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RESEARCH ARTICLE

COMPLICATED FACIAL WOUNDS

Yassamina Ribag[1], Sara Koualla[2], El Hafidi Nawfal[1], Sandy Keith M'fa[1], Bakhil Ayoub[1], Jalal Hamama[1] and M. Karim El Khatib[1]

1. Stomatology and Maxillofacial Surgery Department, Mohammed V Military Training Hospital Rabat.
2. Plastic Surgery Department. Centre Hospitalier Universitaire Mohamed VI. Oujda.

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Abstract

The management of facial wounds poses unique challenges to the surgeon, given the specialized nature of facial tissue and the aesthetic importance of the face. The wide range of wounds varies from simple superficial skin lacerations to extensive, complex facial injury. The management of the complicated injuries is discussed in relation to the location and the mechanism of injury. Therefore, such cases are most appropriately managed by Surgeons who have 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. We report a series of cases of complex facial wounds we put forward the difficulties associated and provide a helpful systematic approach to evaluating and treating them.

Introduction:-

The definition of a wound is damage to the integrity of biological tissue, including skin, mucous membranes, and organ tissues.

Facial wounds are among the most frequent emergencies. They often affect a young population.

They include simple lacerations, abrasions, contusions, bites, avulsions and burns. These injuries can be complicated by the presence and involvement of vital anatomical structures such as vessels, ducts, nerves and muscles and are further complicated by the presence of foreign debris and haematomas.

While basic surgical principles are applied in repairing such wounds, the complicated ones require specialized knowledge and care, their management may pose unique challenges to the surgeon, given the specialized nature of facial tissue and the aesthetic importance of the face. The general principles of trauma management and wound care are applied in all cases. The management of severe wounds to the face is discussed in relation to the location and the mechanism of injury, it remains difficult given the lack studies that systematically investigate the management of these injuries, and therefore, no widely accepted classification scheme or treatment algorithms exist to guide evaluation and treatment.

We present our experience in managing such complicated wounds over a period of 1 year, managed by the on-call surgeon, we put forward the difficulties associated with such wounds and provide a helpful systematic approach to evaluating and treating them.

Corresponding Author:- Yassamina Ribag
Address:- Maxillofacial and Plastic Surgery Department, Mohammed V Military Training Hospital Rabat.

Patients and Methods:-

We included in our study all serious facial wounds of traumatic origin, in particular periorificial wounds, penetrating wounds, and transfixing wounds, admitted through the emergency department between June 2021 and June 2022, and managed by the on-call surgeon of the maxillofacial and plastic surgery department of the Mohammed V Military Training Hospital in Rabat. We excluded superficial wounds.

We considered the following parameters: age, gender, occupation, time from trauma to consultation, wound mechanism, causative agent, location, wound description, wound complexity, associated injuries, care received prior to admission.

Results:-

18 patients were included in our study, 16 men (88%) and two women, the age ranged from 21- to 52-year-old with an average of 34-year-old, The average time between the trauma and the emergency consultation was 7 hours, with no correlation with the presence or absence of correlated with the presence or absence of wound soiling.

Road traffic accidents were the main cause (7 patients), followed by assaults in 5 cases, 2 cases were caused by a domestic accident, 2 patients were victims of animal bites, one patient was a victim of ballistic trauma.

Table 1:- Causes of facial wounds.

Road traffic accident	7
Assault	5
Domestic accident	2
Animal bites	2
Balistic trauma	1
Sport accident	1

The wound was located on the cheeks in 4 patients, on the forehead in 3 patients, on the ear in 3 cases, 3 patients had wounds on the lip, the eyelid was affected in 2 patients, one patient had a nasal location, and 2 patients had two or more locations affected (Fig 1).

Table 2:- Location of the wound.

Cheek	4	22,20%
Forhead	3	16,60%
Ear	3	16,60%
Lip	3	16,60%
Eyelid	2	11,10%
Nose	1	5,50%
Multiple locations	2	11,10%
Total	18	

Figure 1:- Transfixing wound of the cheek and nose.

The wound was transfixed in 83% of the cases, with a loss of substance in two cases located on the lip, 2 patients had a penetrating wound on the cheek, three cases had an associated facial fracture and dental fracture, a parotid wound (Fig 2) was seen in two patients with section of the facial nerve and a wound of the stenon canal in one patient, one case was associated with a lower tear duct wound

Figure 2:- Patient with a penetration wound on the cheek associated with a parotid wound.

The injury was soiled in three patients who required trimming and cleansing before suture.

The management of wounds was urgent and as soon as possible in all cases, it required admission to the emergency operating room in 80% of cases, of which 8 patients required general anaesthesia, 3 patients were sutured under sedation, 2 patients were managed in the outpatient department, and 3 patients in the treatment room under local anaesthesia.

All the lacerations were closed primarily in multiple layers, the mucosa, muscle and subcutaneous level were repaired with absorbable sutures, and skin with nylon. Cartilaginous suture was necessary in transfixing ear wounds and nasal wounds, the eyelid wound associated with a lower tear duct wound requiring intraoperative probing (Fig 3), the loss of substance of the lip required reconstruction with a locoregional flap, associated fractures were treated secondarily.

Figure 3:- Probing of a lower duct wound associated to an eyelid wound.

Due to the unknown tetanus vaccination profile, all patients received serotherapy as a preventive measure. Intravenous antibiotics, analgesics and received local care were systematic. The time taken to remove the sutures varied between 7 and 15 days depending on the location and quality of the skin.

The evolution was favourable in all patients, who were then put under sun protection and healing cream, in order to optimise aesthetic scarring (Fig 4).

Figure 4:- Favourable evolution of a transfixing lip wound 3 months post-op.

Discussion:-

Facial wounds, whether isolated or in combination with other injuries, are considered one of the most common traumatic craniofacial injuries. These injuries account for nearly 10% of all emergency department visits. [1,2]

The literature reported different etiologies, dominated by road traffic accident and assault, domestic injury, sport injuries, and others. [3,4]

The young age of the patients is classic, male predominance as well [1,5,6]

In the literature, the most affected areas are the lip and the chin [1,6,7], contrary to our study where the most affected areas were the cheeks and the forehead.

The management of these complex wounds of the face is based first of all, and after initial evaluation of the patient and search for associated defects and trauma, as well as initial stabilisation, on a focused history and clinical examination that will help determine the management plan. The quality of the wound is examined, along with an assessment of the lacrimal apparatus, the external auditory meatus, the facial nerve, parotid duct, the underlying bone, and the tarsal plates, as well as an evaluation of motor and sensory nerve function, with special attention paid to the facial and trigeminal nerves. [8,9,10,11]

Surgical management requires first thorough decontamination in soiled injuries and conservative debridement with the removal of all foreign debris before the wound is closed. The type of anaesthesia depends on the location, depth and complexity of the wound, the presence of associated lesions, and the patient's tolerance and condition. [10,11,12] Local anesthesia or regional blocks, using 0.5 to 1% xylocaine with epinephrine, is effective and preferable. In dealing with extensive wounds, a patient with airway problems, or with an uncooperative patient, general endotracheal anesthesia is preferable. [13]

Soft tissue wounds should be closed immediately if not sooner ideally within 6 hours of trauma, early repair of soft tissue injuries, even in the setting of significant concomitant injuries, has been associated with better postoperative aesthetic results. Delays in treatment can result in increased soft tissue swelling, obscuring landmarks and making primary closure more difficult. [2,12]

The basic principle of closing all lacerations is to realign anatomic structures in a tension-free manner [14,15], layered closure is recommended, with correct alignment of landmarks, it allow good approximation of like tissues (cartilage, muscle, subcutaneous tissue), eliminate dead space and reduce infection improve the ultimate scar and function. Injuries to collateral soft tissue structures are rare but need to be healed, if salivary or lacrimal duct disruption is suspected because of the anatomic location of the wound, they should be repaired acutely and stented, generally in the operating room while the wound is repaired. [11,12,13,15]. For associated loss of substance, coverage is achieved using regional, locoregional, or more rarely free flaps [15]

According to the literature, antibiotic prophylaxis is discussed and depends on different parameters and authors. It was systematic in all our patients because of the context, the mechanism, the complexity of the wounds and the delay of consultation and management. The time taken to remove the sutures depend on the location and quality of the skin and scarring, should be done as soon as possible for aesthetic and less visible scar.

Complications usually involve infection, scar formation, compromise of function, and (rarely) missed injury, should be investigated and addressed with appropriate treatment.

Surgical management of complex facial wounds is highly challenging as they do not follow any set protocols. Sticking to the basic tenets of reconstruction with matching of the anatomical landmarks and reconstructing in layers gives very satisfying outcomes even in the ghastliest injuries. Immediate single stage procedure with meticulous reconstruction is the key to excellent functional and aesthetic results. [14]

Conclusion:-

Acute complicated facial wounds of different etiologies offer a significant challenge to the reconstructive surgeons. Although rarely life-threatening, the treatment of these injuries can be difficult and may have significant impact on the patient's facial function and aesthetics.

The relative lack of clinical literature regarding soft tissue trauma management has led to physicians relying only on personal experience and pearls of wisdom to help guide them through this complex topic. Those complex wounds may require standardized and/or evidence-based data to optimize outcomes.

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