OPEN ACCESS
Saudi Journal of Oral and Dental Research
Abbreviated Key Title: Saudi J Oral Dent Res
ISSN 2518-1300 (Print) |ISSN 2518-1297 (Online)
Scholars Middle East Publishers, Dubai, United Arab Emirates
Journal homepage: http://scholarsmepub.com/sjodr/

Case Report

Facial Soft Tissue Injuries – Case Series & Review

Dr. Rahul Vinay Chandra Tiwari[1]*, Dr. Heena Tiwari[2], Dr Monika Gahlawat[3], Dr. Priyesh Kesharwani[4], Dr. V K Sasank Kuntamukkula[5], Dr. Amartya Prakash Srivastava[6]

[1]FOGS, MDS, Assistant Professor, Department of Oral and Maxillofacial Surgery, Sri Sai College of Dental Surgery, Vikarabad, India
[2]BDS, PGDHHM, Government Dental Surgeon, Kondagaon, Chhattisgarh, India
[3]Senior Lecturer, Department of OMFS, Maharaja Ganga Singh Dental College & Research Centre, 11 L.N.P, Hanumangarh Rd, Sri Ganganagar, Rajasthan, , India
[4]MDS Oral and Maxillofacial Surgeon, Consultant and Private Practitioner DENT-O-FACIAL Multispeciality Clinic, Mira road, Thane-Mumbai, India
[5]MDS, Assistant Professor, Department of Oral and Maxillofacial Surgery, Sri Sai College of Dental Surgery, Vikarabad, India
[6]Senior Lecturer, Dept of Oral and Maxillofacial Surgery, Saraswati Dental college and Hospital, Lucknow, UP, India

***Corresponding author:** Dr. Rahul V. C. Tiwari
| **Received:** 01.06.2019 | **Accepted:** 08.06.2019 | **Published:** 14.06.2019
DOI:10.21276/sjodr.2019.4.6.6

Abstract

Soft tissue repair following injury can be very challenging for a reconstructive surgeon. The goals of management of facial trauma are the preservation of form and function. The management of facial soft-tissue trauma is particularly critical where injuries can cause not only esthetic deformities but also can affect neural function, normal mastication, visual fields, and salivary outflow. Special consideration must be given to injuries of functional structures such as the facial nerve, ductal systems or organs, and ensuring appropriated management of these structures. This article discusses on few case report and a review of literature pertaining to facial soft tissue injuries.

Keywords: Tissue Injuries, facial trauma, facial nerve.

INTRODUCTION

Soft-tissue injuries may or may not have associated fractures [1]. The purpose of management is functional and aesthetic recovery in the shortest possible period of time. The presence of foreign bodies and unnoticed hematoma can complicate the clinical scenario. It is important to appreciate that many facial malformations in adults can be attributed to trauma in early childhood because trauma has the deleterious effect on the growth and development of facial bones [1]. The types of soft-tissue injuries encountered include abrasions, tattoos, simple or complex contused lacerations with loss of tissue, avulsions, bites and burns. Common etiological factors include road traffic accidents, gunshot injuries, blast injuries, foreign bodies, homicidal trauma, thermal, chemical and electrical burn, suicidal injuries, human bites, animal bites or caused by different animals etc [2]. Facial soft tissue injuries vary in severity based on the impact force and type of injury into minor superficial wounds to massive avulsions [3]. Disfigurement following trauma, becomes a social stigma and has the gross detrimental effect on the social we being of the patient [1]. Therefore, such cases are most appropriately managed by a reconstructive surgeon who has a thorough knowledge of applied anatomy, an aesthetic sense and meticulous atraumatic tissue handling expertise, coupled with surgical skill to repair all the composite structures simultaneously. Most defects can be reconstructed immediately leading to better restoration of form and function with early rehabilitation [4, 5]. Commonly there is a wide range of options for repairing a given defect. These include healing by secondary intention, primary closure, placement of a skin graft, mobilization of local or regional flaps, and free flaps. Local flaps often produce superior functional and esthetic results. A great advantage of local flaps is that the tissue compares closely to the missing skin in color and texture. These flaps can be rotated, advanced, transposed, or interpolated into the tissue defects [6, 7]. Since there is little emphasized in the literature on principles of managing soft tissue injuries we have attempted to highlight the same in this article.

Case Report

Here we present a series of 2 road traffic accident cases who reported to our department with facial soft tissue injury.

Case-1

A 21 year old male patient reported to our unit with a history of road traffic accident few minutes ago. Thorough systemic and local examination was performed. Local examination revealed severe laceration soft tissue injury of upper and lower lip on the right side with abrasions on the cheek and lateral

aspect of the right orbit as shown in Figure-1. Wound debridement done with hydrogen peroxide and povidone – iodine followed by thorough irrigation with normal saline. Suturing was done in layers. Subcutaneous layer, orbicularis oris muscle layer closed with 3-0 vicryl and skin with 5-0 prolene as shown in Figure-2. Patient was placed under medications and periodic follow up done. On day 7, sutures were removed. 6 months follow up reveals near normal esthetic and functional outcome of the patient.

Fig-1: Preoperative view showing the laceration and abrasions on the face

Fig-2: Intraoperative view showing the wound closure

Case-2

A 30 year old male patient reported with lacerated nasal soft tissue injury caused due to a cut by a glass piece. Patient reported to our unit few hours following injury. Local examination revealed a deep laceration on the right side of the face passing through the cheek from the lateral aspect of the nose to the lateral aspect of the right orbit via the lower eyelid as shown in Figure-3. Patient was taken under General Anesthesia for the repair of the soft tissue injury. Wound closure was done in layers with 3-0 vicryl and with 5-0 prolene as shown in Figure-4. Patient was placed under medications and periodic follow up done. On day 10, sutures were removed. 6 months follow up reveals near normal esthetic and functional outcome of the patient.

Fig-3: Preoperative view showing the laceration on the face

Fig-4: Intraoperative view showing the wound closure

DISCUSSION

Facial soft tissue is more commonly encountered due to the increased incidence of road traffic accidents [3]. Necrosis of the soft tissue is one of the major complication encountered with deep or massive soft tissue injury. Since orofacial region has rich vascular supply from branches of the facial artery, the end result of treatment is most often positive. Soft tissue injuries are more common than fractures in children who have sustained facial trauma, particularly in younger children whose facial skeletons are resistant to fracture [8]. In children, the response of the injured tissue to heal is generally more intense and accelerated, as they do not usually have compromising systemic disease or indulge in abusive habits such as alcohol or tobacco use [9]. However, although children heal quickly and predictably, increased collagen deposition in wounds tends to cause hypertrophic scars. Soft tissue wounds that are clean or only mildly contaminated and with little tissue compromise can be cleansed and closed. Antibiotics are not usually indicated unless there is a question of host immune status. Wounds can be closed up to 24 hours after injury. Older wounds should be thoroughly cleansed and their margins freshened before closure. Blunt trauma may result in extensive and prolonged tissue damage with subsequent deep scarring and poor esthetics [9]. Clinical examination of a patient who encountered soft tissue injury may reveal echymosis, oedema, sub-conjunctival haemorrhage, crepitus, hyperaesthesia, evidence of facial nerve palsy, inadequate excursion of the muscles of expression and mastication, wound with or without exposed vital structures and fractures. The aesthetic units on the face are frontal, temporal, supraorbital, orbital, infraorbital, nasal, zygomatic, buccal, labial, mental, parotid-masseteric and auricular. Generally horizontal lacerations across the face are likely to damage more vital structures than a vertical injury. In deep injury, it is necessary to evaluate communication with oral cavity, nasal cavity, and maxillary or frontoethmoid sinuses [1]. The examination of the wound should be done in the operation theatre under proper light source, magnification, copious irrigation and homeostasis. Electrocautery should be used in its lowest setting, conducive to coagulation. It needs to be remembered that nerves are often in proximity to the vessels. Electrocautery may cause iatrogenic injury. It is important to evaluate what tissue constituents are lost and what tissues are exposed. Sometimes the wound apparently may look small but might have wide undermining with overlying devascularisation. Such an undermined tissue should be primarily excised until the bleeding margins are reached. Then the actual measurement of the wound should be made, failing which the evidence of necrosis followed by infection will set in. Isolated soft tissue wounds should be closed as soon as possible; early repair of soft tissue injuries, even in the setting of significant concomitant injuries, has been associated with improved postoperative aesthetic results [10]. Delays in treatment can result in increased soft tissue swelling, obscuring landmarks and making primary closure more difficult. Increased soft tissue wound exposure is associated with an increased risk of infection. Ideally, closure should occur within the first 8 hours after injury [11]. Contraindications to primary closure in the emergency room include tissue damage whereby primary closure can only be performed under significant tension or with complex tissue rearrangement [11]. If significant wound contamination is present, wounds can be cleaned with a surgical scrub brush and antiseptic, preferably chlorhexidine gluconate [12]. Subsequently, copious irrigation should be performed in all contaminated wounds and any wounds treated more than 6 hours after injury; however, clean, noncontaminated wounds treated early do not benefit from irrigation [13]. Broad-spectrum antibiotic coverage is necessary in bite wounds and in patients with impaired wound healing due to smoking, alcoholism, diabetes, or other forms of immune compromise. Tetanus prophylaxis should be given according to the patient's immunization history [11]. Any jagged wound edges and devitalized tissues should be debrided. In cases such as crush injuries where the extent of injury is unclear, tissues can be loosely reapproximated. A layered closure is critical to obliterate dead spaces and also to relieve tension on the epidermal layer. Wounds covering facial nerve or parotid duct injuries should not be closed until operative management of the deeper injury is complete. Ideally, definitive repair of bony and soft tissue injuries can be achieved in a single operation, as successive operations rarely improve functional outcomes [14]. In high-velocity or blast injuries, this is often not possible due to the need for multiple debridements; however, early soft tissue reconstruction should be attempted to prevent significant soft tissue contracture and provide coverage for osseous reconstruction. The presence of contamination has not been associated with an increase in perioperative or long-term complications after early definitive repair of facial injuries with free flaps, therefore contamination should not be considered a contraindication to this treatment approach [14]. Individuals with darker skin pigmentation may be prone to excessive scarring (keloids) and pigmentation changes. If scarring appears to extend beyond the wound margins, a keloid scar may be forming. Topical hydrocortisone, injectable triamcinolone and even low-dose radiation may be helpful in reducing keloid scars. Finally, scars that are discoloured can be tattooed with permanent medical grade pigment to match the surrounding skin. Revision of scars should be deferred until final maturation is complete — approximately 6–12 months postinjury [9].

CONCLUSION

Reconstructive surgeons commonly encounter posttraumatic craniofacial soft tissue injuries in their routine medical practice. Key elements such as time of presentation in relation to injury, degree of injury, and anatomy involved play critical roles in determining the

optimal method of management and whether management can be performed in the emergency room or the operating room. The relative lack of clinical literature regarding soft tissue trauma management has led to clinicians relying more on their personal experience.

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