

Zygomatic Bone Fractures at Cocody Teaching Hospital from January 2025 to December 2025: Epidemiological, Clinical and Therapeutic Aspects

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How to cite this paper: Kouakou, K.R., Koffi, K.M., Diarra, K.M., Chapo, A.M., Boka, K.L., Gnepo, E.J., Fofana, Y.M., N'guessan, A.V., Fofana, H.J., Ebolo, E.C., Abdoulrazack, A.M., Notoloum, S. and Ouattara, B. (2026) Zygomatic Bone Fractures at Cocody Teaching Hospital from January 2025 to December 2025: Epidemiological, Clinical and Therapeutic Aspects. *Open Journal of Stomatology*, 16, 208-217. <https://doi.org/10.4236/ojst.2026.169019>

Received: April 9, 2026

Accepted: August 30, 2026

Published: September 2, 2026

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Abstract

Introduction: Fractures of the zygomatic bone account for 32% to 38% of facial fractures and represent a major therapeutic challenge. This study aimed to identify the epidemiological profile and describe the clinical and therapeutic aspects of these fractures at the Cocody University Hospital (CHU). **Material and Methods:** This was a retrospective, cross-sectional study conducted over a 12-month period (January-December 2025) carried out at the oral and maxillofacial surgery department of the Cocody teaching hospital. The study included patients presenting with an isolated zygomatic bone fracture confirmed by computed tomography (CT), who underwent an ophthalmological examination, received treatment for the fracture, and were reviewed one-month post-treatment. **Results:** During the study period, 322 admitted patients presented with maxillofacial fractures. Among them were 102 patients with an isolated zygomatic bone fracture. The prevalence was 31.7% among all maxillofacial fractures. The typical profile was a male (93.1% of cases) with a mean age of 32.97 years. Motorcycle and tricycle accidents were the dominant etiology (82.3%). Clinically, facial asymmetry was nearly constant (86.3%), followed by limited mouth opening (58.8%). According to the Zingg classification, Type B was predominant (76.8%). The mean time to management was 11 days. Treatment primarily consisted of internal fixation using screwed mini-plates (85.3%). The outcome at one month was satisfactory in 88.2% of cases, despite some persistent complications (cheek asymmetry 5.2%, enophthalmos 3.6%). **Discussion:** The results confirm the predominance of young men involved in road traffic accidents.

While internal fixation provides good functional results, the management delay remains long, due to the slowness of the MGF's administrative procedures (Motor Guarantee Fund). Simplification of funding circuits is necessary to optimize the aesthetic and functional prognosis for patients.

Keywords

Zygomatic, CHU, Cocody, Zingg Classification, Osteosynthesis

1. Introduction

The zygomatic bone is the primary bone of the lateral third of the midface. Zygomatic bone fractures are frequent lesions in maxillofacial trauma, representing approximately **32% to 38%** of facial fractures [1]. Their etiology is dominated by road traffic accidents, interpersonal violence, and sports accidents [2]. Zygomatic bone fractures present a polymorphic clinical symptomatology, sometimes involving associated lesions that can jeopardize vital, functional, and aesthetic prognoses [3]. The treatment of these fractures relies on anatomical reduction and fixation of displaced fractures. However, managing certain clinical forms remains a true therapeutic challenge [4] [5]. While numerous studies have been conducted worldwide regarding zygomatic fractures, there is a lack of recent data specifically from the Stomatology and Maxillofacial Surgery Department of the Cocody University Hospital. The objective of this study is to identify the epidemiological profile and describe the clinical and therapeutic aspects of zygomatic bone fractures managed within this department.

2. Material and Method

This was a retrospective, cross-sectional descriptive study conducted over a 12-month period, from January 1st to December 31, 2025 carried out at the oral and maxillofacial surgery department of the Cocody teaching hospital. The study included patients presenting with an isolated zygomatic bone fracture confirmed by computed tomography (CT), who underwent an ophthalmological examination, received treatment for the fracture, and were reviewed one-month post-treatment. Patients without an ophthalmological assessment of their lesions and those who left against medical advice and were lost to follow-up were not included in the study. Data were collected from medical records (consultations, emergency room visits, hospitalizations). Data were collected using anonymous survey forms identified by clinical record numbers. The variables studied included epidemiological characteristics (prevalence, age, sex, and circumstances of occurrence), clinical data (functional and physical signs, fracture type according to the Zingg *et al.* classification), therapeutic modalities, and post-treatment evolution. Steel wire osteosynthesis was indicated for Zingg type A fractures or minimally displaced fractures. Plate fixation was indicated for Zingg type B and C fractures. Ophthalmological examinations were performed routinely. The outcome was considered sat-

isfactory if the patient reported no functional (masticatory), visual, or aesthetic impairments. The limitations of the study were the short duration of the study period and patient follow-up.

3. Results

3.1. Epidemiological Data

3.1.1. Prevalence

During the study period, 322 patients were admitted for maxillofacial fractures. Of these, 102 patients presented with isolated zygomatic bone fractures, yielding a prevalence of 31.7%.

3.1.2. Age

The most frequently represented age group was [21]-[30] years. The mean age in our study was 32.97 years.

3.1.3. Sex

A total of 95 males and 7 females were recorded, with a marked male predominance and a sex ratio of 13.43.

3.1.4. Etiology

The predominant etiology was motorcycle and tricycle accidents, accounting for 82.3% of cases.

3.2. Clinical Data

3.2.1. Functional and Physical Signs

Facial asymmetry was the most frequently observed physical sign, present in 86.3% of cases. Limited mouth opening and visual disturbance were the most common functional signs, occurring in 58.8% and 21.6% of cases, respectively.

3.2.2. Imaging

Computed tomography (CT) was performed in 100% of cases.

3.2.3. Classification

Zingg type B fractures were the most frequent, accounting for 76.8% of cases.

3.3. Therapeutic Data

3.3.1. Time to Surgical Management

The mean time to surgical management was 11 days.

3.3.2. Treatment

Miniplate osteosynthesis was the most commonly performed procedure, carried out in 85.3% of cases. Ophthalmological management was indicated in 11% of patients.

3.4. Outcomes

The prognosis was satisfactory in 88.2% of cases. However, complications were

observed in 11.8% of cases, including malar asymmetry (5.2%), enophthalmos (3.6%), and visual disturbance (3.2%).

4. Discussion

The prevalence of zygomatic bone fractures in our study (31.7%) is similar to that reported by Traoré I. *et al.* [6] and higher than the prevalence found by Obimakinde OS [7]. This difference likely reflects the variability in the prevalence of zygomatic fractures depending on the study's context and environment.

The mean age in our series was 32.7 years (Table 1). Traoré *et al.* [6] reported a mean age of 32.1 years. Shahzad *et al.* [8] found a mean age of 30.7 years in a series of 67 zygomatic complex fractures, and Soni *et al.* reported a mean age of 33 ± 14.5 years in 183 cases [9]. This similarity in mean ages reflects a predominance in young adults, likely related to increased exposure to risk factors such as intense occupational and sporting activities, road traffic accidents, falls, and interpersonal violence.

Table 1. Distribution of patients according to age group.

Age group (years)	n	%
0 - 10	2	1.96%
11 - 20	10	9.80%
21 - 30	35	34.31%
31 - 40	28	27.45%
41 - 50	17	16.67%
51 - 60	7	6.86%
61 - 70	3	2.94%
Total	102	100%

A clear male predominance was observed in our study (Figure 1), consistent with the literature [7] [10]. This predominance may be explained by the higher frequency of male drivers of both motorized and non-motorized vehicles, as well as a more pronounced involvement of men in alcohol and psychotropic substance consumption, acts of violence, and high-risk behaviors.

Distribution of patients by sex (N = 102)

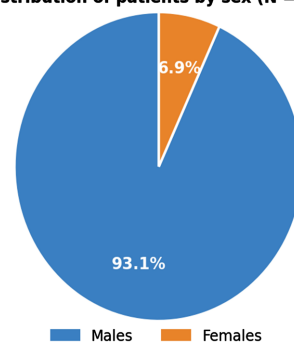


Figure 1. Distribution of patients according to sex.

Road traffic accidents accounted for 82.3% of the etiology (**Table 2**). This predominance, also reported by several authors [3] [8] [10] [11], can be explained by the rapid expansion of the vehicle fleet, the massive use of two-wheeled vehicles, lack of road safety etiquette, and insufficient coercive measures [12]. Driving under the influence of alcohol and psychoactive substances is an established risk factor, increasing the risk of severe facial trauma [8] [13].

Table 2. Distribution of patients according to etiology.

Etiology	n	%
Motorcycle and tricycle accident	84	82.3%
Motor vehicle accident	6	5.9%
Assault (intentional injury)	5	4.9%
Ground-level fall	4	3.9%
Sports accident	2	2.0%
Occupational accident	1	1.0%
Total	102	100%

Facial asymmetry was the most frequent clinical sign in our series (**Table 3**, **Figure 2**). Traoré I. *et al.* [6] noted a “step-off” deformity (sensation de marche en escalier) in 77% of cases, and Homer N. *et al.* [14] reported infraorbital hypoesthesia in 47.6% of cases. These differences are partly explained by the fact that some authors place greater emphasis on signs of absolute severity (sensory deficits, ocular involvement) rather than on swelling or the flattening of the malar relief, which are considered signs of relative severity.



Figure 2. Marked facial asymmetry due to right hemiface swelling.

Table 3. Distribution of patients according to functional and physical signs.

Clinical sign	n	%
Facial asymmetry	88	86.3%

Continued

Limited mouth opening	60	58.8%
Visual disturbance	22	21.6%
Pain on mastication	18	17.6%
Facial oedema	40	39.2%
Facial haematoma	20	19.6%
Infraorbital sensory disturbance	15	14.7%

Ocular involvement, present in 9.2% of cases in our study (**Table 4**), has been previously described by Shahzad [8] and Brucoli [10]. This ophthalmological complication is common due to the anatomical proximity of the zygomatic bone to the eyeball and the violence of the traumatic impact on the orbito-zygomatic region.

Table 4. Distribution of patients according to the Zingg classification.

Zingg classification	n	%
Type A	12	11.8%
Type B	78	76.8%
Type C	12	11.8%
Total	102	100%

In our study, maxillofacial computed tomography (CT) was performed in 100% of cases (**Table 4, Figure 3**). The primary role of CT in our practice aligns with the approach of Shahzad [8]. CT scanning, through its axial, coronal, and sagittal planar sections as well as three-dimensional reconstruction, is currently the gold standard in medical imaging [15].

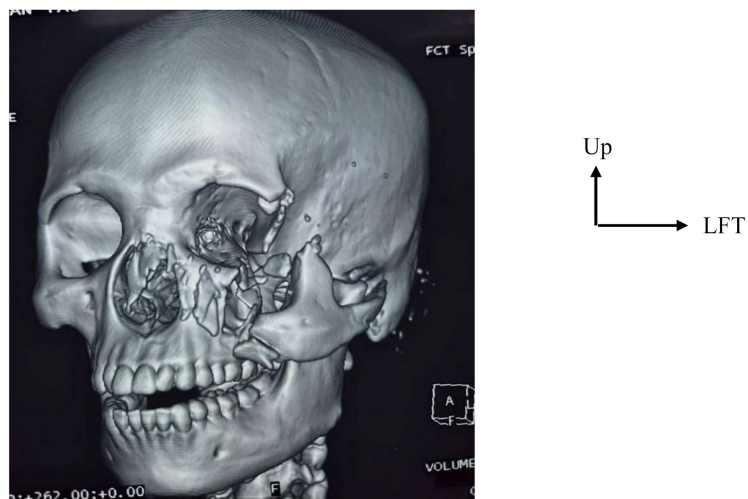


Figure 3. Disjunction fracture of the malar bone Zingg type B.

In our series, Type B fractures according to the Zingg classification were the most frequent (76.8%). This predominance of Type B, described in several studies [1] [9] [10] [16], is explained by the prominent position of the cheekbone exposed to lateral shocks, making the zygomatic bone the “lateral bumper” of the face. Furthermore, the majority of facial traumas are of frontal or antero-lateral origin, favoring fractures of the three zygomatic articulations (Type B), whereas isolated fractures of the zygomatic arch (Type A) result from direct latero-facial impacts.

The average delay for the treatment of zygomatic bone fractures was 11 days, which is higher than the delays reported by Lebeau *et al.* (5 days) [17] and Bissa *et al.* (3 days) [18]. In our context, this delay in management may be linked to the slow administrative procedures of the Motor Guarantee Fund (FGA), which, despite providing free care for victims, extends the time required for treatment.

Osteosynthesis using screwed mini-plates was performed in 85.3% of cases (Table 5, Figure 4, Figure 5). Current recommendations favor open reduction and internal fixation (ORIF) to restore the stability and aesthetics of the facial skeleton [14]. The frequent use of osteosynthesis in our series could also be explained by the financial coverage provided by the Motor Guarantee Fund, a state social assistance service facilitating the management of road traffic accident victims.

Table 5. Distribution of patients according to treatment of zygomatic bone fracture.

Treatment	n	%
Miniplate osteosynthesis	87	85.3%
Wire osteosynthesis	15	14.7%
Total	102	100%

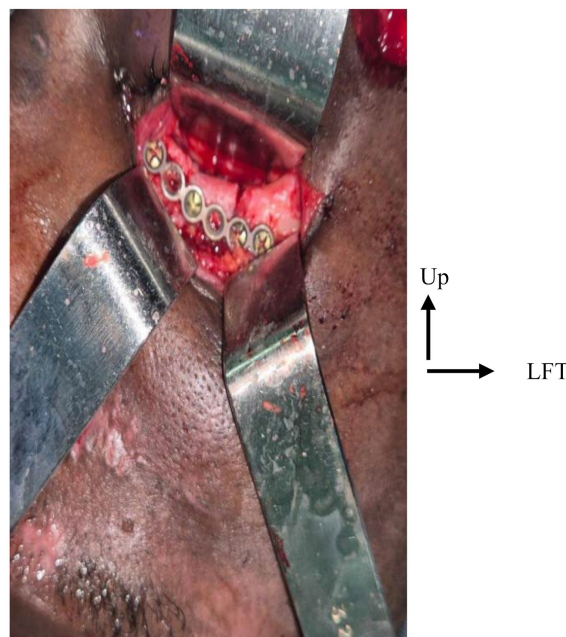


Figure 4. Miniplate osteosynthesis of the infraorbital rim.

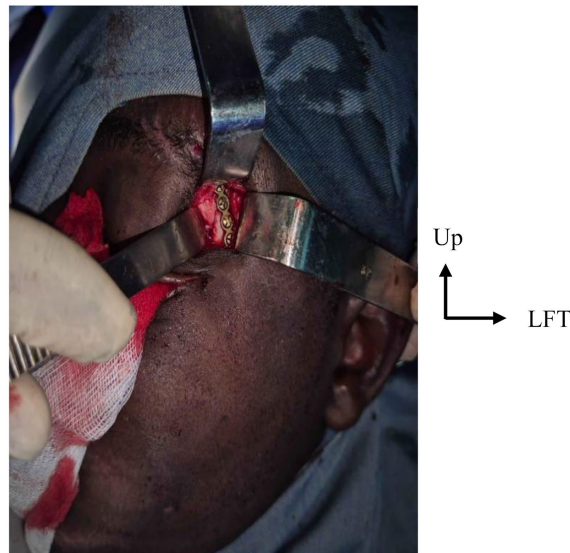


Figure 5. Miniplate osteosynthesis of the frontozygomatic suture.

The outcome one month after the treatment of the zygomatic bone fracture was satisfactory in 88.2% of cases (**Table 6**). Our result is similar to the rates reported in the literature, which generally range between 70% and 90% of cases [9] [13] [19].

Table 6. Distribution of patients according to outcome.

Outcome/Complication	n	%
Satisfactory	90	88.2%
Malar asymmetry	5	5.2%
Enophthalmos	4	3.6%
Visual disturbance	3	3.2%
Total	102	100%

5. Conclusion

Zygomatic bone fracture is a common traumatic injury, occasionally associated with complications such as ocular involvement and limited mouth opening. The prognosis depends not only on the severity of the lesions but also on the promptness of specific treatment. In our context, it appears necessary to simplify the administrative procedures for therapeutic management established by the Motor Guarantee Fund (MGF).

Author Contributions

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All authors have read and approved the published version of the manuscript.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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