Temporomandibular joint dysfunction syndrome
Introduction

- Intracapsular: RA, OA, articular disc displacements
- Extracapsular: more common, myofascial pain of masticatory muscles → TMJ myofascial pain syndrome, TMJ dysfunction syndrome, or TMJ syndrome (TMJ).
- Chronic or acute musculoskeletal pain with dysfunction of masticatory system
- aggravated by movements of jaw
Etiology

- Stress
- Jaw malocclusion
- Jaw clenching
- Bruxism
- Musculoskeletal problems (such as DJD, internal joint derangements, cervical traction, and dental manipulation),
- Rarely from trauma
Etiology

- Nocturnal bruxism or unconscious jaw clenching
- Evidence for tooth grinding was found in 78% of patients
- Tooth contact occurred an average of 360/night in 10 control patients, compared to 1325/night in 9 patients with TMJ and known bruxism, and 999/night in 6 patients with TMJ without known bruxism

Etiology

- More commonly in patients with articular disc displacement.
- MRI evidence of TMJ displacement in 84% of patients with symptomatic TMJ versus 33% of asymptomatic subjects.
- The particular anatomic type of displacement does not appear to be important.
- Other musculoskeletal problems: joint laxity, body asymmetry, increased cervical and lumbar lordosis, scoliosis and poor positioning of the head or tongue.

Clinical symptoms

- Young women, the third or fourth decade
- Unilateral and chronic pain in the muscles of mastication
- Radiation pain to ear, jaw, and posterior cervical area
- A dull ache worsened by chewing
- In some cases, it presents only as a headache without awareness of a TMJ disturbance
- The symptoms often appear in association with a stressful life event
Clinical symptoms

- History of audible clicking, and crepitus may be noted during jaw movement
- Clicks $\rightarrow$ displacement of articular disc
- However, clicking by itself is not diagnostic of the syndrome
- As an example, 1/5 of asymptomatic individuals have clinical signs of TMJ articular disc displacement, and cadaver studies demonstrate a 40~60% incidence of articular disc displacement
Physical examination

- body asymmetry with smallness of the face on the ipsilateral side
- The joint is palpated as the mouth is opened and closed
- To elicit joint tenderness, the tips of fingers should be placed behind tragus at each EAC and pulled forward while the patient opens the mouth. Jaw motion may be guarded and motion restricted
- There is no joint swelling
Physical examination

- The masticatory muscles should be palpated bilaterally

- The masseter muscle can be palpated with the fingers over the angle of the mandible.

- The temporal muscles covering a wide area of the temple should be palpated with the jaw relaxed and then clenched.

- The pterygoid muscles are palpated at the back of mouth on the inner aspect of the ramus of mandible, between tonsillar pillars
Radiology examination

- Not helpful

- Panoramic roentgenograms
  - used to evaluate bony architecture may reveal OA or displaced intra-articular disc
  - no bearing on outcome

- Radiographic examination should be considered
  1. problems with teeth are suspected
  2. severe symptoms unresponsive to conservative therapy
Radiology examination

- Periapical radiographs: exclude problems with the teeth
- CT: detailed imaging of bony components of joint but not radiolucent fibrocartilaginous disc
- MRI: choice of procedure
  → determine disc position and morphology
- MRI alone should not dictate treatment strategy
  → Disc displacement is common in asymptomatic patient
Differential diagnosis

- Inflammatory diseases:
  Infection, RA, or giant cell arteritis
- Dental problems:
  Malocclusion or loss of posterior teeth support
- Lymphoproliferative disorders
- Carotodynia (a migraine related disorder)
- Eagle's syndrome
- Trigeminal neuralgia or glossopharyngeal neuralgia
- Parotid gland disorder
- Other lesions in oropharyngeal cavity
Carotodynia

Areas of pain radiation

Trigger point
Treatment

- Exclude infections and inflammatory diseases
- Recognize aggravating factors (spasm, jaw muscle fatigue, dental malocclusion, anxiety, stress)
- Eliminate nocturnal jaw clenching with an acrylic bite plate appliance
- Dental care if needed
- Jaw exercises
- Muscle relaxants, sedatives, and amitriptyline or similar TCA drugs at bedtime
- Local anesthetic-corticosteroid joint injection
- Botulinum toxin injection
Conservative treatment

- A randomized trial compared the use of NSAIDs and jaw opening exercises to watchful waiting in 60 patients with TMJ pain related to jaw opening but without popping and without radiology evidence of OA.
- Improvement occurred in 60% and 33% of the NSAID plus exercise and watchful waiting groups, respectively.

Therapeutic exercise
Occlusal appliances

- Occlusal appliances reduce joint loading and muscle activity during sleep.
- A study randomly assigned 60 patients with predominantly myogenous disorders causing TMJ pain to receive either a stabilization appliance or a sham appliance.
- The prevalence of daily or constant pain and the number of tender masticator muscles was significantly reduced.

Pain relief

- Cyclobenzaprine, tricyclic antidepressants and muscle relaxants can be helpful.
- Simple analgesics do not provide adequate pain relief.
- The benefit of amitriptyline was suggested in a small study that randomly assigned 12 women with TMJ pain to amitriptyline (25mg) or placebo for 3 weeks. A significantly greater reduction of pain was noted in those receiving amitriptyline than the placebo group (75% versus 28%).

NSAIDs with jaw opening exercise may be beneficial, but NSAIDs used alone are not as helpful.

Naproxen was superior to celecoxib for pain relief and mandibular joint range of motion.

Additional treatment:
- cyclobenzaprine: 10~30 mg at night
- amitriptyline: 5~100 mg at night
- doxepin: 25~100 mg at night
- nortriptyline: 10~50 mg at night

The dose may have to be increased over the first 2 weeks and it may take 7~10 days to achieve improvement.
Local anesthetic-corticosteroid injection

- The involved TMJ is palpated during active movement of the jaw
- Then with mouth open, the depression between the bony areas can be marked
- The skin is prepared with soap and alcohol.
- A No. 25 needle is used with methylprednisolone 40 mg/mL and mix 0.25 mL with an equal amount of 1% lidocaine hydrochloride.
- Ice pack following the injection for 20 minutes
- Relief should be noted within 72 hours

Botulinum toxin injections

- Injections of botulinum toxin type A into the muscles of mastication may be of benefit

- A double-blind trial randomly assigned 90 patients with chronic facial pain to receive botulinum toxin or placebo injections
  → pain decreased significantly

The effectiveness of low level laser therapy in TMJ syndrome was evaluated in 35 patients who were randomly assigned to laser treatments or placebo.

Significant reduction in pain was observed in both active and placebo treatment groups.

Only the actively treated group had significant improvement in mouth opening, lateral mobility, or the number of tender active and passive maximum mouth opening, lateral motion, or number of tender points.

Arthroscopy and surgery

- An option if there are significant internal joint derangements or degenerative joint disease

- Surgical procedures include total meniscectomy, partial meniscectomy with disk repair, or arthroscopic lysis of adhesions and lavage of the joint space