

Lesson Plans and Objectives:

Review material for article

Prep work for article

Picture recovery

Review for placement on-line.

After reading the article, the staff will be able to:

Define facial trauma by written examination

Isolate the main causes of facial trauma by written examination

Define the geographic areas of the facial skeleton by written examination

Define the most important aspect of prehospital care in facial trauma by examination

Facial Trauma

This article deals with facial trauma, which is defined as injury to the soft tissues of the face (including the ear) and to the facial bony structure. Facial injuries require careful,



thoughtful treatment because the patient's face is such a prime focus of attention by others. The cosmetic appearance of the face has an enormous impact on personality and social interactions. To allow features to be unnecessarily distorted as a result of inadequate care does great disservice to the patient and may lead to ongoing psychological problems.

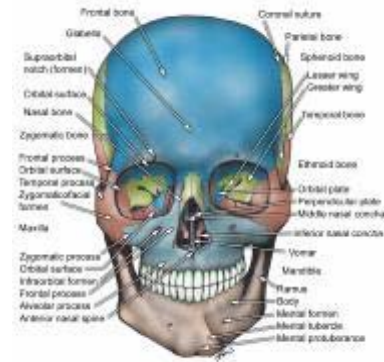
Facial trauma is a common problem in emergency medicine. It may be an isolated injury or may occur with other trauma. Although more than 50% of facial injuries in patients with major trauma continue to be caused by motor vehicle crashes, recent data indicate that the increasing use of active and passive automobile restraints is significantly reducing the frequency and magnitude of this problem. Other major causes of facial trauma include altercations, home accidents, athletic and work-related injuries, animal and human bites, domestic violence, and child abuse. In the pediatric age group, falls are a major cause of facial fractures, although some believe that pedantic facial trauma is relatively rare, composing less than 10% of all facial trauma seen in the general population. The presence of facial trauma in a child should immediately alert the paramedic to the possibility of child abuse or neglect. Increasing evidence also suggests that facial injuries may be a warning for possible domestic violence.

Facial trauma usually presents a complex problem for the emergency room. The ability to provide definitive care depends on many variables. Multi-system trauma takes precedence, and the treatment of facial injuries may be relegated to a later time. Facial trauma also presents the problem of "multi-turf" territory, with

plastic surgeons, otolaryngologists, oral surgeons, and ophthalmologists all laying claim to aspects of facial trauma (and often overlapping one another).

The external bony facial skeleton is composed mainly of the frontal bone, temporal bones, nasal bone, zygomas, and mandible. These bones make up the horizontal and vertical

buttresses that provide both support and strength to the face. The ethmoid, lacrimal and sphenoid bones contribute to the inner portions of the orbits. The facial skeleton is often divided into three geographic areas: the upper third, consisting of the section above the superior orbital rim; the middle third, or midface, consisting of the area from the superior orbital rim down through the maxillary teeth; and the lower third, consisting of the mandible.



Facial Trauma may be classified as penetrating or blunt in origin. Penetrating trauma is more likely to produce a laceration, whereas blunt trauma is more likely to cause a contusion or bony disruption. A mixed class also exists. Facial trauma from vehicular crashes often involves rapid deceleration injuries, many of which could be avoided by using shoulder harnesses and having air bags in automobiles, and through helmet use by motorcycle riders. The speed at the time of the crash is important in terms of the disruptive tissue force generated.

Evaluation starts with the history, and special attention to the mechanism of injury to determine which types of facial injury are probable and which must be ruled out. In some patients, obtaining the history comes only through us as paramedics before the patient becomes comatose. Make sure the receiving physician understands the mechanism of injury to enhance his clinical suspicions as to the nature of potential injuries. If the patient is cooperative, additional information can be sought about the location of facial pain, presence of diplopia or other vision problems, location of any facial numbness, pain on movement of the mandible, and presence of an abnormal “bite.”

Facial structures should be inspected for deformity and asymmetry, both of which may indicate underlying bony disruption.

Documentation in the patient narrative of the appearance of the patient is important. By one estimate, up to 25% of all significant facial trauma cases result in litigation.



Enophthalmos, the sinking of the eyeball into the orbit, or one eyeball looking in a different direction, (entrapment of inferior rectus muscle) must be specifically sought if a blowout fracture of the orbit is suspected. Ocular integrity and visual acuity, along with examination of extraocular movement should be included in your exam if life-threatening injuries are not present.

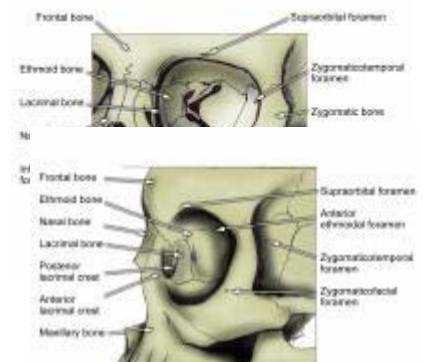
The position and integrity of the nasal septum should be observed, and the presence of a septal hematoma should be sought. The patient should be observed for cerebrospinal fluid (CSF) rhinorrhea as an indication of a fracture of the cribriform plate or associated structures. The presence of a rapidly advancing outer ring when a drop of the discharge is placed on a gauze pad may indicate the presence of CSF.

Motor sensory function should be evaluated next. The motor and sensory examination will be difficult or impossible in the patient with altered mental status and should be documented thoroughly in your patient narrative. All three major branches of the trigeminal nerve should be tested for sensation on each side of the face.



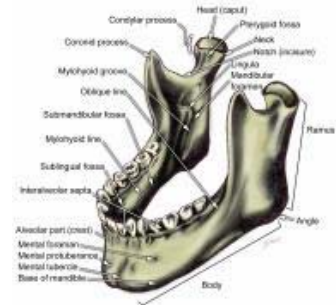
Having the patient wrinkle the forehead, smile, bare the teeth and close the eye tightly checks motor function of the facial nerve.

Palpation of the facial structures is the next step in the evaluation process. Tenderness, bony defects, crepitus, and false motion should all be sought as evidence of disruption of the skeleton. Specific attention should be paid to the infraorbital and supraorbital ridges, the zygoma,



nasal bones, mandible, and lower maxilla. Make sure the teeth are not loose or blocking the airway.

The most important aspect of prehospital care in facial trauma is the maintenance of a clear airway. Airway compromise can be a direct result of the injury, with disruption of the bony and cartilaginous architecture supporting the airway, or it may be caused by obstruction by soft tissue, hemorrhage, vomitus, or avulsed parts. If cervical spine injury is possible (e.g., by the mechanism of injury, an altered sensorium, or cervical spine tenderness) and if airway protection is required, careful oral intubation may be performed with cervical spine in-line stabilization. Nasotracheal intubation may also be performed after cervical spine



immobilization, although this is controversial in patients with potential cribriform plate disruption. This procedure may also be contraindicated if laryngeal trauma may be present. In these cases, airway patency may be temporarily achieved by turning the patient to one side on a backboard after immobilization. Percutaneous transtracheal ventilation and cricothyrotomy are alternate modes of airway maintenance that may also be applicable in these patients.

Most patients with facial trauma must be assumed, until proved otherwise, to have sustained cervical spine trauma. Initial management of the airway should include the removal of any loose material (teeth, blood clots, soft tissue, foreign material) from the oropharynx. If the patient is obtunded but breathing well, (pulse ox above 92%), without hemorrhage into the airway, an oropharyngeal or nasopharyngeal airway may be adequate to ensure airway patency.

Shock, if present, must be treated. The presence of shock as a result of facial trauma alone is extremely rare, and an additional source must be sought.

Hemorrhage caused by facial trauma usually can be controlled in the field with direct pressure. A pressure dressing may be helpful, but care must be taken not to compromise the airway.

Large avulsion flaps are best treated by the removal of gross contamination, irrigation with normal saline if conditions permit, and replacement of the flap on its bed.

Foreign bodies impaled through the cheek may be removed in the field only when the airway is compromised. All other impaled foreign bodies should be left in place until surgery. Patients should be carefully stabilized before transport.



All completely avulsed tissues and organs should be recovered, if possible, irrigated with normal saline and transported in an NS-soaked gauze sponge. This specifically applies to teeth, ears, the nose, and large soft tissue defects.

As with any traumatic injury, the mechanism of injury should be assessed at the scene, with this information transmitted to the receiving hospital. This information is valuable in anticipating accompanying injuries and in determining priorities for the patient's care.

It is important to document the patient's level of consciousness, sensory motor functions and any changes during transport. In all facial trauma, the paramedic should be alert to accompanying head injury.