STIR (Short T1 Inversion Recovery) more sensitive for water- TE 15, TR 4000
PD (Proton Density) between a T1 and T2 and shows the disc- TE 15, TR 2500
T2 shows more water than fat- TE 110, TR 3500

MRI Scan Information
- Bone: Osteolytic, Hypertrophy, Ossification, OsteoNecrosis
- Synovium: Inflamed- Synovitis, Hyperplasia, Fibrotic, Adhesed
- Cartilage: Fibrillation, Wear, Necrosis, Tear
- Disc: Perforation, Disc, Non-reduction
- Ligaments: Stretched, Partial tear, Complete tear

It appears to be _____, but what else could it be?

Two very important Question in diagnosing Pain around the TMJ:
1. Any difficulty opening your mouth?
2. Unstable Occlusion
   - Clicking has changed in the past 2 years
   - Clicking that has stopped in past 2 years
   - Clicks that need further Evaluation- Order Scans

Normal MRI
- Synovial Tissue lines inside periphery of joints
- Synovial Fluid makes Synovial Fluid
- Filters out Red Blood Cells from plasma
- Adds Hyaluronic Acid and Lubricin to the plasma
- Synovial fluid lubricates the joint
- Synovial fluid provides nutrition to cartilage cells

Healthy Cartilage
- Water layer in blue covers Fibrocartilage
- There are no blood vessels in joints
- Synovial Fluid brings in nutrition and O2
- Cartilage is 80% water. The surface of cartilage is fluid (surface active phospholipids). When cartilage slides against cartilage, the surfaces never touch– it is fluid sliding against fluid– very little friction, no wear.

Dynamic Orthopedic System

A change in any one area will affect the others
Information from Important Slides

Occlusal Muscle Disorder Diagnostic Flow sheet for a General Dentist

1. Exam/ Differential Diagnosis: What is it- Jaw, muscle or neck?
   Take History, Palpate TMJ, Palpate TMJ muscles, Palpate Neck
   Rule out dental causes. What are the choices?

2. Diagnostic Tests:
   D-PAS Orthotic for 1 week
   TMJ Painx 3 Rules of Occlusion
   Two days before adopt adjustment, use D-PAS 24/7 to verify joint stability.

   At any point if pain increases, or if the pain has not fully resolved after 1 week
   of therapy a full pain evaluation diagnosis work up is needed including TMJ imaging.

   Joints are either Healthy or Damaged

   If Damaged they will be:
   Actively Breaking Down
   Adapting
   Adapted Favorably
   Adapted Unfavorably

   If Adapted Unfavorably:
   Mechanically unstable on moving
   Mechanically unstable on loading
   Painful muscles and/or joints

   Occlusal Muscle Disorder

   Evaluate every TMJ joint for:
   1. Comfort
   2. Movement
   3. Mechanical stability- does the joint wobble on loading
   4. Structural stability- will the joint lose bone with a resulting occlusal shift.

   Comfort: The TMJ should not be painful. If the TMJ is painful, I order imaging (i.e. MRI) on my website.

   Movement: The TMJ should have a full range of motion. If not full ROM, more diagnostic info is needed is it muscle or joint? If muscle, usually progress can be made with a few weeks or an anterior repositioner. If the joint is the problem, get imaging, need MRI.

   Mechanical stability: I use a daspas orthotic for 24/7 for 3-7 days. If pain does not go down, I do not consider the joint mechanically stable.

   Structural stability: There are two ways to determine

   1. Monitor occlusion
   2. Monitor bone on CT or CBCT

   If you can determine that the occlusion and condylar bone have not changed over a one year period, the joints are stable. In patients that I suspect may not be stable, I use a mounted set of models in CR and take a bite registration in CR o-1 year over a year and compare various bite records with a vernier caliper. Structural condylar bone loss will manifest as a change in occlusion. ANY CHANGE IN OCCLUSION suggests a CBCT and

   MRI. If you do not want to monitor over a year, a CT scan will give you a good indication of joint stability. Any break in the condylar cortex is an indication of joint structural instability. The most sure way to verify structural stability, two CBCTs one year apart showing no changes in bone. Orthodontics makes it hard to detect a change in occlusion from condylar bone loss since the teeth are moving from the orthodontics. For orthodontic cases I like to have a start CT or CBCT so if the case is not going as planned (taking too long to complete), we can get a follow up CBCT and compare the two scans. Patients heading to ortho are given the option of getting a CBCT and explained risk/benefit. A CBCT will identify many unstable joints before orthodontics is started, minimizing the risk of a less than desirable outcome.


   1. Listen to the patient: Get both written and oral history
   2. Patients can have more than one disease
   3. Develop a differential diagnosis: Ask: It appears to be ....... but what else could it be?
   4. Run tests that will increase or decrease the pain: Palpate, Diagnostic blocks, Diagnostic Injections
   5. Verify in more than one way if possible
      - Radio-graphs, Disc Articular Joint Vibration Analysis
   6. Develop a working diagnosis
   7. Diagnosis confirmed after Tx

   - Confirm if the patient's CT is better
   - Don’t chase a diagnosis too long ruling out cancer is rare but can mimic other diseases.

   Suggest Cancer if:
   - Sudden onset headache in 50+ year old
   - Numbness
   - Past history of cancer elsewhere in the body

   Pain description not quite the same as all TMJ patients.

   Pain does not resolve with TMJ therapy.

   TMJ Damage and Pathology

   Adhesions and avulsions
   Avulsed Mandibular Condyle (AVN)
   Cartilage Fracture
   Closed Lock, jaw Cartilage, Acute
   Closed Lock, jaw Cartilage, Chronic
   Crush Injury Mandibular Condyle
   Crush Synovitis
   Crush articular disc (OCR)
   Crazyarticular disc (OCR) Pain in CR Load Zone, tissue or bone
   Joint subluxation under load
   Disharmonious anterior guidance/ condylar guidance
   Pain not changed- not an occlusal problem

   Differential Diagnosis- What are the choices?

   Symptom
   Pain improvement from PM only DAPAS wear
   Additional Pain improvement from 267 DAPAS wear
   efferent Occlusal Muscle Disorders
   TaX- Occlusal Adjustment
   Pain in CR Load Zone, tissue or bone
   Joint subluxation under load
   Disharmonious anterior guidance/ condylar guidance
   Pain not changed- not an occlusal problem

   Verif CR orthotic not working
   Verify CR orthotic well executed
   No rocking- orthotic hard, solid fit
   No Nonworking or working interferences
   No Anterior Arc of Closure Interferences
   Pain in mouth
   Discharmonious Anterior Guidance/ Condylar Guidance has changed joint segregation
   Subluxation- Translatory disc slippage

   Neck

   Other- Not an Occlusal Problem