

Management of Oral and Maxillofacial Soft Tissue Injuries: Serial Case

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Abstract: *Head, face, and neck injuries often found in patients who have traffic accidents and treated in an emergency department. Trauma divided into trauma to the hard and soft tissues. Soft tissue trauma can be addressed immediately in the emergency room as an effort to control the infection of the wound. Method: the method used is to collect several cases of soft tissue wound management at the Hasan Sadikin Hospital emergency department. Results: Treatment of soft tissue injuries consisted of administering anesthesia, irrigation, debridement, and wound closure. Wound closure is done by suturing. For post-operative treatment, including administering antibiotics, additional nutrients, maintaining the humidity of the suturing area, and debridement. Conclusion: The principles of soft tissue wound management are irrigation, debridement, and suturing. Treatment is successful if there are no signs of infection and dehiscence after surgery.*

Keywords: Soft Tissue Injuries, wound management, irrigation, debridement, suturing

1. Introduction

Oral and maxillofacial injuries is divided into trauma to the hard and soft tissues. There are several types of soft tissue trauma, including abrasion, contusions, hematomas, lacerations, incision wounds, punctum wounds, crushed wounds, gunshot wounds, and avulsions^[1]. The most frequent cause of head and neck injuries are traffic accidents^[2,3]. The most common type of soft tissue injury on the face and scalp is a laceration. Facial lacerations most often occur in the forehead (22.6%), eyebrows (16.5%), upper eyelids (14.6%), chin (9.3%), lower lip (9%), cheeks (7%, 5%), nose (4.9%), lower eyelid (4.2%), ears (2.8%), and temporal region (1%)^[4].

Understanding the basic knowledge such as the mechanism of injury, tissue damage, the etiology of trauma, anatomy, physiology, risk, and complications of treatment are important to produce optimal care. Things that must be considered in patients with facial trauma are evaluations of airway security, breathing, and circulation^[5]. Treatment of soft tissue injuries consists of administering anesthesia, irrigation, debridement, and wound closure. Wound closure is done by suturing. For the postoperative treatment can be given antibiotics, additional nutrition, moisture, suturing, and the opening of sutures at 5-7 days for facial sores and 7-10 days for neck or scalp injuries^[5].

Complications that are common in patients with lacerations are dehiscence, tissue necrosis, infection, and irregular skin borders. These complications are usually overcome by restitching, administering antibiotics for the infection, and using foam dressing after debridement in patients with necrotizing tissue^[4]. The purpose of reporting this case is to describe and discuss about wound management according to the type and it's principal.

2. Case Report

Case 1

MR a A 32 y.o male patient came with bleeding from the mouth. ± 9 hours before admission caused by the patient hit the car and fell down with an unknown mechanism. The patient had a history of unconsciousness and bleeding from the mouth. From extraoral (EO) examination found Punctured wound at labiomentale region with 3x2 cm in size, irregular edge, Lacerated wound at the left eyebrow, left palpebra, right submandible region with 3x1x1; 2x0.5x0.5; 0.5x0.5x0.5 and 1x0.5x0.5 cm in size, irregular edge, muscle-based. From intraoral (IO) examination found: Lacerated wound at upper and lower lips region with 0.5x0.5x0.5; 1x0.5x0.5; 0.5x0.5x0.5 cm in size, irregular edge, muscle-based. The lacerated wound at the gingival of teeth 11-22, 31-32 region with 2x1x0.5; 1x0.5x0.5 cm in size, irregular edge, bone-based. The lacerated wound at palate region with 5x2x2 cm in size, irregular edge, bone-based. Hematoma at the vestibule of teeth 14-16, 24-26, 31-45 region (Figure 1). The patient was diagnosed with Punctured wound at labiomentale region, Lacerated wound at the left eyebrow, left palpebra, chin, upper and lower lips, gingival of teeth 12-22, 31-32 region. The patient was injected by TT, had wound debridement, and suturing at the lacerated wound and punctured wound IO and EO (Figure 2). The patient was injected by Ceftriaxone inj 1 gr IV and Ketorolac inj 30 mg IV.



Figure 1: Post debridement, punctured wound at labiomentale region, lacerated wound at the left eyebrow, left palpebra, chin, upper, lower lips, and gingival



Figure 2: Post Treatment, punctured wound at labiomentale region, lacerated wound at chin, upper, lower lips, and gingival

Case 2

ES, a 73 y.o male, came with bleeding from mouth ± 10 hours before admission because fell down after a hit by a motorcycle with his face hit the asphalt first. From an extraoral examination found lacerated wound at upper lips region (3x2x2 cm) and lower lips region (1x1x0,5 cm), irregular edge, muscle-based, and multiple abrasive wounds at the facial region. From intraoral examination found lacerated wound at lower lips region (3x1x0,5 cm), irregular edge, muscle-based, at gingiva of teeth 11-21 region (1x0,5x0,5 cm), irregular edge, bone-based (Figure 3). A patient diagnosed with Lacerated wound at gingiva of teeth 11-12 region and upper and lower lips region. The patient was injected by TT, had wound debridement, and suturing at the lacerated wound and punctured wound IO EO (Figure 4). The patient was injected by Ceftriaxone inj 1 gr IV and Ketorolac inj 30 mg IV.



Figure 3: Post debridement, lacerated wound at gingiva of teeth 11-12 region and upper and lower lips region



Figure 4: Post Treatment, lacerated wound at gingiva of teeth 11-12 region and upper and lower lips region

Case 3

RD A 22 y.o male patient came with bleeding from the chin. ± 30 minutes before admission caused by hit with a motorcycle and fell down with mechanism, his face hit the asphalt first. From an extraoral examination found Lacerated wound at chin region with 1x0.5x0.5 cm and 0.5x0.5x0.5 cm in size, irregular edge, muscle-based, Abrasive wound at chin region. The patient was diagnosed with a Lacerated wound and Abrasive wound at the chin region. The patient was injected by TT, had wound debridement, and suturing at the lacerated wound and punctured wound EO (Figure 5). The patient treated with Cefadroxil caps 500 mg PO and Ibuprofen tab 400 mg PO.



Figure 5: (A) Post debridement, (B) Post Treatment Lacerated wound and Abrasive wound at the chin region

Case 4

HT, a 24 y.o male patient came with bleeding from the mouth ± 6 hours prior to admission, because hit by a motorcycle when he was riding motorcycle with medium speed then fell down with face hit the asphalt first, there was history of alcohol consumption. From an extraoral examination found lacerated wound at upper lips region (3x1x2 cm), irregular edge, muscle-based. From intra oral examination found lacerated wound at upper lip region (1x0,5x0,5 cm), irregular edge, muscle based. Patient diagnosed with lacerated wound at upper lips region. . The patient was having wound debridement, and suturing at the lacerated wound and punctured wound IO (Figure 6). Patient was injected by Ceftriaxone inj 1 gr IV, and Ketorolac inj 30 mg IV.



Figure 6: (A) Post debridement, (B) Post Treatment, lacerated wound at upper lips region

Case 5

BR, a 23 y.o male came with bleeding from mouth ± 4 hours prior to admission because fell down from motorcycle with face hit the asphalt first. There was history of bleeding from mouth. From extra oral examination found punctured wound at labiomental region (2x1 cm), irregular edge. From intra oral examination found lacerated wound at upper lip region (2x1x1 cm), irregular edge, muscle based, at upper lip region with 4x1x1 cm), irregular edge bone based, and punctured wound at lower lip region (3x1 cm), irregular edge(Figure

7). Patient diagnosed with puncture wound at labiomental region and lacerated wound at upper lip region and vestibule upper lip region. Patient was injected by TT, had wound debridement, and suturing at lacerated wound and punctured wound IO EO (Figure 8). Patient was treated by Cefadroxil tab 500 mg PO and mefenamic acid 5000 mg PO.



Figure 7: Post debridement, puncture wound at labiomental region and lacerated wound at upper lip region and vestibule upper lip region



Figure 8: Post Treatment, puncture wound at labiomental region and lacerated wound at upper lip region and vestibule upper lip region

3. Discussion

In the case report obtained by the author, the injuries suffered in these five patients were laceration wounds that were located extraoral or intraoral and there were some patients who also experienced abrasive or punctum wounds. These injuries are caused by impact, friction, or pierced by sharp objects during a traffic accident.

The things that can be done for the management of post-traumatic patients is the primary survey, namely airway security, breathing, circulation, disability, and exposure / environmental. After the patient's condition is more stable, a secondary survey is conducted, which is a complete history taking to determine the sequence of events and a general examination to find out the systemic conditions experienced by the patient^[5]. Supporting examinations can be done to support the patient's systemic state including blood lab tests and radiological examinations.

To prevent tetanus, patients who are at risk of tetanus are given Tetanus Immunoglobulin (TIG). Injuries at risk of tetanus include wounds > 1 cm deep, dirty wounds, wounds exposed to the ground, saliva or feces, necrotic or infected wounds, puncture or amputation or crush injuries, and extensive burns with high degrees. Also seen from the patient's tetanus vaccination history; give TT vaccine to patients whose history of vaccine is unknown, incomplete (<3 doses), or the vaccine is complete but more than 10 years ago (5 years on risky wounds). Antitoxin is given to inactivate antitetanus toxin, while the toxin that is already in the terminal nerve cannot be treated with antitoxin. Therefore, muscle symptoms can continue to develop

because the tetanus toxin travels through axons and trans-synapses and breaks down VAMP. The incidence of tetanus is 500,000-1,000,000 cases per year worldwide. The majority of tetanus cases occur in developing countries involving 50% of neonates. Most cases in developed countries occur in older adults, where men are more frequent than women, which is 2.5: 1^[6]. The five patients in this case report were given intramuscular TT injection.

Patients are given prophylactic antibiotics that is ceftriaxone, which belongs to the cephalosporin group that is given intravenously. Many factors are related to bacterial contamination so that infection can occurs. The use of antibiotics must be based on the degree of bacterial contamination, the presence of supporting factors, mechanical injury, and the presence of predisposing factors for infection. Most of the bacteria that cause wound contamination are normal flora on skin such as *Staphylococcus spp.*, *Corynebacterium spp.*, *Bacillus spp.*, *Propionibacterium acnes*, *Staphylococcus aureus* and *Streptococcus pyogenes*. Gram-negative bacteria are susceptible to antibiotics of ampicillin, cefuroxime, cefoxitin, ceftriaxone, cefotaxime, ceftazidime, cefepime, ciprofloxacin, trimethoprim / sulfamethoxazole, gentamicin, amikacin and co-amoxiclavime^[7].

Patients are also given ketorolac as an analgesic, which also has the effect of reducing inflammation and fever. Side effects of ketorolac can cause stomach pain, nausea, mild vomiting, diarrhea, constipation, bloating, and dizziness. Therefore, patients are also given ranitidine to avoid the side effects of stomach aches, nausea and vomiting by lowering stomach acid levels.

The initial stage of wound care in soft tissue is wound debridement^[8,9,10]. The first step is irrigation wounds using saline water. The use of this water can be combined with *hydrogen peroxide*. The patient is first subjected to local anesthesia around the wound so that the patient feels comfortable when cleaning the wound^{9,6,7}. In all five cases, the wound debridement procedure was carried out using NaCl in a syringe, gently cleaned, then dirt that was difficult to clean was wiped using a sterile gauze moistened with NaCl. Sodium Chloride 0.9% is a safe isotonic solution for the body, non-irritant, protects tissue granulation from dry conditions, maintains moisture around the wound and helps the wound undergo a healing process and is easily available and relatively inexpensive^[11].

In cases of trauma to the soft tissue, the tissue is usually torn and results in irregular margins. The margins should be trimmed by cutting to make it easier during the suturing process so that wound closure can be achieved with a maximum of^[2,9,10]. Wound closure in patients is done by suturing. The suturing technique used is simple interrupted because the simple interrupted or continuous non-interlocking technique has the smallest throttling effect of wound edge^[1,3]. For intraoral injuries, suturing is done using silk sutures size 3.0 because silk suture is a nonabsorbable suture that has good grip properties, high tensile strength, smooth, and flexible. Whereas extraoral suturing is carried out using nylon suture size 6.0, because nylon is very inert

and can maintain tensile strength for many years, in addition, nylon is a monofilament making it easier to pass through tissue, minimal tissue reactivity, and easier to use because of its elasticity. These properties make monofilament sutures suitable for skin retention and closure^[12]. In the process of suturing the wound, reverse needle type is used according to the indications of the skin^[12]. Suturing must be done by paying attention to the tension line and the natural folds of the skin, and do not let the suturing done and cause dead space or give excessive tension.

After finished the suturing process, the wound is usually covered with a scarf and a bandage. Educate patients to change the bandage once a day. The patient also asked to come back for remove the suture thread. For extraoral, usually in POD V and intraoral in POD VII. The process of inflammation and recovery requires a number of chemical compounds to protect the wound area from attack by microorganisms and build the structure of the wound cover. Therefore, antiseptic and antibiotic agents are usually used. For an antiseptic, for example hydrogen peroxide, chlorhexidine, triclosan, iodophors (povidon iodine). Then examples of antibiotic agents are aminoglycosides (viz., Framycetin, Neomycin, etc.) and Polymyxin B, Bacitracin. Sufratul is a sterile gauze with an antibiotic content of Framycetin sulphate BP 1%. This gauze has antibacterial activity and this is good for dressing, use in various wound infections although it does not facilitate the healing process of wounds^[13].

In some cases, patients are to reduce given topical medication post-traumatic infections to reduce containing (chloramphenicol). Therefore it is advisable to keep the wound area always clean from contamination of pathogenic microorganisms.

We could Give antipiretik and antibiotics to prevent further infections. Antibiotics can be given back to patients for additional therapy after the main treatment of surgery. The purpose of antibiotic therapy is to prevent or treat infection by reducing or eliminating bacteria until the body's own immune system can overcome this pathogenic organism and drugs can be given orally or IV^[14].

4. Conclusion

The principles of soft tissue wound management are irrigation, debridement and reunification of tissue separated by suturing techniques. The technique and type of yarn used in suturing depends on the type of wound and the location of the wound. Successful closure of the wound if after treatment there are no signs of infection and dehiscens.

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