**Tempromandibular Disorder Classification:**

* **Masticatory Muscle Disorder**
* **TMJ Disorders**
* **Chronic Mandibular Hypomobility** (either ankylosis or muscle contraction that prevent the mandible from moving into its correct path)
* **Growth Disorders**

The most important classification is the first two and the later two we will not go into them in details

**Masticatory Muscle Disorder**

The etiology of TMD always starts with an event that could be of any kind from an emotional stress, trauma or a high filling this event can cause a TMD or not it depends on the patient’s tolerance if the event’s magnitude with normal function is above the patient tolerance it will cause TMD

**Normal function+ event > tolerance ====🡺 TMD**

**Masticatory Muscle Disorders are classified in sequence as :**

* Protective muscle co-contraction
* Local Muscle soreness
* Myofacial pain or trigger points
* Muscle Myospasm
* CNS mediated myalgia
* Fibromyalgia

**Protective muscle co-contraction**

Which is a normal response from the muscles when the event occurs

If the protective co-contraction persists then we will have

**Local Muscle soreness**

If the muscle soreness persists then we will have

**Muscle Myospasm**

The myofacial pain or trigger points

In some muscle, some bands will be hyperactive once you press on them then a sort of referred pain will be felt

If we move down in sequence we will have the CNS involved

**CNS mediated myalgia**

**Fibromyalgia** (we will not go through them because they are difficult to diagnose and we are not qualified to treat as you know Fibromyalgia is a global systemic musculoskeletal disorder affects the whole body muscles including masticatory muscles and to be diagnosed as fibromyalgia, it needs to have 11 muscles involved from ¾ body quadrants )

**TMJ disorders:**

**Derangements of Disc-Condyle assembly**

* Disc Displacement (slight anterior movement of the disc)
* Disc Dislocation with reduction (the disc and condyle are not related to each other but the condyle can get under the disc in some point)
* Disc Dislocation without reduction (the disc and condyle are not related to each other but the condyle can’t get under the disc)

**Structural incompatibility**

* Deviation in form
* Adherences/Adhesions
* Subluxation and hypermobility (the condyle is moving beyond the eminence)
* Spontaneous dislocation (locking of mouth opening)

**Inflammatory disorders**

* Synovitis
* Retrodiscitis
* Osteoarthritis
* Arthritis
* Osteoarthrosis
* Rheumatoid arthritis

**Now we will start our lecture**

 **Treatment of TMD**

Treatment should be based on an accurate diagnosis and understanding of the disorder .

Orofacial pain is very complex ,many structures in the head and neck can produce complaints that mimic TMD .
it’s very difficult to diagnose TMDs because muscles pain, TMJ pain, and head and neck pain they mimic each other .

**Challenges**

* The patient’s symptoms do not fit into one classification.
* The patient may be suffering from one or more than one disorder (myospasm and internal derangement).
* One disorder may contribute to another (so you need to know the primary disorder).
* Etiological factors that contribute to TMDs are difficult to control and eliminate.
* Some etiological factors are not yet identified.
* Pain from musculoskeletal system varies greatly.

Trauma is one of the most common etiological factors either it’s a macro-trauma (blow to the face) or micro-trauma (occlusion or parafunction).

The Dr showed trauma as the etiological factor in the chart but it’s not the only one you could add emotional stress or deep pain input.

As you see in the chart, all TMDs are related to each other which means that masticatory disorders could lead to disc derangements.

Treatment can be :

**Definitive treatment** (eliminate the TMD cause )

**Supportive treatment** (relief the TMD symptoms): analgesic , massage, ultrasound

**Definitive treatment**

To do definitive treatment you should know the etiological factor (Occlusal factor, emotional stress)

* Patient awareness
* Restrictive use (to decrease or restrict the use of the mandibular movement to it’s full limit and use small movement)
* Voluntary avoidance (to avoid tooth contact )
* Relaxation therapy

**Treatment modalities**

**Pharmacological therapy : depends on the severity of the disorder**

Analgesic

NSAIDs

Corticosteroid

Anxiolytics

Muscle relaxants

Antidepressants

**Physical therapy modalities :**

Thermotherapy: hot packs (better blood flow and it changes the sensory input to reduce the pain )

Coolant therapy (reduce swelling)

(High and low temperatures are very useful )

Ultrasound

Acupuncture

Laser

**Manual techniques**

Massage (by the dentist or you educate the patient how to do massage )

Joint immobilization or distraction (patient should open and relax used in cases of adhesions or myospasm and you need the patient to relax

Passive muscle stretching (in front of the mirror do a few exercises like opening and closing repeatedly)

Splint therapy

Surgery (the last option to choose from the treatment modalities)

Masticatory muscle pain is a common symptom of TMDs

**Protective co-contraction**

Eliminate the cause

Restrict mandiblular movement to painless limit

Soft diet

Short term NSAIDs (for a week)

**Local muscle soreness**

Eliminate the cause

Educate the patient

Restrict mandiblular movement to painless limit

Soft diet

Splint ( if the soreness persists for along time )

Minor analgesic

Muscle relaxant

**Muscle myospasm**

Effectively treated by reducing the pain of the patient

Massage

Cold or thermotherapy

Eliminate the deep pain source

Allow the muscles to rest

No need for Muscle relaxant

**Trigger points myalgia**

Eliminate the cause

Reduce the systemic involvement in the myofacial pain

Treat sleep disturbance (as sleep disturbances might cause trigger points)

Pressure and massage (if you find the trigger point)

Spray (local anesthesia ) and stretch ( the muscle)

Inject (local anesthesia ) and stretch ( the muscle)

Ultrasound

**Chronic myositis**

Restrict mandibular movement

Soft diet

Avoid exercises, dental appointments

Disengage the teeth

Anti-inflammatory

NSAIDs (at least regularly for 2 weeks)

**Fibromyalgia**

We will not go into details of it

If diagnosed then refer to medical society and they will use pharmacological treatment like NSAIDs, antidepressants and physical therapy and regular exercise.

**TMJ disorders**

**Derangements of Disc-Condyle assembly**

**Disc displacement and disc dislocation with reduction**

 **Characteristics:**

Normal range of movement

 Restriction is associated with pain

Deviation or deflection

Clicking

The aim in this disorder depend whether the patient is complaining of pain.

Studies have shown that most population have clicking and they don’t evolve into something serious and in most population it’s intermittent (it will come and go)

If the patient have pain or some restriction of movement treatment will be:

Reduce the pain and reposition of the condyle back on the disc and recapture it **if possible** .

Studies have shown that it’s difficult to recapture the disc and if it’s not recaptured most population will function normally without pain

So if the patient only have clicking without pain there’s no need to interfere

**Definitive treatment:**

* Reduce the pain
* Not to recapture the disc

In some cases where circumstances are favorable in all aspect and you are able to recapture the disc you can do it but we shouldn’t aim to recapture it in all cases because in most times it’s very difficult .

* Splint therapy

Splint : hard acrylic device that sets between the teeth in a certain relationship

We can use stabilization splint or anterior repositioning the splint

Stabilization splint

AKA: Centric splint, Michigan splint, and many other names

Constructed in Centric relation

Anterior repositioning splint

Puts the mandible in a more forward position to try to recapture the disc .

We use the splint at night and we gradually reduce their use, sometimes they are worn for 8 weeks and sometimes for months

Weaning: reduce gradually the use of the splint

If after we remove the splint , the symptoms is back then the duration of use is not enough or the patient didn’t wear the splint enough or might have a really serious occlusal instability in this case the occlusion is not allowing proper disc condyle relationship and it’s the only situation where orthodontic treatment or full mouth rehab is allowed for the treatment of TMDs

* Patient education
* Restrict the movement
* Soft diet
* Medications
* Moist heat or cold packs
* PSR (physical self regulation)

In some patients where sleep disorders, breathing disorders, or emotional stress are the cause of TMDs in these cases the treatment depend on the patient to educate him to relax, do exercises at home , and to sleep in a more relaxed forms.

**Anterior repositioning splint:**

To put the mandible in a more forward position but to what extent ?

It’s the minimal forward movement that eliminate the patient’s clicking (in which we try to recapture the disc so no clicking will be heard)

**Time of use**: at night and gradually reduce the use

**Duration**: depend on the severity of the case, age, general health of the patient, the extent of trauma

\*\*Regarding the age of the patient, in older patients the adaptive changes are slower.

In Anterior repositioning splint after the withdrawal of its use the symptoms will disappear sometimes the condyle-disc relationship will get back to normal but in most times what happens is that before the use of the splint the condyle was positioned posteriorly and presses on the retrodiscal tissues which was causing the pain and once we use the splint these tissues will be relieved and fibrotic changes will occur and healing starts and there will be some sort of adaptation that even if the condyle get back into position before the treatment it will not cause pain because the tissues adaptation, so not all the times you can recapture the disc using the splint

--Studies have shown that joint sounds are common in population they are not related to serious disorder or pain or restriction of movement.

--Not all clicking will progress into clinical disorder .

--even after treatment reoccurrence is common.

--Most of the times the choice of splint will be the easiest, safest and most effective one which is the stabilization splint.

Anterior repositioning splint : not commonly used because the success rate is not high but it reduces pain in 75% of cases

--During Anterior repositioning splint, retrodiscal tissues undergo adaptive and reparative changes and they become more fibrotic and avascular (more like the discal tissues)

**Disadvantages of Anterior repositioning splint**

Long duration use can cause posterior open bite.

**Disc dislocation without reduction**

The disc is in an anterior medial position which is locking the condyle and restricting the movement of mandible not allowing Normal range of movement .

**Disc dislocation without reduction**

Anterior repositioning splint is ***contraindicated*** in disc dislocation without reduction where the condyle will never be under the disc so if you do forward positioning you are pressing the disc more forward which is very painful and harmful.

We use in this case stabilization splint.

But if we have acute clinical case that happened just 2 days ago for example we could recapture the disc by manipulation to relax the muscles,first inject local anesthesia in the lateral ptyregoid muscle and manipulate the muscle to relax and recapture the disc manually and once you achieved that then Anterior repositioning splint is worn for 2 days at night and then we will change it to stabilization splint, this the **only** case where we use Anterior repositioning splint in Disc dislocation without reduction

We try other conservative methods of treatment and if it didn’t work and the patient is still having pain and restriction of normal movement then surgery is the option left for treating the disorder.

Studies have shown that most patients respond well to the conservative method and splints.

Surgical treatment like : arthroscopy, arthocentesis, arthrotomy, discetomy

**Supportive therapy :**

Patient education

Anti-inflammatory

Soft diet

Small mouth opening and gentle exercises

**Structural incompatibility**

**Deviation in form**

**Treatment :** surgery

**Adhesions and adherences**

**Treatment :** stretching

Exercises

Stabilization splint

PSR

**Subluxation** (the condyle is moving beyond the eminence)

**Treatment** : eminectomy or reduce the slope of the eminence

**Spontaneous dislocation**

**Treatment**: inject local anesthesia to relax the muscle and manually manipulate the condyle into its normal position

 **Inflammatory disorders** we will not go through them but you should know that it can be treated by :

NSAIDs

Ultrasound

Soft diet

Small bites

**Occlusal appliance**

Can be definitive or supportive treatment

Non-invasive method of treating TMDs they alter the occlusal forces , prevent wear of teeth, reduce bruxism, treat masticatory pain, change the relationship between maxilla an mandible or the condyle to glenoid fossa.

**Theories of how occlusal appliances work**

* Occlusal disengagement (separate the teeth)
* Maxillomandibular realignment (more physiologic and stable position)
* Increase vertical dimension (the more you increase the vertical dimension the less contracted the muscle can be)
* TMJ repositioning
* Cognitive awareness theory

To aware the patient about the disorder so if for example he has bruxism he will be reminded not clench on his teeth .

--One theory can be responsible for the treatment or more than on theory.

--The Dr will provide a chapter about splints types.

**Type of splints**

* Soft bite
* Localized occlusal interferences splint
* Stabilization splint
* Anterior repositioning splint
* Anterior bite plane

**Soft bite guard**

which is known as night guard some dentist think that it’s the ideal splint while it’s used in emergencies with severe pain and it shouldn’t be used for a long time because it’s soft the patient will continue to chew on it so it exacerbate rather than alleviate the problem it should be given for one week and then replaced with hard appliance, it’s used by athletes during sport for short time.

**Localized occlusal interferences splint**

It’s like balls the patient bite on it the idea is to increase the proprioception on 4 teeth to aware the patient about the parafunction and he will try to avoid it the Dr never used it and doesn’t like to use because it overloads certain teeth and it’s not used for long time worn for short time few months(2-3) only

**Stabilization splint** we talked about it is called

Centric , tanner, fox, Michigan, muscle relaxation splint

It’s used in parafunction

Aims to temporarily give the patient ideal occlusion because he will bite in centric and the forces are equilateral and he have proper anterior guidance without interferences and you are putting the condyle in a musculoskeletal stable position

Safe to apply

**Duration of use** : according to the severity

**How it’s made**: Take the centric relationship with a soft material and it’s constructed to have flat surface never indentated the splint in order not to cause interferences while moving and to have proper anterior guidance without posterior interferences.

After a successful period of splint therapy patient will return with free symptomatic stage it’s a common mistake that after the removal of splint that we should do a full mouth rehab and try to achieve ideal occlusion .

**Anterior bite plate**

Same as stabilization splint but only anterior part only it’s used for short time because it will cause posterior open bite and it can be easily swallowed .

--Permanent occlusal adjustments are rarely indicated.

good luck all

Bayan alyaseen