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Emergency Management of Maxillofacial Soft Tissue Wounds due to Physical Trauma

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Abstract

Introduction: Soft tissue trauma is common in the head and neck, limited to superficial structures or involving deeper anatomical structures. Various types of trauma occur depending on the aetiology and mechanism. Managing oral and maxillofacial soft tissue trauma poses a challenge for surgeons due to the importance of facial esthetics. The purpose of this case report is to report and discuss the emergency management of soft tissue injuries in the maxillofacial region due to physical trauma.

Case report: Three cases with diagnoses of abrasive wounds, lacerations, and punctum wounds on the lips, cheeks, eyebrows, chin, and oral cavity were encountered at the emergency department of Hasan Sadikin Hospital, Bandung City, due to a motor accident. Treatment includes debridement, reconstruction, and wound closure.

Conclusion: Emergency treatment of soft tissue wounds in the maxillofacial area that is fast and according to the procedure will reduce infection and dehiscence.

Keywords: emergency, soft tissue injury, Maxillofacial, Physical trauma

Introduction

Soft tissue trauma is common to the head and neck, limited to superficial structures or involving deeper anatomical structures. Soft tissue trauma consists of the head and neck's skin and mucosa.[1] The most common etiologies are knife wounds, gunshot wounds, animal attacks, and motor vehicle accidents. This trauma occurs in almost 10% of all emergency department visits.[2] There are several types of soft tissue trauma, including abrasions, bruises, hematomas, lacerations, incision wounds, punctum wounds, gunshot wounds, and avulsions.[3]

Oral and maxillofacial trauma is a common condition that often occurs in the maxillofacial emergency department. This trauma can be classified into facial bone fractures, dentoalveolar trauma, and soft tissue injuries.[4] Various types of trauma occur depending on the aetiology and mechanism. Various causative factors can occur: traffic accidents, interpersonal violence/homicide, domestic accidents, falls, gunshots, bomb explosions, industrial accidents, other work-related injuries, sports, animal attacks, suicide, earthquakes, and iatrogenic injuries.[5] Lacerations are the most common soft tissue trauma to the face and scalp, accounting for 50% of injuries

treated in emergency departments. A laceration is the most common soft tissue injury to the face and scalp.[6] Facial trauma can evoke an emotional response in patients' fear of permanent scarring and facial disfigurement. [2]

Managing oral and maxillofacial soft tissue trauma poses a challenge for surgeons due to the importance of facial esthetics. Management is related to the location and mechanism of trauma.[6] Understanding basic knowledge such as mechanisms of injury, tissue damage, trauma aetiology, anatomy, physiology, risks, and treatment complications is essential to produce optimal care. Things that must be considered in facial trauma patients are the evaluation of airway safety, breathing, and circulation.[3]

Oromaxillofacial trauma can be a complex case and requires the involvement of multiple specialists in its management.[7] Speed and accuracy in handling facial soft tissue injuries will significantly affect the aesthetic results and facial functions. Delays in treating facial soft tissue injuries can exacerbate existing swelling, create scars, and make primary closure difficult. The longer the soft tissue injury is exposed to the external environment, the more likely it will be infected.[8] This case report aims to describe and discuss the emergency management of soft tissue injuries in the maxillofacial area due to physical trauma.

Case Report

Case 1

A 22-year-old female patient came to the emergency room at Hasan Sadikin Hospital complaining of bleeding from the mouth. About 2 hours before entering the hospital, the patient had an accident while riding a motorbike as a passenger in the Jatinangor area, suddenly a car came from the opposite direction and hit him, causing the patient to fall with the mechanism of his face hitting the asphalt first. There was no history of helmet use, no history of fainting, no history of nausea and vomiting, no history of bleeding from the mouth, no history of bleeding from the nose and ears, and no history of alcohol poisoning.

On clinical examination, the patient's general condition was compos mentis, breathing 20x/minute and pulse 82x/minute. Extraoral facial asymmetry was seen with oedema, hematoma, and superior and inferior labial lacerations, with irregular edges with muscle base (Fig. 1). Intra-oral, the patient has superior and inferior labial lacerations with a size of 3x1x1 cm; 2 x 1 x 1 cm, vestibule 11-21 and gingiva 12-11 with irregular margins with a muscular base (figure 2). On examination of the AP skull, the lateral radiographic x-ray showed a normal picture. The results of blood laboratory tests were still within normal limits.

Figure 1: Extra oral patient has an asymmetrical face, oedema, and hematoma.

Figure 2: Intra-oral images of the patient have lacerations in the superior and inferior labial regions with a size of 3x1x1 cm; 2x1x1 cm, vestibule 11-21 and gingiva 12-11 with irregular margins, with a muscular base.

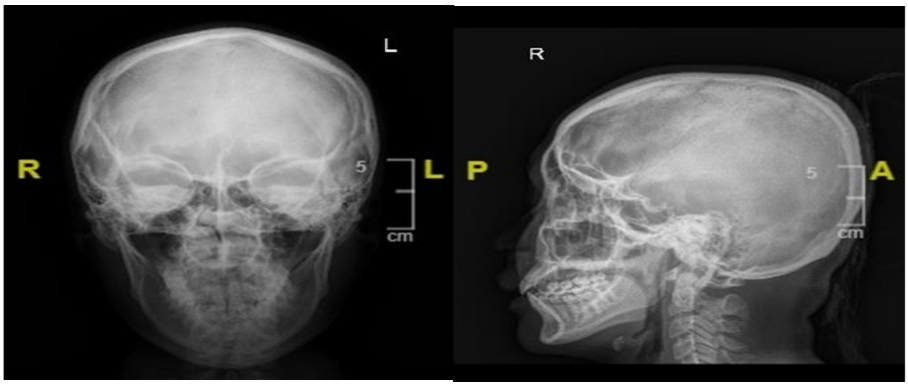

Figure 3: AP lateral skull radiographic appearance within normal limits

Based on clinical and radiographic examination results, this case was diagnosed with lacerations in the superior and inferior labial region, vestibule, and gingiva. Treatment includes debridement and suturing of the wound in the intraoral and extraoral areas. Patients were instructed to maintain oral hygiene, regular diet, administration of 2x500 mg cefadroxil capsules, 3x400 mg ibuprofen tablets, 2x20mg omeprazole capsules, gargle chlorhexidine gargle after every meal, apply hyaluronic acid gel to the post-intra-oral suturing area, and apply chloramphenicol zalf gel to the patient. Post extra oral suture area (Figs 3 and 4). The patient signs informed consent for treatment actions and publication of scientific activities.

Figure 4: Post wound debridement

Figure 5: Extraoral and intraoral after suturing

CASE 2

A 26-year-old male patient came to the emergency room at Hasan Sadikin Hospital complaining of bleeding on the lips and face. About 2 hours before entering the hospital, the patient had a motorised accident while riding a motorcycle at a moderate speed; suddenly, the patient lost his balance and hit a stall cart with the face mechanism hitting the cart's glass first. History of using a half-face helmet, no record of fainting, no history of bleeding ears, nose, mouth, no nausea, and vomiting. There is a history of alcohol consumption.

On clinical examination, the patient's general condition was compos mentis, breathing 20x/minute and pulse 82x/minute. Extraoral facial asymmetry was seen accompanied by oedema, hematoma, and laceration of the right palpebral region 4x1x0.5 cm, abrasive wound on the cheek measuring 6x2x0.1cm, laceration of the labiomental region 3x0.5x0.5 cm, laceration of the inferior labial region measuring 1x0.5x0. 5 cm, irregular margin with a muscular base (Fig 6). Intra-oral lacerations were found in the vestibule region of teeth 43-47 with a size of 6x0.5x0.5cm and irregular edges with a bone base (figure 7). On examination of the AP skull, the lateral radiographic x-ray showed normal. The results of blood laboratory tests are still within normal limits (figure 8)

This case was diagnosed with a laceration in the right palpebral region and inferior labia with a size of 3x1x1 cm, 2x1x1 cm, and in the vestibule 43-47 and gingiva 43-47. The patient signs informed consent for treatment actions and publication of scientific activities. Treatments were injections of tetragrams, wound debridement, and suturing lacerations in the intraoral and extraoral areas (figure 10). Patients were instructed to maintain oral hygiene, regular diet, administration of 2x500 mg cefadroxil capsules, 3x400 mg ibuprofen tablets, 2x20mg omeprazole capsules, rinse their mouth using chlorhexidine gargle every after a meal, apply hyaluronic acid gel to the post-intra-oral suturing area, apply chloramphenicol gel zalf on post extra oral suture area. The patient's family signed an informed consent agreement for treatment actions and approval for scientific publication activities.

Figure 6: Extra oral patient has an asymmetrical face, edema, hematoma

Figure 7: Intra-oral images of the patient have lacerations in the vestibule and gingival regions 43-47 with irregular edges, with a muscular base

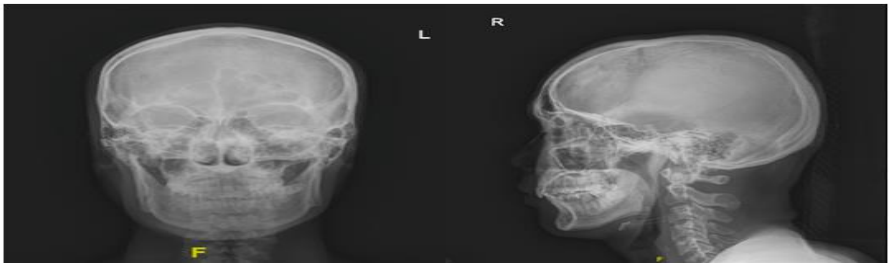

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Figure 8: Radiographs using the AP skull lateral x-ray technique

Figure10: Extraoral and intraoral after suturing

CASE 3:

A 20-year-old male patient came to the emergency room at Hasan Sadikin Hospital complaining of bleeding from the face. About 2 hours before entering the hospital, the patient was riding a motorcycle in the Supratman area when a group of people suddenly intercepted and slashed at him with a sharp object. The patient was taken to a private hospital, and the wound was only cleaned, and then the patient was advised to the RSHS emergency room. There was no history of fainting, no nausea and vomiting, no history of bleeding from the mouth, no bleeding from the nose, and no bleeding from the ear. There was no history of alcohol intoxication. There is a history of Labioplasty surgery in 2003.

Figure 11: Extraoral wound on the left cheek and upper lips

On extra-oral examination, Vulnus Punctum was found in the left buccal region with a regular edge of 7x3 cm. Venus lacerated in the nasolabial region with a size of 4x0.5x0.5 cm, 1×0.5×0.5 irregular edges of the muscle base (figure 11).
On intra-oral examination, Vulnus Punctum was found in the buccal mucosa region measuring 2x3 cm, with regular edges, Vulnus lacerated in the left commissure region measuring 1×0.5x0.5, irregular edges of the base of the Vulnus Laceratum muscle in the gingival region of the teeth 34-35, size 1.5x1x0 .5 cm, an irregular margin of bony base (Fig. 12).

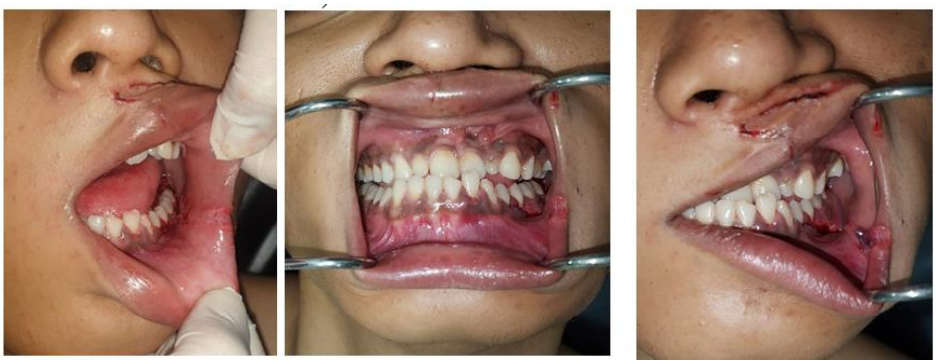

Figure 12: Intraoral Vulnus Punctum in the buccal mucosa region, regular margins, Vulnus laceratum in the left commissure region, irregular margins

This case was diagnosed as Vulnus Punctum in the left buccal region and Vulnus Laceratum in the left oral commissure nasolabial region. Treatments carried out were wound debridement and extra and intra-oral suturing. The patient signs informed consent for treatment actions and publication of scientific activities.

Figure 13: After extra and intra oral treatment

Discussion

Soft tissue injuries can affect the skin, subcutaneous tissue, muscles, fat, nerves, blood vessels, salivary glands, and eyes. Soft tissue injuries can be associated with regional bony, sinus, and varying degrees of brain injury.[5] The complexity of the injuries is represented by the potential loss of connection between the functional and aesthetic subunits of the craniofacial region. 9 The most common injuries

are lacerations caused by blunt trauma, cuts, abrasions, and burns. These wounds can respond to treatment quickly and heal without complications.[10]

In this case report, the patient had lacerations on the upper and lower lip area. The patient should first be evaluated according to the Advanced Trauma Life Support Protocol and examined unless the facial trauma caused significant bleeding or airway compromise; the patient should be stabilised before the facial trauma is diagnosed and treated.[6] Treatment includes wound cleaning, debridement, hemostasis, and sutures in the intraoral and extraoral areas. Treatment of lacerated wounds in patients has carried out wound debridement and suturing. Cleaning the wound is essential for preventing infection and removing foreign contaminants, such as grit.[10.] Debridement of dead tissue must be done conservatively to retain sufficient tissue for repair.[11] Direct pressure is the primary method of stopping bleeding and identifying occluded blood vessels. Seen Wound closure with sutures should be done optimally as soon as the patient is stable. Closing within 12 hours, or ideally within 6 hours, reduces infection rates, improves aesthetic results, and prevents swelling.[6]

Evaluating lip lacerations' depth and anatomical involvement is essential for restoring lip shape and function. The treatment did not miss intra-oral lacerations and injuries. The anatomy of the lips consists of three layers of tissue, namely the mucosa, muscles, and skin. Landmarks include the philtrum, cupid's bow, oral commissure, and the vermilion cutaneous border, which are the most important landmarks.[11] Wet and dry lips require different suture materials. Wet lips require absorbable sutures such as 4-0 or 5-0 chromic and vicryl versus non-dissolvable, 5-0 or 6-0 prolene for dry lips. Dissolvable sutures are used on dry lips if the patient cannot continue treatment to remove the sutures.[12] The goals of sutures are to maintain oral competency, optimise the aesthetic outcome, and prevent microstomia. As with injuries in other areas, re-estimation of the anatomical region of the lips is a must to achieve satisfactory aesthetic results. Soft tissue loss of more than 30% of the lip requires local flap reconstruction.[9]

Wound infection is the most common serious complication of simple lacerations. 10 If oral and maxillofacial lacerations are not treated adequately and promptly, these lacerations can lead to functional or aesthetic disability to more severe health problems.[13] Complications that often occur in patients with lacerations are dehiscence, tissue necrosis, infection, and irregular skin margins. This complication is usually managed by restitching, giving antibiotics for infection, and using foam dressings after debridement in patients with necrotising tissue.3

In addition to giving tetragram injection as tetanus prophylaxis, patients are given cefadroxil to reduce the risk of infection because of its bactericidal activity. The administration of ibuprofen achieves pain control. Patients are given oral hygiene instructions to maintain oral hygiene during the healing period and undergo a regular diet. Oral hygiene instructions were given in the form of cleaning the wound area with a soft brush or cotton and using 0.12% chlorhexidine gluconate mouthwash after meals twice a day for one week to prevent the accumulation of plaque and debris and to reduce the number of bacteria. Patients are also given hyaluronic acid gel in the intraoral post-suturing area as supportive therapy to reduce postoperative pain, reduce infection, and improve healing; besides that, hyaluronic acid gel plays a role in maintaining the integrity and elasticity of connective tissue. The patient was also given chloramphenicol zalf in the extraoral post-suturing area as a topical antibiotic to reduce exposure to microbial contaminants after the surgical procedure.

Conclusion

Emergency treatment of soft tissue injuries in the maxillofacial area includes stopping bleeding, wound debridement, suturing, and wound closure. Prompt and appropriate emergency treatment of

soft tissue wounds will reduce infection and dehiscence.

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