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RESEARCH ARTICLE

MANDIBLE FRACTURE CAUSED BY MOTORCYCLE ACCIDENT: CASE REPORT

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ABSTRACT

Introduction: Traffic accidents have a high level of occurrence in trauma reports in the state of Bahia, in the northeastern area of Brazil. According to official reports, 68% of these patients are motorcyclists and the chances of suffering a head injury are drastically improved when helmets are not being used. **Aim:** This article aims to report a mandible fracture case caused by a motorcycle accident with a 3 month follow up. **Case Report:** Man at the age of 44, attended the Clinic of Maxillofacial Surgery at Hospital do Oeste in Barreiras/Bahia, 15 days after suffering a head trauma caused by a motorcycle accident. Gathering data from the clinical and imaging findings, it was possible to conclude that he suffered fractures in the right mandibular parasymphysis and left mandibular body. Surgical treatment under general anesthesia was scheduled one week after the first examination, and a 3 month follow up was conducted. **Conclusion:** Head injuries are very common in motorcycle accidents when helmet safety instructions are not followed. In these situations, when the mandible is affected, an open surgical treatment, at an opportune time, through intraoral access promotes good resolution when combined with good adherence to postoperative follow up by the patient, as seen in the present study.

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INTRODUCTION

The initial approach of the patient victim of trauma aims to treat the life-threatening wounds. Therefore, the secondary approach proceeds with a re-evaluation of the patient and a strict anamnesis, aiming to elucidate information including what caused the injury. This being said, traffic accidents have a high level of occurrence in trauma reports in the state of Bahia, in the northeastern area of Brazil. According to the data published by ABRAMET, 52% of the people admitted in Bahia hospitals are considered to have suffered traffic accidents. These numbers are in accordance with the ones presented by the Health Administration of the State (SESAB) that point out that 68% of these patients are motorcyclists. In 2018, 9.278 patients were admitted into hospitals due to traffic accidents, 6.326 were riding motorcycles at the time of the incident. This number is significantly higher than pedestrians, ranked in the 2nd place, accounting for 1.194 cases (Associação Brasileira de Medicina de Tráfego, 2019; Secretaria de Saúde do Estado da Bahia, 2017).

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DETRAN-BA gathering data from Salvador and its metropolitan area between 2016 and 2018, registered that men are the main victims involved in traffic accidents, accounting for 71% of the overall value. Moreover, motorcycles are present in 52,5% of the reports collected in the study. In consequence, in Bahia motorcyclists are on top of the list of people managing to receive a restitution by the insurance of damage caused by auto-vehicles (Departamento de Trânsito do Estado da Bahia, 2018). The World Health Organization (WHO) in a study about traffic security in 2009 pointed out that the use of helmets can reduce in 40% the death risk in motorcycle-accidents, as well as it can reduce in 70% the chance of critical head injury in this kind of accident. These numbers show how imperative the use of helmets can be to prevent traumas in the maxillofacial area, since it has a functional and aesthetic appeal (World Health Organization, 2009). For that reason, this article aims to report a mandible fracture case caused by a motorcycle accident with a 3 month follow up.

CASE REPORT

JSS, 44 years old, male, attended the Clinic of Maxillofacial Surgery at Hospital do Oeste in Barreiras/Bahia, 15 days after



Image 1. Anterior open bite seen in clinical examination



Image 02. Panoramic radiography showing signs of mandible fracture

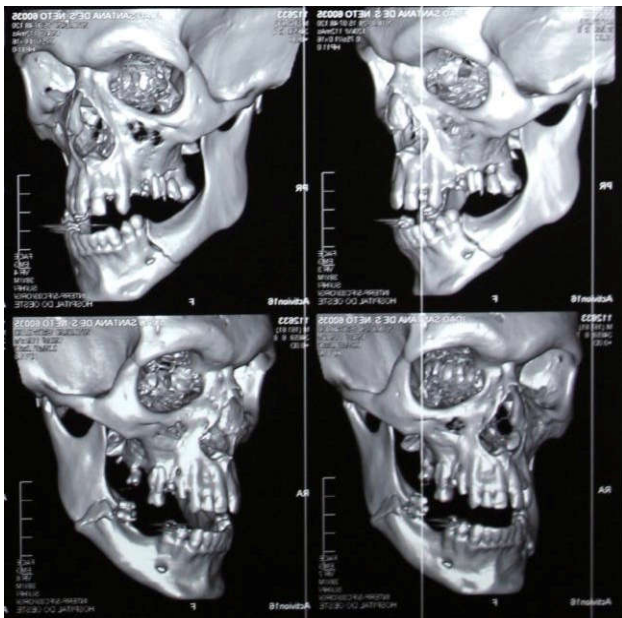


Image 03. Mandible fracture seen in computed tomography



Image 04. Post-surgical findings in panoramic radiography



Image 05. 03-month follow up clinical examination

From the clinical and imaging findings on computed tomography of the face, it brought the conclusion that there were signs of fracture in the right mandibular parasymphysis and left mandibular body. Surgical treatment under general anesthesia was scheduled one week after the first examination, no complications occurred and two plates from the 2.4 system and fivescrews were used. In the follow up period the patient cooperated well and underwent physiotherapy sessions in the first two months, evolving with stable occlusion, an adequate mouth opening and good aesthetic profile as observed in the photo taken in the 3 month follow up session.

DISCUSSION

The etiologic agent of injuries that justify hospital admissions may vary according with the level of socioeconomic development of each region. The face, due to its exposure and its relative unprotection, is subjected to most of the trauma suffered, in soft and bone tissue. In a study at the University of Mashhad, Iran, about fractures suffered in bones of the maxillofacial complex, Samieirad et al. 2017 concluded that 80.3% of the admitted patients were male, mean age 28.8 years, and the major etiologic factor was motorcycle accident. Still, as demonstrated in the present clinical case, the mandible was the bone with the highest incidence of fracture, specifically the mandibular and parasymphysis region (Samieirad, 2017). Sartezi et al 2016, in a similar line of research at the Emergency Hospital of Aparecida de Goiânia, in Brazil, observed that 72.59% of the 405 patients admitted with maxillofacial complex fractures were men. Motorcycle accidents continued to be the main cause of these traumas, however, the nasal bones were the most prevalent, followed by the mandible (Scartezini et al., 2016). Convergent to our

suffering a head trauma caused by a motorcycle accident while not using the helmet indicated to provide proper safety. A deep examination revealed anterior open bite, atypical mandibular mobility at manipulation leading to unstable occlusion and absence of a definite pattern of biting, partial superior and inferior edentulism and poor oral hygiene. The patient complained of mild pain in the lower third of the face and hypoesthesia in the mandibular body region bilaterally and also in the chin region.

clinical case, all articles accessed concerning mandibular fractures, observed the male gender as the most prevalent.

A retrospective study in southern Taiwan found that 76.3% of patients with mandibular fractures had motorcycle accidents as the etiologic agent (Lin, 2017). Similarly, Rojas et al 2017 also indicates motorcycle accidents as prevalent causes of mandibular fractures over a 3-year period at Domingo Luciani Hospital in Caracas, Venezuela. The most commonly affected anatomic sites were the parasymphysis and mandibular body, and 48.8% of the 334 patients evaluated had combined fracture patterns from these regions. However, this author observed a higher prevalence in individuals aged 20-29 years, not registering any patient aged 40-49 years, a fact in contrast with our case report (Rojas, 2017). Bormann et al 2009 in a 5-year follow-up at the University Hospital of Freiburg, Germany, showed a mean age of 37 for the 444 cases reviewed, considered the closest to the age of the patient in this present study. However, only 13 cases were caused by motorcycle accidents and the most affected anatomic region of the mandible was its head (Bormann et al., 2009). Hammond et al 2017, in a study with 708 patients at Queen Elizabeth Hospital in Birmingham, United Kingdom, did not observe any statistic correlation between complications and the moment of surgical intervention. In our report the patient was operated only three weeks after the accident, plus he progressed successfully (Hammond, 2018). A 7-year study at Loyola University Hospital in Maywood, IL, demonstrated that the most common cause of mandibular fracture was associated with violent crime and gunshot wounds in men with an average overall age of 32 years (King et al., 2004). In contrast to the present case, Lin et al. 2017 showed that for the mandibular fractures caused by motorcycle accidents, the most affected sites were mandible head and cervix, followed by the parasymphysis. Body fractures, according to the author, accounted for only 8% of such cases (Lin et al., 2017).

CONCLUSION

Therefore, it is possible to evaluate that even though they are influenced by regional socioeconomic factors, mandibular fractures are more prevalent in males involved in motorcycle accidents. Yet, even though the parasymphysis and mandibular body regions are quite traumatized in these situations, the open surgical treatment, at an opportune time, through intraoral access promotes good resolution when combined with good adherence to postoperative follow up by the patient, as seen in the present study.

Moreover, it can also be attested that the presence of a maxillofacial surgeon either in urban or rural areas is a key point in solving a great numbers of fractures that more oftenly affect the bones of the viscerocranium.

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