**Sheet No. 3**

**Refer to slide No. 3**

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Definition of tooth wear or non carious tooth surface loss:

 General term that can describe Surface loss of dental hard tissues could be as a developmental disorder or caries.

We might lose tooth surface because of many causes:

1-Truma

2-Caries

3-hypocalssification

Tooth wear can be divided into physiological or pathological:

1-Physiological : we will all experience some sort of this type of tooth loss, there are always forces on the teeth opposing each other and it’s a natural consequence of aging and this needs no prevention, when we assess the normal physiologic tooth wear 28 – 38 of population have physiologic tooth loss.

2-Pathological : how can I differentiate physiological from pathological tooth loss?

According to a threshold : for example when I look at a lesion some symptoms will indicate physiological or pathological tooth loss, so these are the criteria we examine in a lesion:

1-Assess the loss of function of the patient

2-Symptoms of dysfunction (when you look at a patient with a young age but the amount of tooth loss is for older age), or when you see a loss clinically and it is so severe and you need to do something about it depending on your clinical judgment.

International classification of tooth loss:

1-Abfraction: it's like having class 5 but with no carious lesion, a result of forces applied on the tooth during mastication, we see these lesions on the cervical third of the tooth due to axial forces acting on the tooth as the cervical region is the weakest region of the tooth as the CEJ is the weakest and forces can cause micro fractures then end up with abrasion, presentation is similar to tooth abrasion, you can ask the patient about the history of the lesion in order to reach the right diagnosis.

2-Attrition: Is loss of tooth surface due to Tooth to Tooth surface contact we mostly see it in pediatric patients because of the edge to edge relation between teeth and the quality of primary teeth is lower compared to permanent teeth.

3-Abrasion is a loss of tooth structure that is due to mechanical l reasons like teeth brushing and it looks like class5 and how can you differentiate class5 from abrasions ? by evaluating oral hygiene, and the shape of the lesion differs in the 2 lesions , and sometimes it exists as combination of the 2 lesions

4-Errosion is chemical tooth loss for example because of acids either from extrinsic or intrinsic sources

Loss of tooth substance during mastication & it’s a combination of attrition and abrasion (Demastication)

Attrition : because of tooth to tooth contact during chewing

Abrasion: depending on the diet we are eating

Is it physiological? Up to a certain limit its physiological, it might jump into pathological

It's difficult to diagnose the lesions into one category as one of the lesions might predominate but still it’s a combination because at the end all these forces act at the same time.

When you drink juice tooth surface will be softened by erosion and when you brush your teeth abrasion will follow so all these forces act together.

Prevalence: up to 97% of population develop physiologic tooth loss , up to 7% its pathological tooth loss.

Studies and classifications differ according to the threshold the person conducting the study chooses.

The biggest problem nowadays is erosion, our diet is changing and carbonated drinks are being consumed more frequently.

5-6 years old : 50% showed tooth wear , 25% it reached dentine

When permanent teeth erupt : 25% erosion of palatal surface of maxillary incisors

32% displayed signs of erosion of palatal surface of maxillary incisors according to other studies.

When do we consider the lesion as severe or mild and when do we consider it physiological or pathological? To classify the lesions we have system called tooth wearing test :

Don’t memorize it but I need you to study it .

When we want to conduct a study and we want to make it easier to classify lesions, we give a score from 0- 4 depending on the lesion.

Etiology of tooth wear:

1-attrtion : some factors if exist will accelerate physiologic attrition and make it a pathological one like parafunctional habits , hard diet , traumatic occlusion .

Bruxism: habitual biting or clenching on teeth during day or night not for functional purposes, etiology of bruxism is not 100% known , we don’t know yet if bruxism leads to attrition or does attrition leads to brusixm , they are both correlated but which one is the leading we are not sure yet.

Mechanical presentation of demastication :

The same as attrition but they differ in the history so in demastication the patient will tell you that he have a coarse diet in cases of demastication.

It's difficult to have a demastication case that is very obvious but you see wearing facets on anterior and posterior teeth and in more severe cases we see loss of vertical dimension, not all patients have dental sensitivity with demastication as the pulp have the chance to build secondary dentine as the rate of loss of enamel is slow.

Again attrition and abrasion and demastication are related and occur at the same time in most patients.

2-Abrasion: caused by mechanical forces from foreign objects associated mostly with abrasive tooth brushing , abrasivety of tooth paste depends on more than one factor like the abrasive factor used and the size of the abrasive factor, other ingredients of tooth paste may affect the enamel and make it more susceptible to abrasion, etc.

This is why we ask patients not to brush their teeth immediately after acidic drinks or eating pickles or any acidic food they need to have a puffer first before brushing, because enamel is softer after acidic drinks so when you brush you remove more enamel.

Other habits may also cause abrasion like pipe smoking, sewak , playing music instruments (mechanical abrasion)

Abrasion causes v shaped lesions on cervical part of the tooth , canines and premolars are most commonly affected because they are more prominent.

People who use sewak frequently will develop abrasion of labial surfaces.

3-Erosion:

Demineralization of enamel occurs when the environmental PH below 5.5 , acids in the mouth will cause drop in PH and acids come from 3 different sources :

1-Acidogenic bacteria : causes caries

2-Extrnsic acids ingested or 3- intrinsic acids : will cause erosion.

PH drop is related to the acid if its strong acid or not and thus affecting erosion , also the amount of alkali needed to be added to the acid to bring it to the neutral PH also affects how much erosion an acid causes.

Intrinsic acids: are those coming from stomach and have a PH of 1-3.

Medical history that leads to erosion due to intrinsic acids :

1-gastroesophegial reflux : passive movement of gastric acid into the mouth and it can be caused by variety of underlying conditions : increased gastric pressure or increased gastric volume or incompetence of the sphincter and doesn’t prevent food from going back to the mouth, obesity or heavy large meals might cause this also.

Symptoms : heart burn on digestion or epigastric pain or asymptomatic at all.

This is why a patient with erosion should be referred to a GI doctor to diagnose the issue.

2-vometing : Cerebral palsy is a neurological cause of erosion but it's not a common cause of erosion in children, in children its mainly because of acids in diet

Vomiting could be spontaneous or voluntary , peptic ulcer can cause frequent vomiting , cerebral palsy and drug abuse might also cause vomiting .

Voluntary or self induced vomiting might be related to psychological disorders.

In children : could be associated with epilepsy , but usually vomiting in children will resolve by its self with time

Bulimia affects 1-2 % of population , anorexia affects less % of people.Recently increased erosion is due to increased ingestion of extrinsic acids that could come from food or drink, some medications and some environmental factors .

Ingestion of acidic food at night is more risky as saliva decreases at night and as we know it show buffering capacity and the mouth is dry at night then no buffering just like caries.

What matters is the frequency of ingestion more than the amount ingested at a time.

Some food s are acidic , but studies confirming the relation between erosion and drinks exist on the other hand studies that confirms the relation between erosion and acidic food are rare (not as well established ), the only thing that was studied and investigated was citrus food and berries.

Medications like vitamin C are acidic and are related to erosion & aspirin, some drugs don’t cause erosion but cause dry mouth and increase vomiting so indirectly related to erosion.

Exposure during work to some acids can cause erosion like inhaling acids in factory.

Swimmers who frequently train and swim : because of acids added to the swimming water.

When 2 people are exposed to the same asdic drinks with same frequency but not both have same severity of erosion other factors determine the erosion degree:

Protective factors just like salivary flow , saliva buffering , Fluoride availability , tooth structure and anatomy .

Clinical manifestations of erosion : bilateral decalcification with glazed appearance on anterior teeth (extrinsic)

Acid go through enamel faster than into restoration so enamel undergo erosion but the restoration is still in its place and higher than the surface of enamel.

In severe cases we lose the cusps and in its location we find cavities.

 dentine erodes faster than enamel , intrinsic erosions are present on labial surface, intrinsic erosions present on palatal surface .

lower teeth are not affected as much because of tongue and saliva usually pools in mandible.