with clinical findings of peri-orbital edema on the right eye region, bilateral infra-orbital ecchymosis, sub-conjunctival hemorrhage being observed on the left eye laterally, a healed abraded wound on lower lip region, deviated nasal bridge towards the left side with multiple facial fractures. (FIG.1,2,3 AND 4)

Figure 1,2 – Frontal View And Birds Eye View Respectively

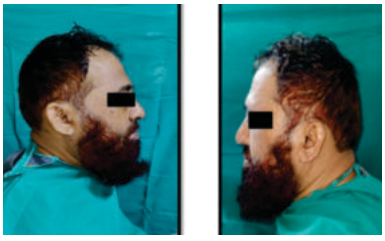

Figure 3,4- Right And Left Sided View Respectively.

The patient complained of difficulty in mouth opening (FIG.5), with a positive history of nasal bleed and oral bleed. There was no difficulty in breathing, SPO2 was maintained. Patient was subjected to hematological, biochemical and radiological investigations which represented a normal profile. CT scan of the head region revealed comminuted fracture involving walls of bilateral maxillary sinus, fracture of both nasal bones with extension into nasal septum, fractures involving the medial and lateral pterygoid plates on both sides, fracture involving the hard palate extending into the alveolar process, considering the CT-scan findings the final diagnosis of right Le-fort II and left Le-fort III along with palate-alveolar fracture with Oro-nasal communication and laterally displaced nasal bone fracture were made. (FIG. 6,7,8)

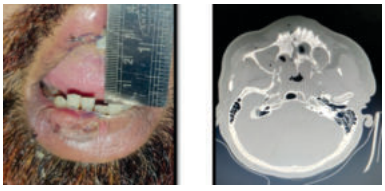

Figure 5,6- Mouth Opening And Ct-Scan-Axial View

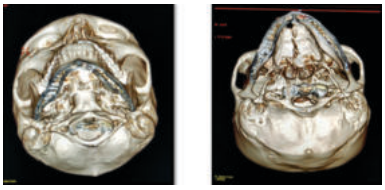

Figure 7,8- 3-D Skull View (CT-Scan)

The patient underwent open reduction and internal fixation under submental intubation under GA (FIG.9). Palato-alveolar fracture was managed by placing Intra-oral vestibular incision extending from the first molar on either side and the fracture site was exposed (FIG.14).

Reduction of the fracture segment with Hayton Williams forceps was performed (FIG.15). Fixation was carried out using 1.5mm 4-hole stainless steel miniplates with a gap at the anterior maxillary buttress region. (FIG.16) Transpalatal wiring was done to stabilize the reduced alveolar fracture site(FIG.19). ZMC fractures region on Left side was managed by placing Lateral brow incision and dissection and exposure of the fracture segment (F-Z region). Reduction and later fixation was done using 2mm 4-hole with gap stainless steel miniplates (FIG.17). On the Right side ZMC region Inferior orbital rim incision was placed. Dissection and exposure of the fracture segment was carried out (FIG.12,13). Reduction and fixation using 1.5 mm 6-hole without gap stainless steel orbital plate was performed. The nasal bone fracture was managed by using Walsham's forceps for reduction. After stabilizing the fracture site nasal packing and prefabricated external nasal splint was placed (FIG.18). Closure was done using 3-0 vicryl and 4-0 ethilon.

Figure-9- Submental Intubation

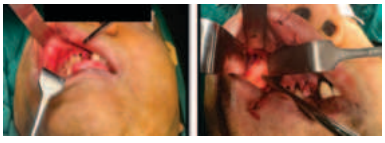

Figure 10, 11- Upper Right Vestibular Incision, Fracture Line Exposed (Blue Dotted Area)

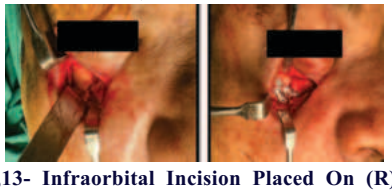

Figure 12,13- Infraorbital Incision Placed On (R), Fracure Reduced And Plating Done

Figure 14,15- Incision Extended Anteriorly To Expose Anterior Nasal Butress Region, Para-alveolar Fracture Exposed And Fixed Using SS-plate.

Figure 16,17- Hayton William's Forceps Was Used To Reduce Para-alveolar Fracture And Upper Left F-Z Suture Fracture Was Fixed Using SS-plate.

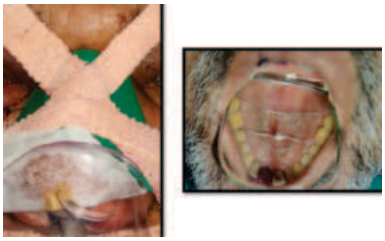

Figure 18,19- Nasal Fracture Reduced And Prefabricated Splinting Done, Transpalatal Wiring Done.

Figure 20,21- Intra-op Occlusion Achieved

Figure 22,23- Post-op Day 11

Post-operatively, the patient underwent intensive monitoring and rehabilitation to address functional deficits and optimize outcomes. Long-term follow-up demonstrated successful restoration of facial aesthetics and function, highlighting the effectiveness of the multidisciplinary approach in managing combined Le Fort II and III fractures.

DISCUSSION

Because of their complexity, possibility for severe face deformity, and potential for functional impairment, combined Le Fort II and III fractures represent a problematic subset of craniofacial injuries [1]. We go over the clinical presentation, diagnostic assessment, surgical treatment, and results of a male patient, age 50, who suffered similar injuries in this case report.

The patient had orbital displacement, cranial nerve impairments, and typical symptoms of midfacial instability. These clinical characteristics highlight the significance of a comprehensive physical examination in detecting and categorizing these injuries as they are typical signs of combined Le Fort II and III fractures [2].

An amalgam of clinical evaluation and sophisticated imaging modalities, including computed tomography (CT) scans and three-dimensional reconstructions, were used in the pre-operative assessment. The accurate identification of fracture patterns and evaluation of related injuries made possible by these imaging modalities aided in the planning and decision-making process for surgery [3].

Because the midfacial skeleton's horizontal and vertical components are involved, combined Le Fort II and III fractures provide special difficulties. Due to its intricacy, successful surgical outcomes necessitate careful preparation and execution [2,4]. The inclusion of specialists from many fields in the treatment of these fractures highlights the use of a multidisciplinary team approach. Working together, neurosurgeons, ophthalmologists, otolaryngologists, and maxillofacial surgeons can effectively treat the various anatomical and functional problems that arise from these injuries [5].

Recent developments in surgical technology, such as the use of 3D printing and intraoperative navigation, have improved surgical precision and resulted in better outcomes in complex cases of craniofacial trauma [6].

In order to maximize results after surgical intervention for combined Le Fort II and III fractures, long-term rehabilitation is essential. Rehabilitating functional deficiencies and offering psychological support are crucial steps in the process [7].

CONCLUSION

A multidisciplinary strategy, careful surgical planning, and extensive post-operative care are necessary for the successful therapy of combined Le Fort II and III fractures. This case study emphasizes how crucial coordinated cooperation is to helping patients with complicated craniofacial injuries recover well.

REFERENCES

1. Moe J, Steed MB. Le fort II and III fractures. Clinical Review of Oral and Maxillofacial Surgery-Pageburst E-Book on Kno2: Clinical Review of Oral and Maxillofacial Surgery-Pageburst E-Book on Kno. 2013 Nov 1:270.
2. Karatas M, Tasolar H. The effect of marked nasal septal deviation on left ventricular function and blood markers. Journal of Craniofacial Surgery. 2019 May 1;30(3):803-7.
3. Moe J, Steed MB. Le fort II and III fractures. Clinical Review of Oral and Maxillofacial Surgery-Pageburst E-Book on Kno2: Clinical Review of Oral and Maxillofacial Surgery-Pageburst E-Book on Kno. 2013 Nov 1:270.
4. Baurmash HD. Comparing the titanium arch bar with the bonded arch bar. Journal of oral and maxillofacial surgery. 2007 Feb 1;65(2):359-62
5. Le Roux MK, Thollon L, Godio-Raboutet Y, Carbonnel E, Guyot L, Graillon N, Foletti JM. The association of Le Fort midfacial fractures with frontobasal injuries: a 17-year review of 125 cases, reflections on biomechanics, classifications and treatment. Journal of Stomatology, Oral and Maxillofacial Surgery. 2021 Dec 1;122(6):561-5.
6. Zingg M, Laedrach K, Chen J, Chowdhury K, Vuillemin T, Sutter F, Raveh J. Classification and treatment of zygomatic fractures: a review of 1,025 cases. Journal of oral and maxillofacial surgery. 1992 Aug 1;50(8):778-90.
7. Phillips BJ, Turco LM. Le Fort fractures: a collective review. Bulletin of Emergency & Trauma. 2017 Oct;5(4):221.