International Journal of Scientific Advances
ISSN: 2708-7972
Volume: 6 | Issue: 3 | May – Jun 2025 Available Online: www.ijscia.com
DOI: 10.51542/ijscia.v6i3.19

'Sword' Injury in Maxillofacial Region in Rural Area: A Case Report

Ni Komang Maitri Devi[1,2*], Fauzan[2]

[1]Health and Medical Department of Papua Regional Police

[2]Derpartment of Surgery, Merauke Naval Hospital, South Papua, Indonesia

*Corresponding author details: Ni Komang Maitri Devi; nkmaitridevi@gmail.com

ABSTRACT

Maxillofacial trauma involves injuries to the soft tissues and bones of the face that can lead to functional impairment, aesthetics, and even death. Major causes include traffic accidents, violence, and sharp object attacks. In Merauke, South Papua, maxillofacial trauma due to sharp objects is common due to low levels of education, economy, and alcohol consumption habits. This case report illustrates the challenges of managing maxillofacial trauma in a rural area with limited health facilities. A 25-year-old man presented with an open wound on the left side of his face due to a sharp object attack. The patient was referred from Puskesmas Jagebob to Merauke Naval Hospital, where he was further examined. Computed Tomography scan (CT-scan) showed multiple fractures of the temporal, orbital, and nasal bones as well as soft tissue injury. The patient underwent surgical debridement, open reduction internal fixation (ORIF), and soft tissue repair. Due to the limited number of plastic surgeons, the surgery was performed by a general surgeon. Post-surgery, the patient was admitted for six days and made a good recovery with no complications. Maxillofacial trauma requires a multidisciplinary approach, especially in areas with limited facilities. Limited access to specialists in rural areas is a challenge, but with appropriate treatment, optimal outcomes can still be achieved, as in this case. Prompt and appropriate management of maxillofacial trauma is essential to achieve a good outcome. Management by general surgeons in rural areas can provide positive outcomes despite limited facilities and medical personnel.

Keywords: Sword injury; sharp object injury; maxillofacial trauma; rural area; debridement.

INTRODUCTION

Maxillofacial trauma is trauma involving structural damage to the soft and hard tissues of the face and oral cavity. The maxillofacial area consists of the upper face (frontal area), the middle face (maxilla, nose, and zygomatic area), and the lower face (mandible). Maxillofacial trauma can also include trauma to the teeth and vital structures of the head and neck, which can cause morbidity with functional and aesthetic problems and even death [1].

The causes of maxillofacial trauma are varied, such as traffic accidents, physical violence, falls, assaults, sports, suicide, and trauma from firearms. Patients with maxillofacial trauma have a high risk of being accompanied by head injury. This is because it is located very close to the base of the cranii. This trauma can lead to functional failure, non-aesthetic appearance, and decreased quality of life [2].

Maxillofacial trauma is a public health problem in both developed and developing countries. The prevalence and factors associated with this health problem are influenced by differences in culture, lifestyle, educational and economic levels also population size. The incidence of maxillofacial trauma differs from country to country around the world and even within regions of the same country. The reason behind the high incidence of maxillofacial trauma is that it affects the prominent parts of the facial bones, anatomical position, and configuration [2,3].

Maxillofacial trauma often requires surgical intervention to repair damaged bone, tissue, and teeth. Common techniques include Open Reduction and Internal Fixation (ORIF), osteosynthesis, bone grafting to replace lost or damaged bone tissue, soft tissue repair with suturing, debridement, or skin grafts, and root canal treatment, crowns, or implants. In some cases, microvascular surgery is required by connecting small blood vessels to restore blood flow. Distraction osteogenesis is performed with the aim of gradually lengthening or widening the bone, and facial prosthesis restores facial appearance. The choice of technique depends on the severity of the injury, the patient's health, and the surgeon's expertise. A combination may be required for optimal results [4-6].

Many cases of maxillofacial trauma caused by sharp objects often occur in the Merauke region, South Papua, Indonesia. This is motivated by low economic and educational levels with alcohol consumption habits that often lead to horizontal conflicts within the community.

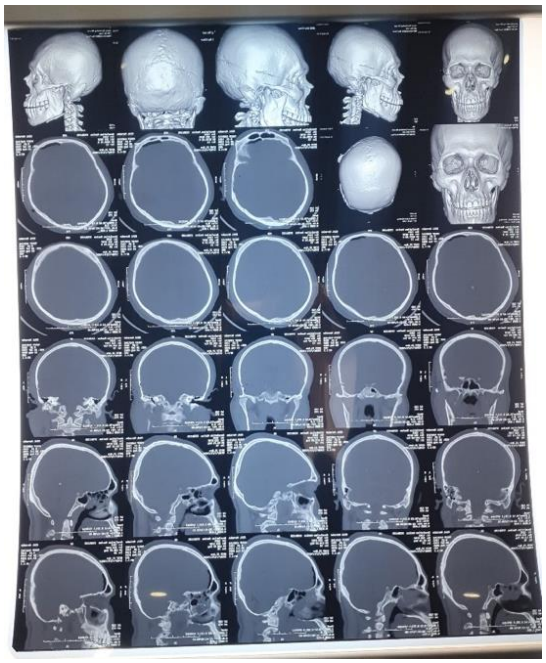
The diagnostic evaluation and treatment process of maxillofacial trauma is a challenge for health facility units in remote areas, such as the Merauke district, because it is a life-threatening case. The first treatment of maxillofacial trauma is to evaluate airway patency according to the principles of trauma management. Diagnosis is based on clinical symptoms and facial plain photographs. CT-Scan radiologic examination was performed in patients with clinical signs of vomiting, loss of consciousness, or low GCS. Treatment was based on the clinician's assessment of symptoms and the availability of facilities. This study discusses the management of maxillofacial trauma cases in the Merauke Regional Hospital, which only has general surgeons so cases are handled by general surgeons. This study is expected to provide an overview and help further trauma studies in rural areas [6,7].

CASE DESCRIPTION

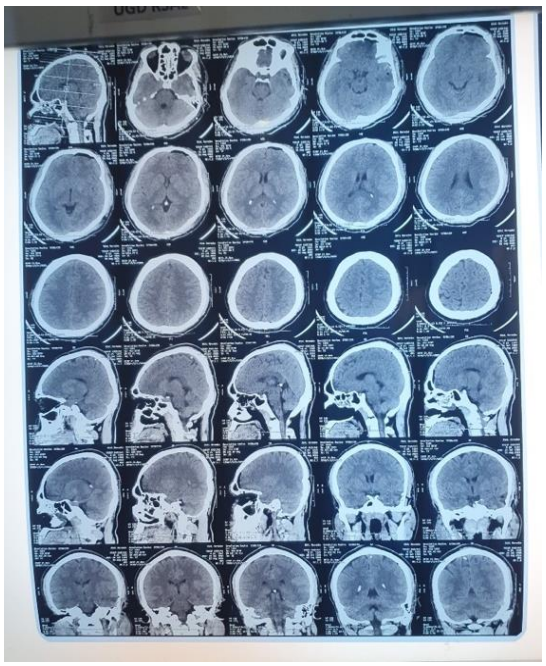
A 25-year-old man came to the emergency room with an open wound on the left facial area after being slashed by an unknown person. The patient also feels pain accompanied by active bleeding on the facial wound. Initially, the patient came to Puskesmas Jagebob, managed with Intravenous Fluid Drip Ringer's Lactate 2 line with loading 2 kolf each, O^2 nasal cannula 2 liters per minute, situational hecting, 1 gram of intravenous Ceftriaxone and 1 gram of intravenous Tranexamic Acid. The patient's hemodynamics were stable when referred from Puskesmas Jagebob to Merauke Naval Hospital a distance of 116 KM within 3 3-hour road trip. Blood pressure was 110/60 mmHg, pulse rate 112 beats per minute, respiratory rate 24 beats per minute, axillary temperature 38 degrees Celsius, and oxygen saturation was 95%.

The patient can open the mouth as wide as 3 fingers and has a Mallampati Score of 4. In the temporal sinistra area, passing through the auricula sinistra to the nasal sinistra, an incised wound with a size of 15 cm by 5 cm was found. On the superior periorbita, there was a 4 cm by 2 cm cut. Laboratory examination revealed White Blood Cell 21.500, Granulocyte 86.7%, Haemoglobin 8.2 g/dL, Platelet 213,000, and blood sugar levels 107 mg/dL.

The patient was referred to a general surgeon, then directed for a head CT scan NCE: axial slices reformat sagittal and coronal. From the head CT-Scan, the results showed swelling hematoma of the left extracranial craniofacial soft tissue; multiple craniofacial fractures affecting temporooccipital, nasoorbital, frontozygoma, and lateral wall of left orbit; mild widening of left petromastoid suture; paranasal hematosinus and bilateral posterior hematonasal impression; proptosis of the left orbit with fat hematome lesion of left extraorbital; and intracone/rectus lateral edge of the left orbit. There was a significant volume loss of the left orbital bulb at further evaluation. There is pneumocephaly found in the left frontal margin and minimal faint in the left temporal sulci and left sylvii fissure, suggestive of bilateral cortical brain edema with left temporal thin SDH lesion and suggestive of small cortical contusion hematoma of left frontal lobe on further evaluation, still suggestive of minimal midline structure shift to the right by 0.11 cm.



(a)



(b)

FIGURE 1: The bone view (a) and soft tissue view (b) of the patient's non-contrast CT scan on the day of the incident.

The patient was diagnosed with Temporal Open Fracture, Open Fracture Left Rima Orbita Lateral, Open Fracture Os Nasal, Open Fracture Left Mastoid, Left Rupture Auricula, Left Rupture Inferior Palpebra, Vulnus Scissum Left Zygomaticomaxillaris. The next plan for the patient was cito debridement + ORIF rima orbita lateral sinistra + repair auricula sinistra + primary hecting. The patient was hospitalized for 6 days from 3rd August 2024 to 8th August 2024. The patient's follow-up results showed pain in the operating wound which gradually improved until the patient was able to go home.

(a)

(b)

FIGURE 2: (a) is the clinical picture of the patient in the Emergency Room on the day of the incident, and (b) is the patient's picture one-month aftercare.

DISCUSSION

Maxillofacial trauma, which includes injuries to the bones and soft tissues of the face and jaws, is a significant public health problem worldwide. These injuries can result from a variety of causes, including accidents, assaults, sporting events, and falls. The impact of maxillofacial trauma is not only limited to physical injury but also affects the patient's quality of life and overall well-being [1].

The incidence of maxillofacial trauma varies significantly among different populations and regions. Factors such as socioeconomic status, lifestyle, and access to healthcare resources may influence the prevalence of these injuries. In many countries, traffic accidents are the leading cause of maxillofacial trauma, followed by assaults and falls. The demographic profile of individuals affected by maxillofacial trauma is diverse, with young adults and males disproportionately represented [8,9].

Epidemiologic data consistently show motor vehicle accidents as the leading cause of general trauma and maxillofacial injuries both globally and in some regions in Indonesia. Internationally, there are 300,000 traffic fatalities per year. The most common etiologies are sports injuries, workplace accidents, traffic accidents, and violence. Symptoms experienced as a result of a facial fracture include difficulty breathing, speaking, and vision. Maxillofacial trauma may also be accompanied by other conditions such as brain trauma, airway obstruction, major bleeding, and shock. Often occurring in polytrauma cases, >45% of cases are accompanied by intracranial injury, and nearly 10% are accompanied by cervical trauma [2,3,9].

Maxillofacial trauma can be classified based on the severity of the injury, the anatomical structures affected, and the mechanism of injury. Common types of maxillofacial trauma include (1) Fractures: These can involve the mandible, maxilla, zygomatic complex, nasal bone, or orbita. Fractures can be simple, comminuted, or open. (2) Soft tissue injuries: This can include lacerations, contusions, hematomas, and avulsions. Dental injuries: These can range from chipped teeth to complete avulsions [10].

The initial evaluation of a patient with suspected maxillofacial trauma should follow the principles of Advanced Trauma Life Support (ATLS). This includes evaluation of the patient's airway, breathing, circulation, disability, and exposure. A thorough facial examination should be performed to identify any signs of trauma, such as swelling, deformation, or bleeding. Imaging studies, such as radiography, computed tomography (CT), or magnetic resonance imaging (MRI), may be required to confirm the diagnosis and assess the extent of the injury [4].

Management of maxillofacial trauma requires a multidisciplinary approach involving maxillofacial surgeons, otolaryngologists, plastic surgeons, and other healthcare professionals. The treatment plan will depend on the severity of the injury and the overall condition of the patient. Initial management in these cases may include airway management, bleeding control, and treatment of associated injuries. If required, definitive treatment may involve surgical intervention to reduce the fracture, repair soft tissue defects, and restore dental function. Surgical techniques may include open reduction and internal fixation, osteosynthesis, and transplantation. Post-operative care includes wound care, pain management, and rehabilitation. The wound will heal within 6 months to 1 year after going through all phases of wound healing. Poor facial wound care can lead to conditions that can reduce quality of life [5,6].

Open Reduction and Internal Fixation (ORIF) is a common technique used to repair facial bone fractures that involves exposing the fracture site, realigning the broken bone, and then attaching it with an internal fixation device such as a plate, screw, or wire. Osteosynthesis is a general term for surgical techniques used to repair broken bones. It can involve various methods, including ORIF, wire fixation, and external fixation. Bone grafting is a procedure used to replace lost or damaged bone tissue that involves transplanting bone from another part of the body or using a bone graft substitute. Bone grafting is often used to repair large defects in the facial bones or to promote fracture healing. Soft tissue injuries such as lacerations, contusions, or avulsions may require surgical repair involving wound suturing, debridement to remove damaged tissue, or skin grafts to cover large defects.

In some cases of severe maxillofacial trauma, microvascular surgery may be required to reconstruct the damaged facial tissues. This involves connecting small blood vessels to restore blood flow to the affected area. This technique is often used to reconstruct facial features after trauma or cancer surgery. Distraction osteogenesis is a technique used to gradually lengthen or widen bones. It involves creating a small gap in the bone and then slowly widening the gap over time using a distraction device. This technique can be used to reconstruct facial bones that have been severely damaged or deformed. In some cases, facial trauma can result in significant defects that cannot be repaired with surgery. Facial prostheses can be used to restore the appearance of the face. These prostheses can be made from a variety of materials, including silicone, acrylic, or titanium. The choice of surgical technique will depend on the specific type of injury, the patient's overall health, and the surgeon's expertise. A combination of techniques may be required to achieve optimal results [6,7].

Maxillofacial trauma can lead to a variety of complications, including infection, as the most common one, which can occur if the wound is contaminated with bacteria, and bleeding. Bleeding can be a significant problem, especially in patients with severe injuries. Fractures may not heal properly, resulting in deformation or impaired function called malunion and nonunion, and trauma to the facial nerve can cause facial paralysis. Injuries to the teeth may require root canal treatment, crowns, or implants. Maxillofacial trauma can have a significant psychological impact on patients, affecting their self-esteem and quality of life. In this case no complications occurred, the patient only complained of pain in the surgical site which was getting better, from a study by Demirdover et al., found the main etiology causing maxillofacial trauma in the study was road accidents not due to cars (25.5%), then rigid and semi-rigid fixation with plates and screws was the most commonly used treatment method, and the complication rate was seen to be lower [11,12].

CONCLUSIONS

Maxillofacial trauma is a common injury with significant morbidity and mortality. Many cases in rural areas are due to sharp objects. Early diagnosis and appropriate management are essential for optimal outcomes. A multidisciplinary approach to the treatment of maxillofacial trauma involves a combination of surgical and non-surgical interventions. The outcome in patients is excellent even if not performed by a plastic surgeon. By addressing both the physical and psychological aspects of these injuries, healthcare providers can help patients recover and return to normal daily life.

REFERENCES

[1] Goodfellow M, Burns A. Relation between facial fractures and socioeconomic deprivation in the northeast of England. British Journal of Oral and Maxillofacial Surgery. 2019 Apr;57(3):255–9.

[2] Samad S, Sjamsudin E, Tasman A, Faried A. Tingkat Kejadian Trauma Maksilofasial Akibat Kecelakaan Kendaraan Bermotor Di Kota Bandung, Provinsi Jawa Barat, Vol. 1, MULAWARMAN DENTAL JOURNAL. 2021.

[3] Saleh N. Prevalensi Angka Kejadian Fraktur Maksilofasial Di Rumah Sakit Gigi Dan Mulut Pendidikan Universitas Hasanuddin Makassar Tahun 2017-2020. Repository Unhas. 2020

[4] Kihara EN, Ochola TJ, Wagaiyu EG, Chindia ML. Utilization of Diagnostic Imaging in Dental and Maxillofacial Trauma in Selected Kenyan Hospitals. Open J Stomatol. 2020;10(05):61–73.

[5] Choudhury-Peters D, Dain V. Developing psychological services following facial trauma. BMJ Qual Improv Rep. 2016 Jun 21;5(1):u210402.w4210.

[6] Wu FC, Hung KS, Lin YW, Sung K, Yang TH, Wu CH, et al. Effectiveness of protocolized management for patients sustaining maxillofacial fracture with massive oronasal bleeding: a single-center experience. Scand J Trauma Resusc Emerg Med. 2022 Nov 21;30(1):60.

[7] Sohal K, Owibingire S, Kalyanyama B, Simon E. Association between oro-facial soft tissue injuries and oral and maxilla-facial fractures. Journal of Stomatology. 2022;75(3):176–81.

[8] Aleksanyan L V., Poghosyan AY, Misakyan MS, Minasyan AM, Bablumyan AY, Tadevosyan AE, et al. Epidemiology of maxillofacial injuries in "Heratsi" No 1 university hospital in Yerevan, Armenia: a retrospective study. BMC Oral Health. 2022 Dec 12;22(1):123.

[9] Wusiman P, Maimaitituerxun B, Guli, Saimaiti A, Moming A. Epidemiology and Pattern of Oral and Maxillofacial Trauma. Journal of Craniofacial Surgery. 2020 Jul;31(5):e517–20.

[10] Nawi MAA, Noor NFM, Shaari R, Khaleel AK, Lazin MAM, Sulaiman IM, et al. The patterns of facial fractures in traumatic brain injury (TBI) patients using ordinal regression: a retrospective study of five years. AIMS Neurosci. 2022;9(3):345–57.

[11] Demirdover C, Geyik A, Yazgan HS, Ozturk FA, Cakmak S, Vayvada H, et al. Epidemiologic analysis and evaluation of complications in 1266 cases with maxillofacial trauma. Turkish Journal of Plastic Surgery. 2018;26(1):6–11.

[12] Nayak SS, Gadicherla S, Roy S, Chichra M, Dhaundiyal S, Nayak VS, et al. Assessment of quality of life in patients with surgically treated maxillofacial fractures. F1000Res. 2023 Nov 6;12:483.