Systematic of the temporomandibular MRI Diagnosis

Introduction: Systematic in MRI-Diagnostics can describe the pathology of the temporo-mandibular joint (TMJ) and will help to discover the anatomic structures and diseases in three dimensional view. MR-Images give important information to evaluate chronic pathologic disorders of orthofunctions.

Sections layer:
Parasagittal
Paracoronal
Transversal

Diagnosis of:
- Discus perforations
- TMJ compressions
- Laterally or medially discus displacements
- Condyle arthritis

To recognize:
- Position and anatomical variation of the caput mandibulae
- Condyle axis in the horizontal layer
- Position and degenerative changes of the articular discus

Anatomical structures:
- Temporal lobe of the cerebrum
- M.pter.lat.sup.
- Strat. sup.
- Strat. inf.
- Meat.acust.extern.
- Maxillary sinus
- M.temporalis
- M.pter.lat.inf.
- Zygomatic arch
- A.carot.int.
- Lig.lat
- M.pter.lat.inf.
- M.pter.lat.sup.
- Discus
- Caput mandible
- Coronoïd process
- B.sinus

Main layer:
Occlusal bite
therap. protrus. 2-4mm, anter. caudal
submaximal anter. caudal

- Total anterior discus displacement
- Totally anterior discus displacement without reposition
- Totally discus displacement without reposition, submax. Open anterior position

Findings:

Parasagittal
Paracoronal
Transversal and parasagittal

Apathology, TMJ
Lateral discus displacement
Advanced condyle arthritis with painful joint effusion
Dorsomedial discus displacement

- Physical, joint gap with discus
- Medial condyle compression
- Coronoïd process
- Lateral displaced discus-fragment
- a. laterally compressed joint gap
- b. dorsomedial positioned discus

The MRI emphases are used to represent the different groups of tissues with various levels of contrast. The MRI-images are differentiated between T1, T2, and proton-related images. The best contrast for the diagnostics of the TMJ and discus can be achieved with the proton emphasis. With co-injection of Gadolinium, the contrast to the well circulated tissues is enhanced. Fat suppressed images are excellent to point out traumatic effusions of the joint.

MRI emphases:
T 1
T 2
Proton balanced image
Fat suppressed T 2

- Good for first orientation, discus with too little contrast
- Cerebral liquor with high signal, discus too dark
- Best contrast for the diagnosis of the discus articularis
- For joint effusions, H2O with very high contrast to tissue

Summary:
A systematic MRI (magnet resonance Imaging) diagnosis allows a three dimensional evaluation of the anatomic structures and describe the pathology of the temporomandibular joint (TMJ). MRIs reveal important information about chronic pathological findings. With the increasing number of adult patients, MRIs are important forensically, as well as for comprehensive treatment planning.