

DENTO-MAXILLARY RADIOLOGY AND IMAGING

Course 4

RADIOIMAGING DIAGNOSTIC OF MAXILLO-FACIAL TRAUMAS

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4.1. TOPO - LESIONAL CLASSIFICATION

Generally are used a topo-anatomic lesional classification which delimits:

- **FACIAL MASSIVE TRAUMAS**
- **DENTO-ALVEOLAR TRAUMAS**
- **MANDIBLE TRAUMAS**

4.2. FACIAL MASSIVE TRAUMAS

4.2.1. RADIOGRAPHIC EXPLORATION

Facial massive radiographic exploration imply:

- the routine perpendicular image projection from face and profile,
- the dedicated image projection for anterior floor of the base of the skull,
- facial oblique image projection,
- special image projection for: nasal pyramid, zygomatic arch (May projection) and temporo-mandible joint.

4.2.2. COMPUTER TOMOGRAPHY - SCAN

DENTO - MAXILLARY MULTISLICE COMPUTER TOMOGRAPHY

With dedicated dento - maxillary region C.T. programs are the imaging method of choice for oro-facial traumas fine detection and characterization, offering a huge volume of information with specialized reconstruction possibility:

- paraxial dental reconstructions,
- panoramic dental reconstructions,
- axial, coronal and sagittal dento - maxillary reconstructions,
- 3D dento - maxillary reconstructions,
- virtual 3D endoscopic maxillary reconstructions.

CONE BEAM COMPUTER TOMOGRAPHY - CBCT

Using a cone X - ray beam is an advanced imaging modality that provides excellent visualization of the dental hard tissues and osseous structures in three dimensions, being the imaging method of choice for dento - maxillary traumas detection and characterization:

- images are displayed as multiplanar reconstructions of the imaged structures in three orthogonal planes;
- has become widely used over the last decade because it has multiple applications in dento - maxillo - facial structures imaging diagnosis.

4.2.3. TOPO - ANATOMIC LESIONAL CLASSIFICATION

There are imaging detected:

- massive facial fracture implying maxillary uni or bilaterally and also,
- maxillary fracture with or without dental arch lesions.

MASSIVE FACIAL FRACTURE IMPLYING MAXILLARY BILATERALLY WITH DENTAL ARCH LESIONS, also named cranio-facial disjunction after Lefort are classify in 3 distinctive types:

- Lefort type I fracture - low facial disjunction passing over the dental apex;
- Lefort type II fracture - middle facial disjunction passing through nasal pyramid with submalar directing;
- Lefort type III fracture – high facial disjunction passing through nasal pyramid with supramalar directing and maxillary detaching from neurocranium.

Usually are detected more simple fractures forms which also imply the **DENTAL ARCH AND MAXILLARY UNILATERALLY FRACTURES** which are often secondary to a dental trauma.

From **MASSIVE FACIAL FRACTURE NON - IMPLYING DENTAL ARCH** the most often are lateral: zygomato-malar which may be with or without displacement and have a discreet symptomatology.

Also from **MASSIVE FACIAL FRACTURE NON - IMPLYING DENTAL ARCH CATEGORY BUT WITH CLINICO - THERAPEUTIC RADIOLOGICAL SPECIAL IMPLICATIONS** are superior median fracture: proper nasal bones fractures, frontal sinuses fractures, ethmoid fractures and floor of the orbits fractures.

4.3. DENTO - ALVEOLAR TRAUMAS

Extremly frequent, dento-alveolar traumas which usually need dedicated special radiographic techniques as:

- orthopantomography and
- endooral film radiographic projection and

- CBCT

which will detect:

- simple fractures, contusions and pure dental luxations and also
- transverse or parceled alveolar traumatic implications.

By radioimaging may be distinctive detected:

- posttraumatic enamel fissures,
- crown or radicular fractures,
- coronal - radicular fractures,
- dento - periodontal contusions
- dental luxations.

4.4. MANDIBLE TRAUMAS

Imaging diagnosis methods of choice are:

- Radiographic mandible exploration implying specific and dedicated projection images:

- overall projections: "low face", Waters and Hirtz I,
- unilateral projections: "scroll mandible" for each side,
- segmentar projections: antero-posterior for menton and tangentially

postero-anterior for ascending ram and gonion.

- Multislice CT - scan and CBCT are always especially indicated for detection, multiplanar and 3D characterization.

Mandible may be involved in 3 types of fractures:

- FRACTURES OF DENTATE PORTION: symphysis, parasymphysis and of the mandible body;
- FRACTURES OF MANDIBLE ANGLE;
- FRACTURES OF MANDIBLE WITHOUT TEETH PORTIONS: ascending ram, condylar (itself, low subcondylar, high super condylar) and of the coronoid tuberosity.