

# Soft tissue injuries of the face: early aesthetic reconstruction in polytrauma patients



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## Soft tissue injuries of the face: early aesthetic reconstruction in polytrauma patients

*Facial injuries are often accompanied by soft tissue injuries. The complexity of these injuries is represented by the potential for loss of relationships between the functional and the aesthetic subunits of the head. Most reviews of craniofacial trauma have concentrated on fractures. With this article, we want to emphasize the importance of early aesthetic reconstruction of the face in polytrauma patients. We present 13 patients with soft tissue injuries of the face, treated in our emergency department in the "day one surgery", without "second look" procedures. The final result always restored a sense of normalcy to the face. The face is the first most visible part of the human anatomy, so, in emergency, surgeons must pay special attention also to the reconstruction of the face, in polytrauma patients.*

KEY WORDS: Facial injury, Facial reconstruction, Polytrauma, Soft tissue injuries.

## Introduction

Many facial injuries are accompanied by soft tissue injuries, most commonly contusions and lacerations. Motor vehicle collisions make up the majority of these injuries followed by bite wounds and ballistic injuries.<sup>1</sup> There are a lot of options to repair post-traumatic facial defects like healing by secondary intention, primary closure, skin graft, local flaps and free tissue transfer. Most reviews of craniofacial trauma have concentrated on fractures. The importance of early aesthetic reconstruction of the face in polytrauma patients has never been emphasized in literature.

## Patients and Methods

From February 2003 through December 2007, 13 patients (7 men and 6 women) aged 16 to 65 years

with soft tissue injuries resulting from complex craniofacial traumas were treated in our emergency department. In all cases the cause was a motor vehicle collision. All patients have been initially evaluated to determine the extent and the mechanism of the injury; emphasis is placed on airway maintenance (clearance of upper airways, suction, chin-lift maneuver, endotracheal intubation or cricothyroidotomy, supplemental oxygen), control of external and internal bleeding, fluid resuscitation, brief neurologic evaluation, protection from hypothermia. Pharmacological coma was induced in some patients. A CT scan was always performed. 7 patients presented multiple facial fractures. The majority of the injuries regarded the mid third of the face and they were clinically noninfected. In 4 patients an advancement flap was performed (Fig. 1 A, B, C, D). In a bald man was observed a injury of the scalp and it was treated with a full thickness graft (Fig. 2).

A difect of the eyebrow was treated with a V-Y island pedicle flap. A forehead flap was used for a large nasal defect. When it was possible (6 more simple cases) we used a primary closure (Fig. 3). The wounds were irrigated and debrided. Tetanus prophylaxis with immunoglobulin and systemic antibiotic treatment were administered to all patients.

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Fig. 1

## Results

The final result always restored a sense of normalcy to the face with appropriate sizes and proportions. A meticulous skin closure and a good definitive surgical scar were obtained in every patient. According to the timing of polytrauma management, we have treated the soft tissue injuries in the “day one surgery” (the first 24h), but without “second-look” procedures. Every time we used flaps, we never observed partial or total necrosis. No other complication worthy of note occurred.

## Discussion

Before 1970 it was believed that polytrauma patients were too ill to withstand surgery and prolonged surgical procedures were avoided. In the following decades the concept of “damage control” surgery was introduced for multiply injured patients.<sup>2</sup> Today we want to emphasize the concept of early aesthetic reconstruction of the face in emergency department that represents a new evolving trend in the care of polytrauma patients. When a polytrauma patient arrives in a emergency room, the first priority of the initial assessment is survival. The “Advanced Trauma Life Support” (ATLS) protocol of the American College of Surgeons’ Committee on Trauma is the standard pro-

cedure algorithm for the management of trauma victims.<sup>3</sup> An accurate timing has to be followed: a) baseline diagnostics and immediate life saving procedures according to the A-B-C-D-E protocol of the ATLS (Airway, Breathing, Circulation, Disability, Exposure); it’s important to remember that patients with extensive soft tissue injuries may have blood, bone fragments and foreign bodies obstructing the airway! b) “damage control surgery” to control hemorrhage and decompression of body cavities; c) elaborate diagnostics including a total body radiologic work-up (only in hemodynamically stable patients); d) “Delayed primary surgery”(DPS), that includes surgical interventions which are not immediately required to resolve life-threatening conditions. During the “DPS-time”, we perform the aesthetic repair of soft tissue injuries of the face with excellent results. The complexity of these injuries is represented by the potential for loss of relationships between the functional and the aesthetic subunits of the head.<sup>4</sup> The restoration of facial contour after trauma is no different than reconstruction of any form of non-emergency facial asymmetry. The facial wound may be contaminated by orosinonasal secretions and foreign material, and can contain nonviable soft tissue and bone. The most accurate cleaning and debridement must be performed. The bony foundation must be reconstructed before treating soft tissue. Orbital injuries, injuries in the region of the parotid gland and facial nerve must be carefully evaluated. The



Fig. 2



Fig. 3

appearance of final scar in facial surgery plays a key role also in emergency department. When the primary closure is not possible, flaps, grafts or other techniques should be used. If it's necessary Z-plasty can be used to avoid retractions. Where a plastic surgeon is not available, regardless of the surgical specialty, every surgeon has to engage to obtain the most aesthetically pleasing incision and the best surgical scar in a polytrauma patient presenting a facial injury.

## Conclusions

The face is the first most visible part of the human anatomy<sup>5</sup>, so surgeons must pay special attention to devising any plan for the reconstruction of the face in polytrauma patients. Unbelievably it's not rare that a polytrauma patient with soft tissue injuries of the face, waked up from coma, asks a mirror, only concentrated on how normal facial appearance is after surgery, ignoring he has risked his life.

## Riassunto

Le lesioni del volto sono frequentemente associate a lesioni dei tessuti molli. Gli incidenti stradali rappresentano

la prima causa di traumi facciali. Le difficoltà nella riparazione di tali lesioni sono dovute alla potenziale perdita di armonia tra le subunità estetiche e funzionali del viso. L'obiettivo del nostro articolo è enfatizzare la ricostruzione estetica del volto in emergenza nei pazienti politraumatizzati, anche in stato di coma. In letteratura infatti la ricostruzione dei tessuti molli del viso nel politraumatizzato è poco discussa, in quanto quasi tutti gli autori si sono concentrati sul trattamento delle fratture. Presentiamo 13 casi di soggetti politraumatizzati (7 uomini e 6 donne), di età compresa tra 16 e 65 anni, con lesioni dei tessuti molli della faccia, trattati in emergenza nel nostro dipartimento, nelle prime 24h dall'incidente, tra febbraio 2003 e dicembre 2007. La riparazione delle lesioni è stata effettuata con diverse tecniche chirurgiche. Il risultato finale è stato sempre ritenuto soddisfacente dai pazienti; si è ottenuta armonia e proporzione tra le varie subunità estetiche del viso. La faccia è la parte anatomica del corpo umano più visibile, pertanto i chirurghi devono porre particolare attenzione finanche alla ricostruzione estetica del volto nel soggetto politraumatizzato; non è raro che un paziente risvegliatosi da un coma, in seguito ad un grosso trauma, sia quasi solo interessato all'aspetto del proprio volto, dimenticando di aver rischiato la vita.

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