Introduction to orthodontics

 **تم الاستعانة بشيت السنة الماضية أثناء كتابه هاي الشيت ,**

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 **زيادة ولكنها مفيدة في فهم المحتوى . ؛)**

Lecture outline:

* Definition
* Occlusal variation
* Malocclusion
* Aims of orthodontic treatment
* Orthodontic treatment
* Limitation of orthodontic treatment
* **Definition :**
* Orthodontics term comes from two word, ortho( Greece word ) which mean straight and odonte which mean tooth.

\*\* So orthodontics means straight teeth.

* Orthodontic definition :

Is that branch of dentistry concerned with facial growth and development of the dentition, occlusion and with the diagnosis, problems and intercept and treatment of occlusal anomalies.

* Orthodontic definition by ADA (American dental association):

It is the area of dentistry concerned with the supervision, guidance, correction of growing" mixed dentition and before the full eruption of the permanent teeth" and maturing of dentofacial structures and looking for the condition that require basically moving of teeth and correct the mal relationship between other related structures) and adjustment of relationship between teeth and facial bone, and we achieve that by the application of forces or simulation of the unidirectional and functional force.

\*\*so it is away to - correct the mal alignment of teeth in mixed dentition by helping the teeth to erupt in the right place ,

- in permanent dentition to move the teeth and put them in the correct position , we also adjust the adjacent bone structure and soft tissue as well.

-try to influence the bone and remove any problem that hinders its growth .

* **Malocclusion :**
* In order to know what malocclusion is we should know what is the normal occlusion
* Occlusion in general: is the manner in which the teeth meet.
* There is something known as the ideal occlusion, which is the perfect occlusion and it is essentially a hypothetical concept.

\*\* So in the nature there is no ideal occlusion as the study says, there is what we call normal occlusion.

* The normal occlusion slightly deviated than the ideal one and this deviation not compromise the function or the esthetics of teeth.

The first person that observe this was Andrews, in 1972 he bring 120 patients who have really good teeth in relation with face, and didn't need orthodontic treatment from their point of view, after that he made a study casts and studied the labial surface of these teeth ,then he came up with the SIX KEYS OF NORMAL OCCLUSION.

\*\* In the 120 case there is no case that has the all six feature 100%, there is minor deviation... So there is no ideal one.

* The six normal features are :
1. Correct molar relationship.
2. Correct crown **angulations (mesio – distal tip ).**
3. Correct crown **inclination (bucco – lingual inclination).**
4. Absence of rotation.
5. Tight proximal contacts.
6. Flat occlusal plane (curve of spee).

* **Molar relationship**: (according to angel classification).

\*\* In angel classification to consider the molar relationship as normal, three criteria must be meeting:

1. The teeth must occlude in class I occlusion.
2. The mesio buccal cusp of the upper 6 should occlude in the mesio buccal groove of the lower 6 . and also ,
3. The distal slope of upper 6 should contact with the mesial slope of lower 7.
* **Crown angulations** :

It is mesialy inclined tooth "crown" or distally

* **Crown inclination** :

\*\* describe the bucco- lingual inclination of the teeth.

??For the incisors they are labially inclined , the canines and PMs are lingually inclined

\*\* And this is in order to position the teeth at right angel to the dental base (bone).

\*\* As we go backward (posteriorly) the inclinations increase lingually.

* **Absence of rotations** :

\*\* Because if the posterior teeth are rotated they will occupy more space , If the anterior teeth are rotated they will occupy less space

* **Tight contact :**

\*\* There should be tight contact between adjacent teeth.

**Flat occlusal plane (**curve of spee) :

\*\* In the normal occlusion the occlusal plane should be flat or slight curve of spee.

\*\* *There is something called reverse curve of spee, sever curve of spee.*

*\*\* In the sever curve of spee the lower teeth had a lot of spaces and in the upper they are constricted, and the opposite happen in the reverse curve of spee.*

* After knowing that... any deviation from these six features we call it a malocclusion.

* Malocclusion: represent **appreciable** deviation from the ideal that may be considered aesthetically or functionally unsatisfactory.
* The prevalence of malocclusion :

Dr. said that he made a study which result in 0% with the ideal occlusion " presence of the six keys in one case" , but of course not all of them need to seek a treatment..

how to determine if they need or not?

* There were a lot of indexes that developed for dental health and aesthetic , in Jordan it is about 28% of people need help.
* We go throw the RISK-BENEFIT analysis :
1. Treatment need.
2. Potential risk.

 \*\* Malocclusion is not a disease it is just as spectrum in one end normal occlusion and in the other end the malocclusion, there is no cut point there is overlapping between the two conditions.

* **Aims of orthodontic treatment:**
1. Improve the aesthetic of the dentition.
2. Improve the function of the dentition.
3. Facilitate other form of dentistry.
* **Improve aesthetic** :
* 99% of patient seeking dental treatment is for aesthetic reason, to improve the appearance.
* Improve self esteem of individuals. Mainly with children , teeth problems are common reason for bullying in school .
* Patient how have malocclusion doesn't have social or sever psychological problem, not like patient how have facial malformation.
* **Improve function** :
* Patients that have malocclusion have problem and difficulty in function like eating and speech, that’s true but only in severe cases, because in the mild cases the patient is adapted to it.
* Patient with increase over jet (it causes trauma to anterior teeth-which will decrease by 50% after seeking a treatment).
* **Facilitate other forms of dentistry**:
* Restorative treatment.
* Orthognathic surgical treatment.
* Periodontics

These two forms need orthodontic help to correct the occlusion.

\*\* Kuprane's systematic review ?؟ : data base that look for all research that published in particular area , combine them to gather , select the highest level of evidence , and comes out with a conclusion result of these research .it is like a library to educate doctors and people.

**## orthodontic has nothing to do with :**

* + TMJ dysfunction syndrome (TMJDS) !

\*\* Here we have to ask ourselves three questions:

1. does malocclusion cause TMJ problem?
2. does orthodontic treatment would this solve the problem?
3. does orthodontic treatment have any positive or negative effect regarding TMJ?

\*\* The study showed in summary that there is a NO association between TMJ problem and malocclusion.

\*\* But there is some problem might be associated with TMJDS:

1. Marked displacement.
2. Deep bite.
3. No posterior occlusion.

\*\* If the patient has TMJDS this didn't mean that the cause is the occlusion, TMJDS is a multi-factorial disorder.

\*\* No negative or no potential risk of orthodontic treatment on TMJ, if there is effect it would be positive.

* + Caries Risk (the most important factor here that affect caries risk are the diet and the habit of cleaning teeth not the malocclusion).
	+ Periodontal disease.

\*\* So irregular teeth doesn't necessitate that you have increase risk of caries or periodontal destruction, patient may has straight set of teeth with poor oral hygiene

 Will have high risk of caries, in comparison patient with malocclusion and good oral hygiene will not have high risk of caries.

* **Treatment:**

- Not every patient came to you require an orthodontic treatment, there are four option to treat the patient:

First option: is to do nothing.

Second option: treatment using appliances.

Third option: treatment using functional appliances (growth modification).

Forth option: surgeryfor the big skeletal abnormality

* Depends on how braces work.
* We have different mechanism to move the teeth:
1. Fixed Braces (stainless steel one).
2. Lingual Braces.
3. Invisible aligners.

\*\* We have either camouflage or surgical treatment, the camouflage divided into :

1. Removable.
2. Functional.
3. Fixed.

--- This will be discussed more later on.

* **The limitations of orthodontic treatment:**
1. Dento- alveolar tooth movement (the most important one).

\*\* So the treatment takes long time to move the teeth (little influence on profile).

1. Stability/relapse.

 \*\* The relapse is a fact, our arches are in constant change, we improve them already but if we left them after the treatment for a time the teeth back to its past situation.

1. Patient expectation after treatment and the general dental state.
2. The bone, the teeth are found in a thin alveolar bone, we can move them in all direction but to a limit not as we want, if we can't then surgery is recommended.
* Finally you should be very careful during taking the Hx for ortho. treatment

 Exra information added by : Mayazeen & Rawan

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