Maxillofacial Traumatology

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Maxillofacial injuries

- izolated maxillofacial injury
- combined injury
- polytraumatization (injury of two or more parts of the body when one of them jeopardize the life of the patient)
Maxillofacial injuries

- Injury of soft tissue of the head and neck (35%)
- Injury of facial skeleton (65%)
  - Mandibular fractures (71%)
  - Midface fractures (25%)
  - Combined fractures –midface and mandible- (4%)

Male: female 2:1
Maxillofacial injuries
-reasons-

• traffic accidents
• acts of violence
• work-related accidents
• sport-related injuries
First-aid

• **maintance of patient airway** (saliva, blood, teeth, removable denture, retroflexion of the tongue, retropositioning of the maxilla..., tracheotomy / conicotomy)

• **cessation of haemorrhage**

• **stabilisation of circulation** (administration of plasma expanders, anti-shock therapy)

• **wound covering** (sterile gauze)

• **immobilisation of broken ends** (jaw bandage in case of mandibular fracture)

• **hospitalisation**
Hospital treatment

Immediately and definitive !!!

• establishment of the exact diagnosis (history, clinical signs, radiographic pictures)
• care of the soft parts of the face (always primary wound closure)
• reduction of the fractured ends, immobilisation
• administration of antibiotics
• nutrition and postoperative management (diet, cleaning)
Mandibular fractures

- 75% of the fractures of the jaws
Classification of mandibular fractures 1.

- relation to the external environment (simple, compound)
- type - incomplete (infraction)
  - greenstick fractures (children)
  - complete fractures (through the entire thickness of the mandible)
  - comminuted (fractures with numerous segments)
Classification of mandibular fractures 2.

- localisation of mandibular fractures
  - symphysis (fractures between the canine teeth)
  - canine region
  - mandibular body (between the canine and the mandibular angle)
  - angle of mandible
  - ascending ramus (between the angle and sigmoid notch)
  - coronoid process,
  - condylar process
Diagnosis

- history
- inspection
- clinical signs
- radiographic pictures (OP, PA, CT...)
Indefinite signs of mandibular fractures

- pain (spontaneous, induced by pressure, mastication)
- swelling
- soft tissues injury (gingival rupture…)
- functional disturbances (trismus, mastication, paresthesia of the mental nerve…)
Definite signs of mandibular fractures

- change in shape, malocclusion
- abnormal mobility
- crepitation (when the fractured ends are moved, a characteristic sound can be heard)
Treatment of mandibular fractures

– Conservative
– Surgical
– Conservative and surgical (combined)
Conservative treatment of mandibular fractures

• conservative – IMF (intermaxillary fixation) 4-6 weeks
  (disadvantage: oral hygiene, eating difficulties, speaking, hyperemesis, epilepsy!!!)

• circumferential fixation (using Gunning splint, removable denture)
Surgical treatment of mandibular fractures

- wire osteosynthesis (Neuner)
- pin fixation
- plate osteosynthesis (AO, compression, mini-, microplates, resorbable plates)
Treatment of condylar process fracture

- **Conservative** - 2 weeks IMF
  - functional treatment

- **Surgical**
  - laterally dislocated condile
  - central dislocation of the condile (medial cranial fossa)
  - malocclusion (which can not be reduct)
  - foreign body in the fractured site (compound)
Classification

- Le Fort I., II., III. (mainly didactic classification)

- central (Le Fort I., II., nasal, nasoethmoidal region)

- centrolateral (Le Fort III.)

- lateral (zygomatic complex, zygomatico-maxillaris complex fracture, blow-out fractures)
Le Fort I

René Le Fort
Le Fort III
Diagnosis of midface fractures

- physical examination (inspection, palpation)-swelling, pain, „plate face”, malocclusion,
- abnormal mobility, crepitation (when the fractured ends are moved, a characteristic sound can be heard), „step”, formation, periorbital emphysema, diplopia
- radiographic pictures (OP, PA, „zygomatic arch, CT…”)
Treatment of midface fractures

Steps:
- reduction of fractured ends
- immobilisation (fixation)
- rehabilitation
Treatment of midface fractures

- conservative (rare)
- surgical
  - reposition with surgical hook, (zygomatic bone fracture)
  - external immobilisation: (extraoral pin fixation, Halo device történő, supraorbital pin fixation)
  - open reduction- intraoral or extraoral approach: suspension wiring (Addams), miniplate, microplate, resorbable plate
Signs

- reduction of eye movement
- diplopia
- enophtalmus
Diagnosis

• physical examination
• radiographic examinations
  – PA pictures, CT!!!
Treatment of blow-out fracture

- exploration of the orbital floor
- repositon
- immobilisation
  - reconstruction of orbital floor (titanium mesh, Lyodura, PDS membrane, autologous bone...)
  - supporting of orbital floor from maxillary sinus (Folley catheter)