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Unveiling Traumatic Facial Wounds: A Comprehensive Study on Epidemiology, Diagnosis, and Therapeutic Approaches

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ABSTRACT

***Introduction**: Dilapidated facial wounds are shredded injuries with loss of tissue substance. A surgical emergency characterized by complex anatomical clinic types that may expose vital organs. The objective of this study is to investigate their epidemiological, diagnostic, and therapeutic aspects.*

***Material and method**: This epidemiological, retrospective, descriptive, and cross-sectional study was conducted using patient records from individuals who experienced maxillofacial trauma resulting in decaying facial wounds between March 2017 and June 2021 at the Maxillofacial Surgery Department in Libreville, Gabon. All confirmed cases of traumatic dilapidated facial wounds were included, while patients with non-traumatic wounds were excluded. The analyzed parameters encompassed sex, age, etiology, clinical signs, and treatment. The criteria for patient assessment of the plasty outcomes were categorized as very satisfactory, satisfactory, not satisfactory, and disappointed.*

***Results**: A total of 33 cases were included in the study. The male-to-female sex ratio was 3.1:1. The average age of the patients was 29.8 ± 14.9 years. The majority of cases (36.4%) were attributed to road traffic accidents (AVP). Among the affected areas of the face, the lips were most frequently involved. Local plasty was performed in 24 patients, while 9 patients underwent regional plasty. The treatment outcomes were deemed satisfactory by 75.8% of the patients. However, 21.2% of the patients experienced functional sequelae as a result of the injuries.*

***Conclusion:** Young males are commonly afflicted by severe lesions, often leading to bone fractures. The application of local plasty has proven to yield favorable results in effectively managing these complex injuries.*

Keywords

Epidemiology, Diagnosis, Thérapeutic, Traumatic Facial Wounds.

Introduction

Facial soft tissue injuries rank among the most prevalent traumatic craniofacial injuries encountered by emergency department personnel and maxillofacial surgeons [1,2]. Among these injuries, dilapidated wounds stand out as soft tissue lesions with significant loss of facial tissue [1,3]. In some cases, these wounds may be associated with bone lesions, compounding the complexity of the condition [4]. Their occurrence demands urgent surgical attention. Research by Jose et al. [5] indicates a higher prevalence of these wounds among young men compared to women, with road accidents being a common cause among men, assaults among women, and domestic accidents among children. Diagnosis relies primarily on clinical evaluation, with paraclinical assessments performed as necessary to explore associated injuries and potential hemodynamic complications [5,6]. The management of these wounds presents significant challenges due to the face's pivotal role in emotions, relationships, aesthetics, and functionality. Emergency situations may require intricate handling of various concomitant bone lesions, necessitating the coordination of

multidisciplinary expertise [6]. Maxillofacial surgeons have an array of options for treating these wounds. Techniques encompass the use of skin grafts, mobilization of local or regional flaps, and free flaps, as proposed by various authors [7,8]. This study aims to unravel the epidemiological, diagnostic, and therapeutic aspects of dilapidated facial wounds, shedding light on essential data related to this condition.

Material and Method

This study employed an epidemiological, retrospective, descriptive, cross-sectional, and monocentric design, using patient records from the Maxillofacial Surgery Department at Owendo, in Libreville, Gabon. The data spanned the period from March 2017 to June 2021. The study focused on patients who experienced maxillofacial trauma resulting in decaying wounds of the face, with or without associated fractures. Cases of dilapidated wounds of the face with non-traumatic origin were excluded from the analysis. Key variables, including sex, age, etiology, clinical signs, treatment modalities, and treatment outcomes, were thoroughly examined. To assess patient satisfaction with the plasty, a four-tier rating scale was employed, ranging from "very satisfactory" to "satisfactory," "not satisfactory," and "disappointed. Data analysis was conducted using Epi info TM 7.2.0.1 software, enabling comprehensive and robust evaluation of the collected data.

Results

The study sample comprised 33 patient files, consisting of 25 males and 8 females, resulting in a sex ratio of 3.1. The mean age of the patients was 29.8 ± 14.9 years, ranging from 2 years to 54 years. Among the different age groups, individuals between 18-40 years constituted the most affected category, accounting for 54.5% of cases, followed by those under 18 years with 18.2% of cases and individuals over 40 years with 27.3% of cases. Regarding etiology, road accidents emerged as the predominant cause, accounting for 36.4% of cases, followed by assaults and domestic accidents, constituting 30.3% and 15.2% of cases, respectively (Figure 1). The average time from trauma to surgical intervention in the operating room was approximately 1 day, with a range of a few hours to 4 days.

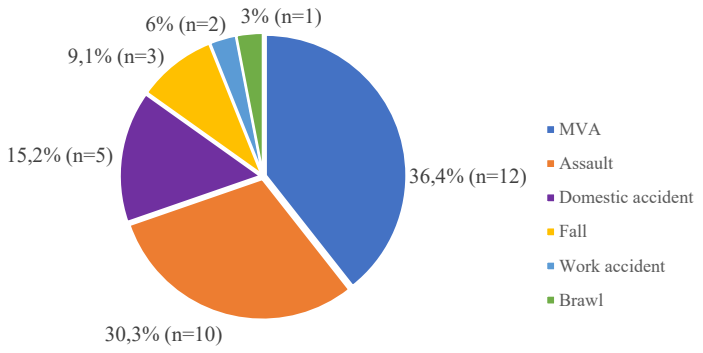

Figure 1: Distribution of patients by etiology.

The lips were the most commonly affected facial area, accounting for 66.7% of cases, followed by the forehead at 33.3%, and the nose at 30.3% (Figure 2). Among the affected sides, the lower floor was impacted in 46.8% of cases. Additionally, it was observed that all three facial layers were involved in 17% of the wounds. Maxillofacial computed tomography was performed as the morphological examination in 18 patients, representing 54.5% of the cases, of which 94.4% showed bone lesions.

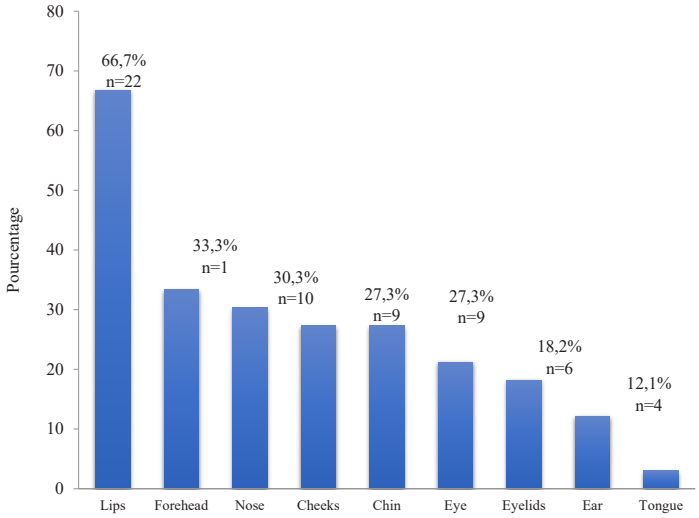

Figure 2: Distribution of lesions by aesthetic units.

In this study, various medical interventions were administered to emergency cases. Serum and tetanus vaccines were given to 90.9% of patients, and 87.9% received antibiotic therapy. Additionally, 87.9% of patients underwent a pressure dressing, while analgesics were prescribed in 72.7% of cases to manage pain. Regarding surgical procedures, local plasty (Figure 3 and 4) was performed for 24 patients (72.7% of cases) and regional plasty for 9 patients (27.3% of cases). Osteosynthesis was provided to all 17 patients with bone lesions. In terms of blood transfusions, only 1 patient (3% of cases) required this intervention. The primary complication observed was hemodynamic in 12.2% of cases, and secondary infectious complications occurred in 18.2% of cases. Feedback from patients showed that 75.8% were satisfied with the surgical care they received (Table 1). The study also investigated post-therapeutic sequelae, which affected 30.3% of cases, and functional sequelae, affecting 21.2% of cases (Table 2).

Table 1: Patients' assessment of surgical treatment.

	n	%
Very satisfied	3	9
Satisfied	25	75,8
Not satisfied	4	12,2
Disappointed	1	3

Table 2: Distribution of sequelae by workforce.

	n	%
Morphological sequelae	**1**	**3**
Eyeball enucleation	1	
Functional sequelae	**7**	**21,2**
Facial paralysis	1	
Frontal hypoaesthesia	2	
Decreased visual acuity	1	
Loss of sensitivity of the lip	3	
Aesthetic sequelae	**2**	**6,1**
Unsightly scar	1	
Hypertrophique scars	1	

Lower labial decay wound with bifocal fracture mandibular and glossoptosis.

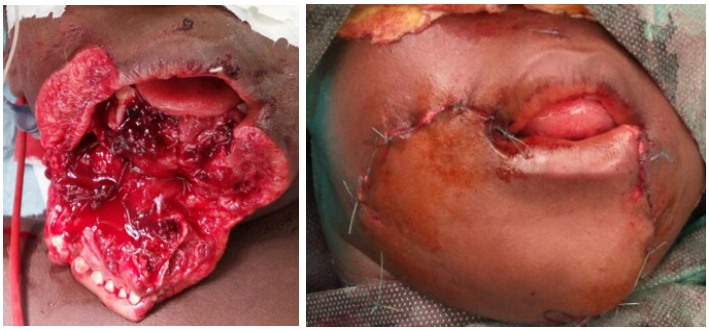

Figure 3: Lower labial decay wound with mandibular bifocal fracture and glossoptosis before and after repair.

Figure 4: Frontal and jugal wound in pre- and post-operative settings.

Discussion

Dilapidated wounds are primarily observed in young individuals. Our study, along with those of other researchers, confirms this trend among patients, although the average age difference may vary from 21 to 30 years, representing 38.49% of cases in Guinea Conakry [9]. This observation in our series could be attributed to the youthful demographic of Gabon, which corresponds to the country's active workforce [10]. During this study, we noted a significant male predominance, accounting for 75.8% of cases, with a sex ratio of 3.1:1. This finding aligns with several other studies, particularly in Morocco and Guinea Conakry [7,9].

The male-dominated trend in dilapidated wounds can be attributed to several factors. Firstly, men are generally more involved in physically demanding activities and are more exposed to trauma. Their preference for risk-taking behavior, whether on public roads, at work, or in various social activities, contributes to a higher likelihood of injury. Additionally, despite efforts in feminist struggles, certain high-risk occupations such as liaison officers, mechanics, and masonry continue to be predominantly male-dominated. Furthermore, the consumption of alcohol, stimulants, and narcotics among men can lead to hypovigilance and increased aggressiveness, making them more susceptible to accidents and injuries. Unfortunately, these substances seem to be more commonly used among men, which adds to the risk.

Several African studies have also found a significant involvement of road accidents (MVAs) in maxillofacial trauma. For instance, Diallo et al. in Guinea Conakry [9] reported that 70.57% of facial wounds resulted from road accidents. This situation is exacerbated by the lack of road safety education and the poor, defective, and inadequate condition of roads in some regions, amplifying the risk of accidents.

Assaults rank second among the etiologies of traumatic dilapidated wounds of the face in our study. This trend highlights the concerning development of violence and delinquency in developed countries, where acts of violence are increasingly prevalent, particularly in urban areas. The rise in violence has led to an increase in facial injuries resulting from assaults. Domestic accidents hold the third position as an etiology of traumatic dilapidated facial wounds in our study, accounting for 15.2% of cases. These accidents are reported as the third most common cause of facial wounds by many authors [11], particularly affecting children, for whom they represent the primary cause of maxillofacial trauma.

Our study reveals that the average time to seek medical care for traumatic facial injuries is longer than that reported by Diallo et al. [9]. Their study showed that the majority of patients received care within 24 hours of their trauma. In our case, there was a delay in seeking medical attention for facial injuries.

Regarding the specific regions of the face affected, our study found that the lips were the most frequently involved, followed by the frontal region. This observation is consistent with the findings of Diallo et al. [9], who also reported high frequencies of 26.79% for lip involvement and the forehead. Similarly, Hussaini [12] found a predominance of labial involvement, with both lips being affected almost equally, with 22.8% for the upper lip and 18% for the lower lip.

Understanding the causes and patterns of facial injuries is crucial for developing targeted prevention strategies and improving timely medical care for patients. Addressing the root causes of violence, promoting safety measures at home, and increasing awareness of the risks associated with domestic accidents can contribute to reducing the incidence of traumatic facial wounds.

The higher frequency of facial soft tissue injuries in regions like the lips and frontal area can be attributed to their prominent positioning as the "bumpers" of the face, making them more susceptible to trauma. To address these injuries, various facial soft tissue reconstruction options were employed, with local plasties accounting for 72.7% of cases and loco-regional plasties for 27.3%. A study in Niamey found that regional and remote flaps were used in 35.29% of cases each, while local flaps were used in 29.42% [13]. Local flaps were primarily utilized for addressing lip and nostril wing defects, while loco-regional flaps were employed for more extensive losses of substance in the parotid, jugal, and frontal regions.

Patient satisfaction outcomes were assessed against multiple criteria, and encouragingly, 75.8% of patients expressed satisfaction with their surgical management. However, a small percentage of patients (12.2% of cases) were dissatisfied, with unrealistic expectations, often driven by aesthetic concerns rather than more modest functional outcomes. This highlights the importance of providing clear and accurate information to conscious patients or their families before interventions. Notably, a significant proportion of our patients (70% of cases) progressed toward complete healing without any sequelae. In a study conducted in Conakry [9], a higher consolidation rate of 82.13% was reported. This difference in consolidation rates could be explained by the fact that, despite the striking nature of facial wounds, they rarely result in fatal outcomes, especially when treated promptly and effectively.

Understanding the factors influencing patient satisfaction and healing outcomes is essential for improving surgical interventions and patient care. By providing comprehensive information and managing expectations, healthcare professionals can contribute to better treatment experiences and successful recoveries for patients with facial injuries.

The sequelae of dilapidated wounds were observed in 30.3% of our patients. Among these, sensory issues were the most frequent, occurring in 21.2% of cases, followed by unsightly and hypertrophic scars in 6.1% of cases. Additionally, a morphological sequela was identified. The relatively high frequency of sequelae in our series could be attributed to the therapeutic delay and, more importantly, the need for sutures to be redone due to initial inadequate emergency treatments. This highlights the importance of timely and appropriate interventions to minimize the risk of complications and improve overall patient outcomes.

To reduce the occurrence of sequelae, optimizing the management of dilapidated wounds is crucial. Providing prompt and proper medical attention, ensuring timely suturing, and implementing appropriate wound care protocols can contribute significantly to reducing the incidence of long-term complications and improving patients' quality of life after traumatic injuries.

Moreover, increasing awareness among healthcare providers about the significant influence of timely and effective treatment on sequelae rates can result in enhanced practices and better patient outcomes. Equally important is patient education concerning wound care and the crucial role of adhering to medical advice post-injury, which can greatly contribute to preventing or minimizing potential sequelae. By addressing these essential factors, we can strive towards enhancing the overall management and recovery of patients with dilapidated wounds.

Healthcare professionals should be well-informed about the best practices in wound management, including appropriate cleaning, suturing techniques, and wound dressing, to reduce the risk of complications and promote optimal healing. Timely intervention and proper wound care are crucial in preventing infections and unfavorable scar formation, leading to better cosmetic and functional outcomes for patients.

In addition to healthcare providers' efforts, patient education plays a vital role in facilitating their active participation in their recovery journey. Educating patients about wound care, the importance of complying with prescribed medications, and following post-injury instructions can empower them to take charge of their healing process. By adhering to medical advice and attending follow-up appointments, patients can better monitor their progress, detect potential issues early, and receive necessary interventions promptly.

Collaboration between healthcare providers and patients is essential for achieving successful outcomes in the management of dilapidated wounds. By emphasizing the significance of timely treatment and patient engagement, we can collectively work towards reducing sequelae rates, improving overall patient satisfaction, and ensuring a smoother recovery process for individuals affected by these traumatic injuries.

Conclusion

Dilapidated wounds of the face predominantly affect young adult males and are primarily caused by accidents on public roads. Among the facial regions, the lip and lower stage of the face are most commonly involved. Surgical treatment mainly consists of local plasty, which is the preferred approach for addressing these injuries.

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