**\* Orthodontics \* Class III malocclusion \* lec. #6**

- To assess the patient skeletally, we usually look 3 dimensionally:
 **1. Anterioposteriorly:
 🡪 Zero meridian line:**
 - A vertical line from the nasion, which determine the skeletal status of:
 **A.** ***the mandible***:🡪 if it lies onthe line, then it's in it's **normal** position
 🡪 if it lies anterior to the line, then it's **prognathic** 🡪 if it lies posterior to the line, then it's **retrognathic**
 ***B. the maxilla:*** 🡪 retroganthic
 🡪 prognathic
 🡪 normal position

**\*Question:** How to know the status of maxilla skeletally:
 - **cephalometry** - **clinically**: through anatomic landmarks on the face:
 1. zigmatic process of maxilla
 2. orbital process of maxilla
 3. alveolar process of maxilla

**\*Notes:**
 - When the maxilla is retrognathic, both the incisors and the orbital process will
 be posteriorly positioned.

 - If the pt has no infraorbital rib, this is known as hypoplasia as a an etiology of
 retrognathic maxilla or hypoplastic maxilla.

 - what's the difference between "hypoplasia" and "retrognathism"?
 🡪 ***Hypoplastic***: small maxilla "size"
 🡪 ***retrognathic***: the maxilla with incisors are setting backward

 - **paranasal holloway:**
 normally the face has a contour representing the cheeks, nasolabilal area,…, if
 they are not prominent (can't be noticed), then the aetiology of that is
 ***hypoplastic maxilla.***
 - paranasal Holloway may be due to: **1. Retrognathic maxilla
 2. Hypoplastic maxilla
 3. Both** (more sever case)
 - if the pt is obese, then the soft tissue in this case is compensating for the
 hypoplasia of maxilla
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 \* when were talking about skeletal pattern, we must conside genetics as an
 important role in skeletal problems (specially in Class III)so prognathic
 mandible has something to do with genetics.

\* **Features of class III:**
 - it is not necessary if the pt has class III incisor relationship to have skeletal
 class III, it could be class II !
 - How? Revise the etiology of malocclusion:
 1. Skeletal
 2. dental
 3. local factor/ soft tissue
 🡪 and in this case the etiology of this incisor relationship is **dental**

 - A picture that represents a girl with skeletal class II, but class III incisor
 relationship,,,,, why she has this relationship incisorly: it is **dental problem**

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 **2. Vertical:**
 - growth rotation is of two types: - anterior growth rotation
 - posterior growth rotation
\* a picture that represent patient has post. Growth rotation; according to that
 what is expected to happen to the overbite if he has posterior growth rotation:
 🡪 reduced overbite = anterior open bite
 🡪 the pt becomes more class ii skeletally,,, cuz the mandible is becoming more
 backward,,,
 🡪then the posterior growth rotation is helping us in decreasing the severity of
 class iii pts
 \*\*\*BUT, in pts with class iii in general, we are expecting both:
 - classiii with posterior growth rotation 🡪 anterior open bite
 - class iii with anterior growth rotation 🡪 deep overbite

**Question:**which is easier to treat a class iii pt with posterior growth rotation or anterior growth rotation?:
 - the **common sense**: suggests that a pt with posterior growth rotation is
 decreasing the overbite then decreasing the severity of class iii,,,,,but
 - **in fact**, the consequence of that rotation is **anterior open bite** which is the
 most difficult thing to treat in orthodontics.
 therefore we prefer ***class iii pts with anterior growth rotation***

 **3. Transverse:**
 - means skeletal asymmetry,
 - There is high possibility for pts with class III malocclusion to have facial
 asymmetry

 - picture for pt who has class III, and have the mandible is shifted to the left,
 this doesn't mean that every pt who has class III, is having this asymmetry.
 🡪the idea is that if we encounter patient with class III, we must take in our
 consideration the symmetry of the face immediately
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\*Again: Aetiology of malocclusion:
 1. Skeletal
 2. Dental
 3. Soft tissue/local factors

**🡪 soft tissue:** - soft tissue factor in class III pts is considered as a helping factor in correcting
 the malocclusion, how?:
 \* soft tissues are: tongue and lip
  **1. tongue** will push the upper incisors forward
 **2.** **lower lip** will push the lower incisors back ward
 \* by this compensation, reduction in the severity of class 111 malocclusion will
 be achieved, so soft tissues here are helping us,
 \* on the other hand, this factor is against class II div II malocclusion in which
 the high line of lower lip will retrocline the upper incisors and exceed the
 force of the tongue therefore loosing the balance and malocclusion will worse
 \* **there is only one case in class III in which soft tissue is a damaging
 factor:** - when the pt has an open bite, therefore having an adaptive swallowing
 pattern in which his tongue is between the incisors to touch the lower lip,,,
 here we will have **dentoalveolar** open bite.
 \* but generally speaking we are 7abaayib with the soft tissue in class III
 malocclusion

**🡪 dental factor:** - picture for a women with class II malocclusion:
 - description:
 1. Lower incisors are upright/ retroclined (to help ourselves, let's take lateral
 ceph),,, the normal inclination of lower incisor is 90 and here is 79 then
 they are retoclined

 2. Upper incisors normal inclination is 109 and here is 120, then they are
 proclined
 🡪 so as a feature for pts with class III malocclusion, upper incisors are
 proclined and lower ones are retroocined, therefore we need to do
 compensation

\*\* we said that mandible is often prognathic or big in size, on the other hand the
 maxilla is either retrognathic or hypoplastic, so we expect to have crowding
 maxilla and somehow well-aligned teeth in mandible (less crowded), and it's
 common sense due to their size.

\*\* ***crossbite***:
 - An image showing anterior crossbite
 - back to the definition of class III: the lower incisors should lie anterior to the
 cingulum of plataue
 - a picture shows anterior and posterior crossbite, and this is known as:
 **generalized crossbite**
 🡪 the question is, why do specifically class III pts have generalized ceossbite?
 1. The mandible goes anterior to the maxilla
 2. There will be some changes; the wider part of the mandible will oppose
 the narrower part of the maxilla (in maxilla, as we go anteriorly, it will
 become narrower; meaning that the inter-canine space will become
 narrower, on the other hand, in the mandible, as we go posteriorly, it
 will become wider)
 \*\* **to sum up**: when the wider part of the mandible is getting anteriorly,
 then the the narrower part of the maxilla will oppose this wider part of
 the mandible resulting in generalized cross bite.
 \*\* Again: anatomically, as we go posterior in the mandible, the distance
 between the contra-laterals teeth is increased, for example the inter-
 premolar space in the mandible is wider than the inter-canine space,
 and this happens oppositely in the maxilla.
 Meaning that when the mandible is coming forward, the mandibular
 premolars (wider part) will occlude with maxillary canines (the
 narrower part ), this resulting in **generalized crossbite**.

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- **Treatment options for any type of malocclusion:**
 1. Accept
 2. Growth modification
 3. Camophlage
 4. orthodontic Surgery
 5\* upper arch! (ma fhmtha)🡪 only related to class III
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1. **when do we accept?** 🡪 ***I f there is no chief complain:***
 - a picture shows a man with increased both overjet and overbite, as well as
 anterior open bite, but he is satisfied and doesn't have any chief complain
 regarding this,,, so in this case we accept cuz he is happy with this, there is no
 functional or esthetic problems

 🡪***Patient has no displacement:***
 - "**displacement**": when the patient is asked to occlude on his teeth, he
 occludes edge to edge with no contact between teeth posteriorly, when is
 asked to achieve maximum intercusption, there will be displacement in his
 mandible forward "anterior displacement"

 - what's the problem with displacement?
 **1. Wear of the teeth**: because of this displacement, anterior teeth will toch
 each othe, resulting in atretion, and any trt modality will result in wear of
 the teeth,,, bad appearance

 **2. Gum recession**: because of continuous trauma from upper incisors on
 the lower ones, this will be traumatic to the lower gingiva resulting in gum
 recession

 **3. Affect the TMJ:** a picture showing the place of the condyle in the
 mandibular fossa **normally**, wheras other picture showing that it's shifted
 anteriorly in case of **displacement**.
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2**. growth modification**:
 - in class III malocclusion, the mandible is prognathic, so we need something
 that restrains the growth of the mandible so that not to be prognathic

 - **ma 2deret asma3**: it's a device in which the force is directed on the chin in an upward
 and backward direction resulting in restriction of the mandibular growth….
 🡪Does it work? NOOO!

 - **Twin block** "reverse":
 \*\*in **class II**: the lower block is located anterior to the upper one , so the
 patient will displace the mandible forward

 \*\* in **class III**: we do the opposite, therefore the patient will displace the
 mandible backward
 🡪Is it really comfortable? No, that's why the growth modification is not
 that common

 \*\* the only functional appliance the depends on soft tissue… it proclines the
 upper incisors and retrocline the lower ones

 - **protraction end**:
 \*\* it takes it's support from the chin, and it's elastics do proclination of the
 upper incisors and retroclination of lower

 \*\* what are the effects:
 ***1. Dentoalveolar "main effect"***: it's elastics are inserted on teeth, therefore:
 - proclination of upper incisors
 - retroclination of lower incisors

 ***2. Posterior growth rotation of the mandible:***
 - downward and backward rotation of the mandible, so in this case it will
 help us in decreasing the class II malocclusion, BUT, at the same time it will
 reduce the open bite and may result in increasing of open bite if the pt
 originally having it .
 \*\*so it's indication: in ***class III malocclusion with deep overbite***

 ***3. It has some skeletal effect on the maxilla: it pushes the maxilla forward***

all these effects are important in taking a decision of whether to use it or not,
so there specific features to use it:
 1. Slightly hypoplastic maxilla:
 2. No severe skeletal descripancy " cuz mainly has dentoalveolar effect"
 3. Reduced lower facial hight " cus it has a posterior growth rotation effect"
 4. Slight proclination of upper incisors as well as slightly prognathic mandible
 5. **age (8-10):** we use twinblock at age of 12, but here because the growth of
 the maxilla finishes before mandible according to scammon scale that
 explains the different organs/ parts in the body have different periods of
 growth spurt "acceleration"
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3. **Campuflage:**
 - is masking the skeletal problem by something dental
 - picture: a girl the has dental class III, but threr is no chief complain regarding
 her profile at all, so she needs only to fix her teeth.
 indeed we can do this using removable appliance at first, then by using fixed
 appliance (either non extraction or with extraction🡪 here non extraction)
 🡪 if we have crowding, we need to extract teeth, in order to correct the
 overjet
 - ***Exam question***: which is more difficult to treat, a case with displacement or
 without?
🡪 when the patient occlude edge to edge, his overjet is almost zero/ (-1 to 0)
🡪 when displacement occurs, then the overjet will become about (-3 to -4), so this
 excess (2-3 mm) is due to displacement
🡪 in case undisplacement and having a slight proclined upper incisors, this excess
 of millimeters will disappear, therefore reducing the overjet
🡪 then a case of class III with displacement is easier to treat that a case without
-NOTE:
 most of the minimum overjets are because of displacement not skeletal.

- picture: a girl attended the clinic complaining of her teeth, when looked to her father, he has the same problem, this concludes that there is high correlation between the mandibular prognathism and distribution in the family "genetics"
Because the patient is 12 years old, so if we interfere and the growth is continuing
then we will have relapse, therefore we start a trt for the upper arch only till the
end of mandibular growth

- the main cause of relapse in pt with class III: interfere the mandible before
 ending of it's growth period
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4. **Orthognathic surgery:**
 - when?
 🡪when the pt is complaining of problem in the shape of his chin "da2ni mesh
 3ajebtni", so in this case we go straight ahead for surgery…..

 -the main indication for orthodontic surgery: when the pt is unsatisfied with his
 profile
 - other indication: when the pt has sever malocclusion that can't be treated
 orthodontically and he WANTS to treat it.
 🡪 ex.: - the pt says: "my face looks like banana"
 - intraorally she has a severe dental class III malocclusion that can't
 be treated orthodontically, here we go ahead for surgery

-Note: the incision after surgery aree located intraorally

- the orthodontic surgery has a very good effect, abut at the same time it has some
 - risks:
 - needs cooperative patient
 - many days of hospitalization "4-5 days"
so we would never send the pt for sugery unless he is soooo concerned to treat this problem surgically
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\*\*\* **Retention**: to prevent relapse

\*\*\* **Relapse**: return back to it's original position

🡪 ***what are the main causes of relapse in class III patient:***
 1. growth: main cause

 2. In un-gorwing (mature) pts, the most important factor to maintain the
 result is **positive overbite**:
 \*\***case #1**: a pt has **negative overjet**, we correct the overjet to become
 positive with also a **positive overbite**"originally", if the lower
 incisors has the intention to return back to it's original position,
 they will be resisted by the upper incisors due to positive overbite

 \*\* **case #2**: a pt with **negative overjet**, but with **anterior open bite**
 (negative overbite),,,here, even if we retrocline the lower incisors and
 correct the overjet to be positive, (it's OK), but what about the
 retention!:
 he stills have anterior open bite, then there is nothing that keep/resist
 the lower incisors from relapsing

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THANK YOU