



Lec. 3

1. Aims of Orthodontic treatment
2. Types of Orthodontic treatment

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Sequelae of malocclusion

ماهي المشاكل التي تنتج عن سوء الاطباق وتحتم علاجه بالتقويم؟



Who Needs Treatment?

Why we need orthodontic treatment?

Protruding, irregular, or maloccluded teeth can cause three types of problems for the patient:

1. social discrimination because of facial appearance (esthetic problem).
2. problems with oral function, including difficulties in jaw movement (muscle incoordination or pain), temporomandibular dysfunction (TMD), and problems with mastication, swallowing, or speech (functional problem).
3. greater susceptibility to trauma, periodontal disease, or tooth decay (oral hygiene and soft & hard tissue problem).

1-(esthetic problem)

Social discrimination (Psychosocial Problems)



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1-(esthetic problem)

Social discrimination (Psychosocial Problems)



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2- Problems with Oral Function,

- TMD dysfunction
- problems with mastication
- swallowing
- Speech
- Breathing



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greater susceptibility to trauma

Proclined incisors with increased overjet more susceptible to trauma



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Caries susceptibility

Overlaped, crowded, malposed teeth,....etc. have greater susceptibility to tooth decay



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Periodontal disease susceptibility

Overlaped, crowded, malposed teeth,....etc. have greater susceptibility to periodontal disease.



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Number 1 is the most attractive and number 10 the least attractive arrangement. Where would you put your teeth on this scale?" Grades 8 to 10 indicate definite need for orthodontic treatment; 5 to 7, moderate or borderline need; 1 to 4, no or slight need.

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Aims of Orthodontics

Scope of orthodontic treatment

1. Alteration in tooth position.
2. Alteration in skeletal pattern.
3. Alteration in soft tissue pattern.

Orthodontics can improve the following:

1- Dental health:

a- Dental caries: Mal-alignment of the teeth may reduce the potential for natural teeth –cleansing and increase the risk of decay.

b- Periodontal disease: Irregular teeth reduce effective brushing, in addition to that, crowding may force one or more teeth to be squeezed buccally or lingually out of their investing bone reducing periodontal support and finally traumatic occlusion may lead to increase loss of periodontal support (e.g.: anterior crossbite).

c- Trauma to anterior teeth: overjet more than 3 mm had more than double the risk of traumatic injury.

d- Impacted teeth: Impacted (unerupted) tooth may affect normal position and health of adjacent teeth in addition to the loss of function of the impacted tooth itself.

Aims & objectives of orthodontic treatment have been summarized by Jackson as the Jackson’s Triad.

- 1. Functional Efficiency.
- 2. Structural Balance.
- 3. Esthetic Harmony.

Functional Efficiency Many malocclusions affect normal functioning of the stomatognathic system. The orthodontic treatment should thus aim at improving the functioning of the orofacial apparatus.

Aims of Orthodontics

1. The improvement of facial and dental esthetics



Aims of Orthodontics

2. The alignment of the teeth to eliminate stagnation areas.



Aims of Orthodontics

3. The elimination of premature contacts which give rise to mandibular displacements and may cause later muscle or joint pain.



Aims of Orthodontics

4. The elimination of traumatic irregularities of the teeth.



Aims of Orthodontics

5. The alignment of prominent teeth which are liable to be damaged.



Aims of Orthodontics

6. The alignment of irregular teeth prior to bridge-work, crowns or partial dentures.



Types of Orthodontic treatment

- Preventive Orthodontic Treatment
- interceptive Orthodontic Treatment
- Corrective Orthodontic Treatment (comprehensive orthodontic and orthognathic)

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Graber defined preventive orthodontics as ‘the action taken to preserve the integrity of what appears to be a normal occlusion at a specific time’.

preventive orthodontic procedures are aimed at **elimination** of factors that may lead to malocclusion,

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One of the major goals of modern orthodontics is to prevent or intercept developing malocclusion caused by aberrations in the developmental process. Thus interceptive orthodontics plays an important role in reducing the development of future complex malocclusions.

Koshy Philip

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preventive orthodontics

Procedures undertaken in preventive orthodontics are as follows

- A. Preventive procedures without use of appliances
 1. Predental procedures and parental education
 2. Maintenance of good oral hygiene in deciduous dentition.
 3. Caries control and restoration of decayed deciduous teeth
 4. Extraction of supernumerary teeth or retained deciduous tooth
 5. Maintenance of quadrant-wise tooth shedding timetable
 6. Break bad oral habits
 7. Prevention of damage to occlusion or occlusal equilibration

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A. Preventive procedures without use of appliances

1. Pre-dental procedures and parental education

All these preventive procedures ideally should begin **before the birth of the child** and are instituted **before the eruption of teeth**. The mothers should be educated on matters like: ○ breastfeeding ○ Nutrition ○ Proper nursing and care of the child ○ Use of physiologic nipples ○ harmful effect of prolonged use of pacifiers on dentition ○ Correct method of brushing child's teeth. Overall, the parents should be educated on need for maintaining good oral hygiene of the child.

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A. Preventive procedures without use of appliances

2. Oral hygiene

Parents and children should be taught appropriate oral hygiene measures applicable to the children.



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B. Preventive procedures with the use of appliances

1. Space maintenance by appliances (space maintainers).

2. Habit breakers

Space Maintaining

Whenever spaces for successors were lost due to caries or early extraction, a dental problem will occur.



Space loss

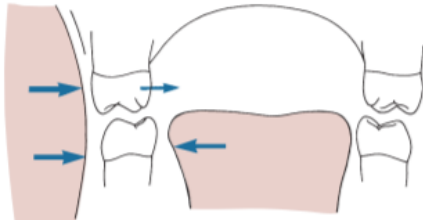
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habit break



Diagrammatic representation of soft tissue pressures in the molar region in a child with a sucking habit. As the tongue is lowered and the cheeks contract during sucking, the pressure balance against the upper teeth is altered, and the upper but not the lower molars are displaced lingually.

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(A) to (D) Photos at 1-year intervals of a child who stopped sucking his thumb at the time of the first photo. Gradual closure of the open bite, without a need for further intervention, usually occurs in patients with normal facial proportions after habits stop.

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preventive orthodontics

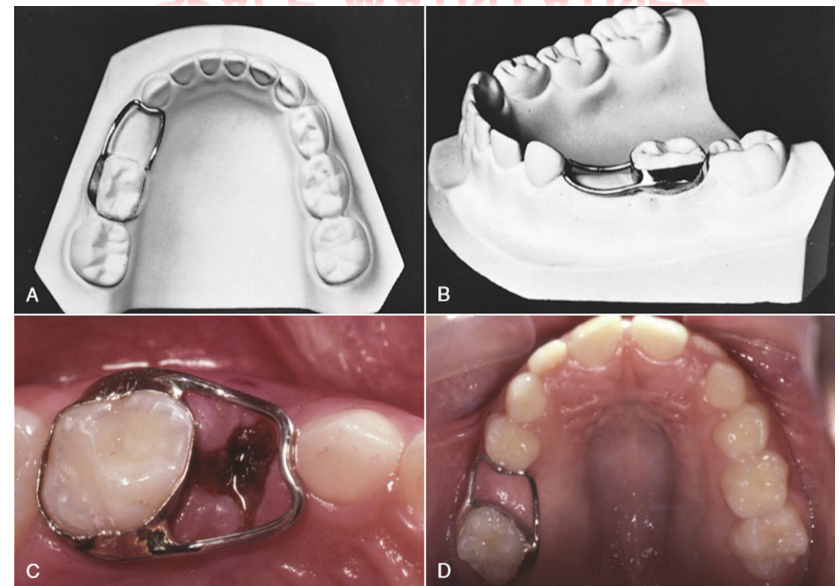


An adhesive bandage can be applied over the end of the finger to remind the child not to suck and to reduce the enjoyment

A cemented habit crib made

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Preventive orthodontics SPACE MAINTAINER



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Interceptive orthodontics

Interceptive orthodontics is defined as 'the phase of the science and art of orthodontics employed to recognize and eliminate potential irregularities and malpositions of the developing dentofacial complex'. Interceptive orthodontics basically refers to measures undertaken to prevent a potential malocclusion from progressing into a more severe one.

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Interceptive orthodontics

interceptive orthodontics is undertaken at a time when the malocclusion has already developed or is developing.



Space has been lost

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Interceptive orthodontics

The procedures undertaken in interceptive orthodontics include:

- Serial extractions
- Correction of developing crossbite
- Control of abnormal habits
- Space regaining.
- Interception of skeletal malrelation
- Removal of soft-tissue or bony barrier to enable eruption of teeth
- Many of the interceptive orthodontic procedures are nothing but extension of preventive orthodontic procedures; only the difference is timing of treatment.

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Space regaining (interceptive)



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Interceptive orthodontics

interceptive orthodontics plays an important role in reducing the development of future complex malocclusions.

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Corrective orthodontics

Corrective orthodontics recognizes the existence of a malocclusion and the need for employing certain technical procedures to reduce or eliminate the problem and the attendant sequelae.

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Interceptive and preventive orthodontics

Interceptive and preventive orthodontic procedures are relatively simple and inexpensive treatment approaches that target developing malocclusions during the mixed dentition

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Now we can define orthodontics as:

Orthodontics and Dentofacial Orthopedics is a specialty area of dentistry concerned with the supervision, guidance and correction of the growing or mature dentofacial structures, including those conditions that require movement of teeth or correction of malrelationships and malformations of their related structures and the adjustment of relationships between and among teeth and facial bones by the application of forces and/or the stimulation and redirection of functional forces within the craniofacial complex.

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Types of corrective orthodontic treatment

Orthodontic

orthognathic

Orthodontic Treatment

Orthodontic treatment is a complex, professionally guided process which alters the structure of the dentofacial complex. Regardless of the specific intervention, treatment design proces or mechanotherapy, orthodontic treatment begins and ends. Between these two time points lies the bulk of orthodontic therapy. It is critical that the orthodontist supervise the applied therapy using appropriate means consistent with orthodontic educational standards, ethical guidelines and legal requirements.

Due to the protracted nature of orthodontic therapy and since each patient will respond to treatment in a unique manner, orthodontic treatment requires supervision, dynamic reassessment, and case management to achieve the treatment goal.

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Risks of orthodontic treatments

- 1- Root resorption: During 2- years of fixed orthodontic treatment it is inevitable to find 1mm of root resorption, however the use of excessive orthodontic force may lead to un-accepted amount of root resorption and hence devitalization of affected tooth or teeth.
- 2- Loss of periodontal support: Caused by poor oral hygiene during orthodontic treatment.
- 3- Demineralization: May occur during fixed orthodontic treatment specially, as a result of plaque accumulations in case of uncooperative patient (poor oral hygiene).
- 4- Soft tissue damage: Traumatic ulceration may occur specially in fixed orthodontic treatment.
- 5- Pulpal injury: Excessive orthodontic force may lead to pulp injury and death especially for the teeth with a history of trauma