

Maxillofacial Trauma at Dapaong in Togo: About 208 Cases

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Abstract

Objective: We conducted a study to describe the problem of maxillofacial trauma in rural Africa. **Background:** the maxillofacial region is very much affected by trauma. These traumas, which are mainly related to public roads, are responsible for considerable mortality. In Africa, they mainly concern young men. **Method:** This was a monocentric, retrospective and descriptive study over 02 years from January 2019 to December 2021 in the surgical and stomatology departments of the Regional Hospital of Dapaong in Togo. All patients who received treatment for maxillofacial trauma in the said departments during the study period were included. **Results:** 208 cases of trauma were reported with an annual incidence of 104 cases. The average age was 31.4 years and the age groups most represented were 20 to 29 years (34.13%). Road traffic accidents were the main circumstance (70.14%) and involved mainly blue-collar workers (25.48%). Only standard X-rays were used to assess the injuries. Bone lesions concerned 92.79% of the patients with a predominance of mandibular fractures (34.60%). The main mode of management in the centre was orthopaedic treatment. **Conclusion:** Maxillofacial trauma is common in Togo. It involves young men and is essentially related to road accidents.

Keywords

Trauma, Maxillofacial, Fracture, Mandible, Togo

1. Introduction

The maxillofacial region is often concerned with trauma [1]. These traumas are

mainly related to public roads [1] [2]. Indeed, road accidents are the main cause of maxillofacial trauma [1]. The lesions concern the maxillofacial massif as well as the soft parts and alveolar structures [1]. These traumas are responsible for serious lesions potentially engaging the vital prognosis [1] [2]. These accidents have a considerable worldwide morbidity and mortality rate, with approximately one million deaths, 25 million injuries per year and one death every 30 seconds [2]. This number is constantly increasing due to the growth of the world's car fleet and above all, the increase in armed conflicts throughout the world [3]. Other circumstances in which these injuries occur include sports accidents and physical aggressions [1]. Africa has the highest rate of road traffic fatalities, mostly involving young men [1]. As an African country with a very young population, Togo is confronted with this problem, especially among its rural populations where the low literacy rate does not facilitate the application of road safety rules. This work, therefore, allows us to describe the epidemiological and diagnostic aspects of these maxillofacial injuries in the northern part of Togo.

2. Method and Study Framework

Monocentric, retrospective and descriptive study; it concerned all patients taken in charge in the surgery and stomatology departments of the Regional Hospital Centre of Dapaong from January 2019 to December 2021 for maxillofacial trauma. The data were collected from the patients' medical records after administrative authorization from the hospital by way of a pre-established form. The parameters studied were epidemiological (frequency, age, sex, occupation, mechanisms), diagnostic (clinical and radiographic) and therapeutic. Data were entered into an electronic database (Excel, Microsoft, 2013).

The study took place in the surgical and stomatology departments of the Regional Hospital of Dapaong (CHR-D). The surgical department is staffed by general surgeons. Activities in the stomatology department are carried out by senior stomatology technicians. There is no maxillofacial surgeon or stomatologist. Dapaong is a town located in the Savannah region, 650 kilometres from Lomé. The region borders three countries, Burkina Faso, Benin and Ghana. The Savannah region covers about 850,000 inhabitants for an area of 8602 km². CHR-D is the only referral centre in the region and also receives populations from neighbouring friendly countries. It is the only public centre in the Savannah region with a surgical unit.

3. Results

3.1. Epidemiological Data

We reported 208 cases of maxillofacial trauma in 2 years, *i.e.* an annual frequency of 104 cases per year. We observed 156 men and 52 women with a sex ratio of 3 (Figure 1). The average age was 31.4 years with extremes of 4 and 76 years. The most represented age group was 20 - 29 years followed by 30 - 39 years (Table 1) with 34.13% and 25.96% of cases respectively. Workers were the most

affected, followed by traders with 25.48% of cases. The professional characteristics of patients are described in **Table 2**. The circumstances of the injuries were essentially represented by road traffic accidents (70.14%) followed by intentional assault and injury (17.03%). Ballistic injuries represented 1.92% of the mechanisms, *i.e.* 4 cases. In road accidents, motorbike impact was predominant, accounting for 47.21% of cases.

3.2. Diagnostics and Therapeutics Data

The facial lesions observed are shown in **Table 3**. Soft tissue injuries were predominant, whether isolated or associated (78.37%). These were mainly lesions of the chin region (54%). Standard X-rays were the only diagnostic radiological examination; CT scans were not available in the region. Bone lesions were present in 193 patients (92.79%) with a total of 315 fractures (**Table 4**). One hundred

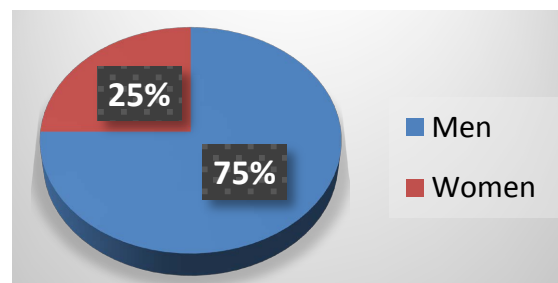


Figure 1. Distribution of patients by gender.

Table 1. Age distribution of patients.

	Effectif	Percentage (%)
Under 20 years old	16	7.7
[20 - 29 ans]	71	34.13
[30 - 39 ans]	54	25.96
[40 - 49 ans]	39	18.75
50 years and more	28	13.46
Total	208	100

Table 2. Distribution of patients by profession.

	Effectif	Percentage (%)
Workers	53	25.48
Traders	47	22.60
Motocycle taxies drivers	40	19.23
Farmers/breeders	29	13.94
Students	24	11.54
civil servants	15	7.21
Total	208	100

Table 3. Distribution of patients according to facial injuries.

	Effectif	Percentage (%)
Association of bones and soft tissue lesions	81	38.94
Association of dental and alveolar lesions and soft tissues	47	22.6
Combination of bones, alveolar and soft tissue lesions	23	11.06
Bones injuries only	20	9.61
Trauma to the temporomandibular joint	14	6.73
Soft tissue only	12	5.77
Combination of bones and alveolar lesions	11	5.29
Total	208	100

Table 4. Distribution of bones lesions according to their location.

		Effectif	Percentage (%)
Top stage	Frontal bone	24	7.62
	Zygomatic bone	84	26.67
	Maxilla	46	14.60
Middle stage	Nasal bone	21	6.67
	Orbital frame	19	6.03
	Facial disjunctions	12	3.81
Low stage	Mandible	109	34.60
Total		315	100

and eighty-two fractures (57.78%) were midfacial and 109 fractures (34.6%) were in the mandible. Eighty-four patients presented with alveolar-dental lesions. These were mainly dental fractures (63.39%). Of the 53 extra-facial lesions reported, involvement of the thoracic limbs predominated and accounted for 46%.

Therapeutic decisions were adapted to the type of injury. The main mode of management in the centre was orthopaedic treatment by intermaxillary blocking with an immobilisation period between 4 and 6 weeks.

4. Discussion

We reported an incidence of 104 cases per year. This rate is well above the one reported by Bissa *et al.* in Lomé in 2017 (30.2 cases per year) [1]. This rate is also different from those reported by Dramé *et al.* (75 cases per year), and Traoré (60.33 cases per year) [4] [5]. This is due to various factors between the short study period but especially the geographical location. Road traffic injuries are very frequent in rural areas as reported by Dramé *et al.* in Mali in 2020. This is a predominantly uneducated population with a high level of incivism. The highway code as well as individual protection measures, notably the use of helmets, are not respected. This incidence could be largely underestimated, particularly concerning the lack of financial means which leads some traumatised people to

go to traditional practitioners. Konsem *et al.* reported 230 cases of maxillofacial trauma in 4 months [6]. This shows the real harm that trauma represents in our societies.

Overall, young people are the most affected as reported in several studies [1] [4] [5] [7]. It is more likely to be the male sex. Indeed, young men in Africa are the most socially active and are therefore very exposed to traffic accidents [1] [4] [7]. These injuries are responsible for a drop in productivity due to the temporary or permanent work incapacity they cause. They, therefore, constitute a real brake on the country's development, as Rabenandrasana *et al.* in Madagascar [7] point out. Workers were the most affected by these injuries in our study. This same result was observed by Bissa *et al.* in Togo (29.96%) and Konsem *et al.* in Burkina Faso (43.48%) [1] [6]. This finding is not similar to those reported by Traore in Mali and Mossus *et al.* in Cameroon. They had rather reported a predominance of students [5] [8]. Dramé *et al.* reported a predominance of farmers [4]. This difference could be due to the geographical location of the different target populations but also to the realities of the different countries.

Road traffic accidents are known to be the main circumstance for the occurrence of these injuries [1] [4] [6] [7]. We reported a predominance of motorbike impact among the mechanisms. This is consistent with the results of other African studies which also reported a predominance of 2-wheelers among the trauma victims. Bissa *et al.* in Togo reported bicycle users [1], Traore in Mali and Konsem *et al.* in Burkina-Faso reported motorbike users [5] [6]. In Africa, these two-wheeled vehicles are by far the most widely used both in and out of built-up areas.

In terms of injuries, the toll is high with 92.79% of bone injuries. The mandible was the preferred site for fractures. The mandible is the bone most affected during maxillofacial trauma, as highlighted by numerous studies [1] [9] [10] [11]. The parasymphyseal was the most affected part. Bolaji *et al.* in the studies reported the angle as the main site of mandibular fractures (36.32%) while Roc-ton *et al.* in France had rather noted the condylar region (28%) [12] [13]. These two areas are indeed areas of low bone strength [10] [11] [14] [15] [16]. However, the lack of helmet use and the violence of the impacts could explain our results, as raised by Bissa *et al.* in Togo [1].

This work allows us to formulate some recommendations for the reduction of these traumas, but above all to reduce their heavy lesion toll. In addition, road safety education for the population of this region of Togo through billboards seems to us to be a good way of getting the message across. In terms of injuries, the wearing of helmets should contribute to reducing injuries during trauma.

The limitations of our study are related to two facts. Its retrospective nature did not allow us to specify whether or not helmets were worn, which is a non-negligible safety element for users of two-wheeled vehicles. In addition, some injuries may have gone unnoticed due to the absence of a scanner in the region. Nevertheless, we considered the data exhaustive enough to describe the real extent of maxillofacial trauma in the Savannah region of Togo.

5. Conclusion

Maxillofacial trauma is very frequent in the Togolese savannah region. It concerns mainly young men and therefore constitutes a real obstacle to the development of the region. The lesion assessment is very significant with numerous bone lesions. Education on road safety and the use of helmets would be excellent ways of reducing the impact of these injuries.

Conflicts of Interest

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

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