



MRI of the Temporo-Mandibular Joint (TMJ)

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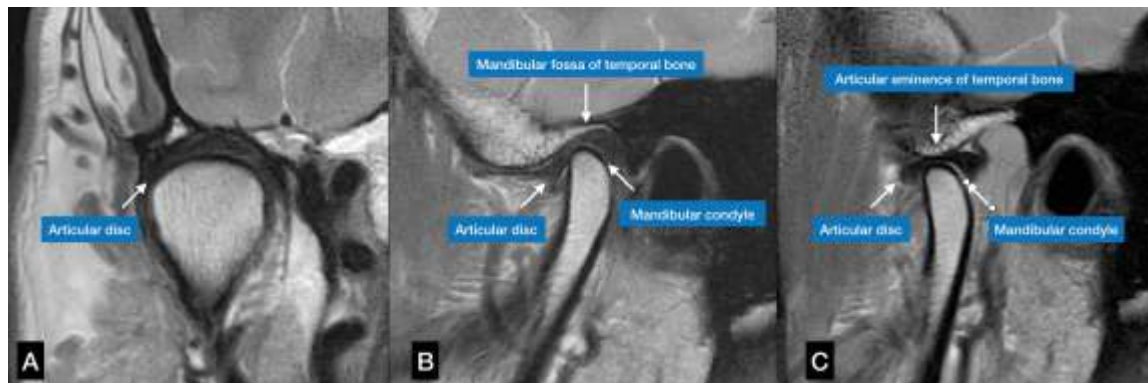


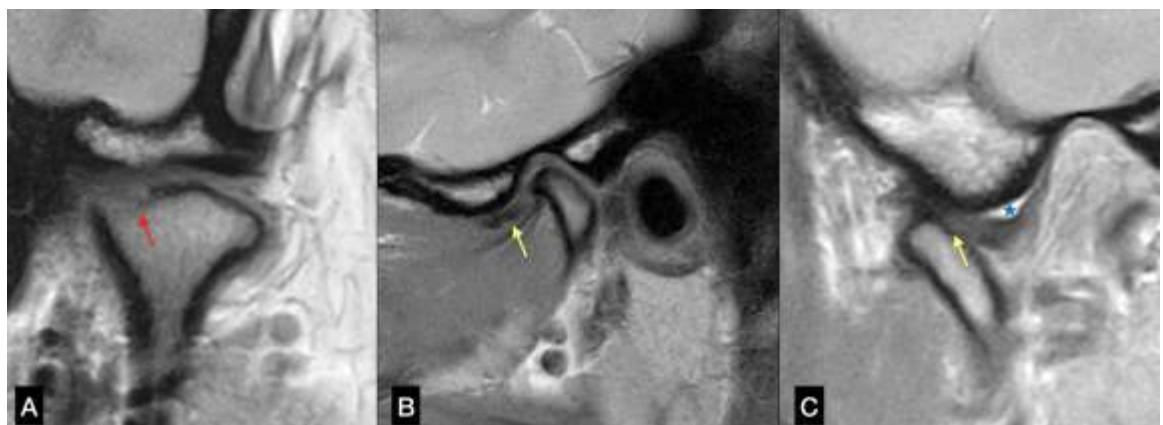
Fig 1. Oblique coronal (A) and sagittal (B) images of the right TMJ in closed mouth show the normal position of the articular disc and mandibular condyle. The oblique sagittal image in open mouth position (C) shows the normal anterior translation of the condyle as well as the articular disc.

The TMJ is a synovial joint with unique anatomy and function formed by articulation of the mandibular condyle (lower jaw) with the temporal bone (skull base) on either side of the face, in the pre-auricular region. Within the joint space is a biconcave fibro-cartilaginous 'articular disc' which acts as a cushion between the bones and allows smooth movements of the joint (Fig. 1). It comprises of an anterior band, intermediate zone and posterior band and is held in position by supporting anterior and posterior layers. The TM joint allows for both translational and rotational movements of the mandible which result in protrusion/retraction and depression/elevation of the jaw, respectively. It is these movements that are involved in the daily functions of eating and talking.

Abnormalities in structure, position and function of the articular disc and osseous structures of the joint are collectively termed as 'internal derangements' (Figs. 2-4). Various derangements present with common symptoms of localised or referred pain, abnormal 'clicking' sounds and eventually restricted movements.

Dedicated MR imaging of the TM joints using small FOV, high resolution sequences in closed and open mouth positions, clearly depicts the nature of internal derangement in terms of alterations of structure and function of the bones, articular disc as well as other supporting soft tissues. It also gives information about active inflammation in the joint in the form of effusion or bone marrow edema and degenerative osteoarthritic changes in more advanced stages. All of this information is pertinent to deciding further treatment in these patients.

Fig 2. Oblique coronal (A) image of the right TM joint shows flattening of the condylar articular surface with erosion (red arrow). The oblique sagittal images in closed (B) and open (C) mouth positions show anterior displacement of the articular disc with reduction (yellow arrows) on mouth opening. Joint effusion (blue star) is also noted.





At a glance

- ◆ Internal derangements of the temporomandibular joints are commonly encountered and present with overlapping clinical symptoms.
- ◆ Dedicated high-resolution MRI is excellent in depicting TM joint structure, function and derangements.
- ◆ MRI findings in internal derangements of the TM joint guide further management and treatment planning.

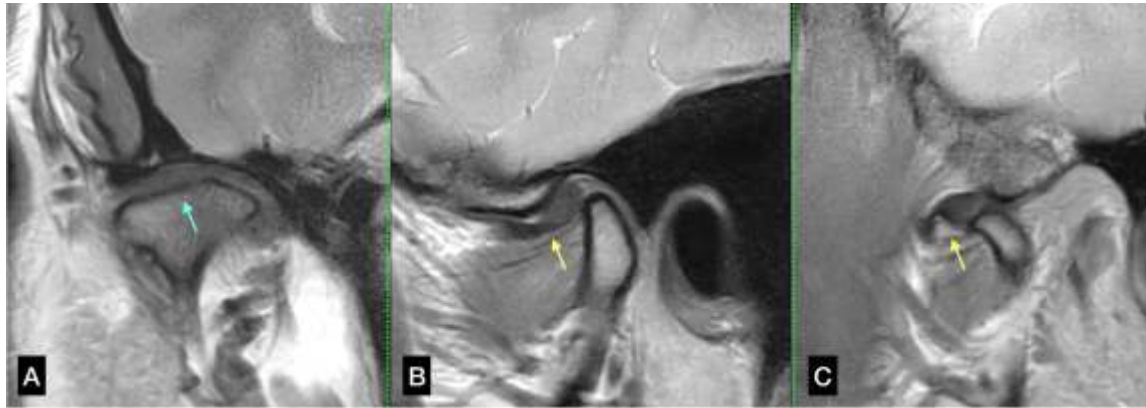


Fig 3. Oblique coronal (A) image of the right TM joint shows flattening of the condylar articular surface (blue arrow). The oblique sagittal images in closed (B) and open (C) mouth positions show anterior displacement of the articular disc without reduction (yellow arrows) on mouth opening. The disc also shows abnormal morphology with thickening and increased signal of the posterior band.

Fig 4. Oblique sagittal-closed mouth (A) and oblique coronal (B, C) images of the right TM joint in 3 different patients depict posterior, lateral and medial displacement of the articular disc, respectively



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