

MIND MAP & CUE CARDS



BY DR. JIGYASA SHARMA

Etiology of Erosion ←

- Erosion is caused by the chemical dissolution of dental hard tissues due to acids.
- Distinction between intrinsic and extrinsic acid erosion based on sources

Surfaces Affected by Intrinsic Erosion ←

- Generalized erosion appears on lingual, incisal and occlusal surfaces.
- Gastric reflux affects molar occlusal and palatal surfaces.

Surfaces Affected by Extrinsic Erosion (

- Consuming acidic foods can create crescent or dishshaped defects primarily on labial/buccal surfaces.
- Occupational exposure, like wine tasting, primarily affects anterior teeth.

Pathophysiology of Erosion

- Continued erosion leads to exaggerated signs and eventual total loss of enamel.
- Repeated erosive episodes can soften cementum/dentin, increasing sensitivity.

Investigations for Erosion

- Diet assessments to identify acidic food consumption.
- Impressions or scans to monitor progression of erosion.

Control Measures for Erosion

- Behavioral controls include rinsing after acid exposure and dietary adjustments.
- Chemical measures involves using topical fluoride and neutralizing acides.



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EROSION



Definition of Erosion

- Erosion refers to the loss of surface tooth structure due to chemical action from demineralizing agents with low pH.
- Erosive tooth wear is primarily caused by erosion, with attrition and abrasion contributing.

Intrinsic Acid Erosion

- Commonly caused by gastric contents in conditions like GERD.
- Rumination, eating disorders like bulimia and anorexia, can also lead to intrinsic erosion.

Extrinsic Acid Erosion

- Caused by dietary acids from foods and drinks, as well as industrial and pharmacological sources.
- Acids include phosphoric, citric, acetic, tartaric, ascorbic, and malic acids.

Signs and Symptoms of Erosion

- Symptoms can range from slight surface loss to severe pain and pulp exposure.
- Early signs include rounding of angles, thinning enamel, and detectable softening on root surfaces.

Risk Factors of Erosion

- Duration and frequency of acid contact with teeth.
- Drug use, dehydration, and enamel maturity can influence susceptibility

Management of Erosion

- Accurate diagnosis and identifying acid sources are crucial for management.
- Prevention is key; restorative treatments may be necessary based on severity.

Monitoring Erosive Damage

- Continuous monitoring is essential to prevent recurrence after treatment.
- Techniques like repetitive impressions can help assess ongoing erosion









What is the definition of erosion in dental terms?





Erosion is defined as the loss of surface tooth structure by chemical action in the continued presence of demineralizing agents with low pH.





What are the main processes involved in erosive tooth wear?





Erosive tooth wear involves the loss of dental hard tissues through the processes of erosion, attrition, and abrasion, with erosion being the dominant factor.





What is the primary cause of intrinsic acid erosion?





The primary cause of intrinsic acid erosion is the regurgitation of gastric contents into the mouth, commonly associated with gastroesophageal reflux disease (GERD), primarily involving hydrochloric acid.





What are some psychological disorders that can lead to intrinsic erosion?





Anorexia and bulimia nervosa are psychological disorders that can lead to intrinsic erosion, primarily due to regurgitation and self-induced vomiting.





How can extrinsic acid erosion occur?





Extrinsic acid erosion can occur from dietary sources, industrial exposure, or pharmacological means, involving the consumption of acidic foods, drinks, and medications.





What surfaces are commonly affected by extrinsic erosion?





Extrinsic erosion commonly affects the labial or buccal surfaces of teeth exposed to acidic agents, as well as the occlusal surfaces of molars and palatal surfaces of upper molars due to medications.





What factors influence the risk of dental erosion?





Factors influencing the risk of dental erosion include the duration of acid contact with teeth, frequency of contact, drug use, and the maturity of enamel.





What is an important step in the management of dental erosion?





An important step in managing dental erosion is accurate diagnosis, identifying the acid source, and determining if the erosive process is ongoing.





What should patients do immediately after an acid attack to control erosion?





Patients should rinse their mouths immediately after an acid attack with water, milk, or a fluoride mouth rinse, and avoid brushing for at least 30 minutes to allow salivary stabilization.





How can ongoing erosive damage be monitored?





Ongoing erosive damage can be monitored through repetitive impressions of vulnerable teeth to assess loss of dimension with calipers, as well as placing a small circle of unfilled resin on the tooth surface to observe for enamel loss.





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Expected vs. Abnormal Attrition

- Some attrition is normal with age, but excessive attrition indicates a problem.
- Evaluation of functional movements and parafunctional habits, like bruxism, is necessary.

Types of Bruxism ←

- **Sleep Bruxism**: Its causes are complex and not fully understood, but are linked to sleep-stage transitions.
- Awake Bruxism: Often triggered by stress and anxiety.

Signs and Symptoms ←

- Craze Lines: Indicate excessive masticatory muscle activity.
- **Cupped Areas**: Wear on cusp tips and incisal edges exposing dentin.
- Fractures: Horizontal or vertical fractures may develop.
- **Severe Wear**: Advanced attrition leads to shorter clinical crowns and occlusal collapse.
- **Secondary Dentin Formation**: Sclerosis of pulp chambers can occur in severe cases.

Uses of Study Casts

- Analyze patient occlusion.
- Establish appropriate occlusal vertical dimension for restorations
- Create diagnostic wax-ups for restoration shapes.
- Form dental appliances for surgical procedures or provisional crowns.

Protective Measures

- Full coverage intraoral appliances (splints or dental guards) can protect teeth d uring sleep bruxism.
- These appliances also reduce muscle strain and protect temporomandibular joints.

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ATTRITION



Definition of Attrition

- Attrition refers to the mechanical wear of tooth structure due to functional or parafunctional movements.
- It results from the grinding of teeth against each other.



Etiology of Attrition

- Parafunctional habits, especially bruxism, are the main causes of advanced attrition
- Bruxism involves repetitive clenching or grinding of teeth, occurring both during sleep and while awake.



- Caffeine and stimulants
- Alcohol consumption
- Smoking habits
- Snoring and sleep apnea
- Stress and anxiety
- Medications, including certain antidepressants and stimulants

Diagnostic Investigations

- Radiographs: Assess bone levels and root morphology in severe cases.
- **Study Casts**: Determine ideal restorative treatment and occlusal vertical dimension.



Management Strategies

- Identify the cause and triggers of tooth wear.
- For sleep bruxism: Avoid risk factors and consider relaxation techniques and therapies
- For awake bruxism: Focus on habit recognition and stress management.



Conclusion on Erosive Wear

• Erosive tooth wear can involve both erosion and attrition and requires careful management and referral to specialists as needed.





What is attrition in the context of dental health?





Attrition is the mechanical wear of occlusal or incisal tooth structure resulting from functional or parafunctional movements of the mandible, leading to the loss of dental hard tissues due to the grinding action of teeth against each other.





What are the main causes of advanced attrition?





Advanced attrition is primarily caused by parafunctional habits such as tooth grinding, known as bruxism.





What is bruxism and when does it occur?





Bruxism is a repetitive activity involving teeth clenching, grinding, bracing, or thrusting of the mandible, which can occur both during sleep and while awake.





What are some common triggers for bruxism?





Common triggers for bruxism include caffeine, alcohol, smoking, snoring, obstructive sleep apnea, stress and anxiety, certain antidepressants, antipsychotics, and various stimulants like amphetamines and cocaine.





What signs and symptoms might indicate the presence of bruxism?





Signs of bruxism may include craze lines in the enamel, cupped out areas on teeth, fractures, severe wear leading to reduced crown height, and signs of secondary dentine formation with pulp chamber sclerosis.





What types of investigations can help assess erosive tooth wear?





Investigations for erosive tooth wear may include radiographs to assess bone levels and root morphology, and maxillary and mandibular study casts to determine restorative treatment options.





What is the first step in managing cases of tooth wear?





The first step in managing tooth wear cases is to identify the cause and address any triggers related to the wear.





How can sleep bruxism be managed?





Sleep bruxism can be managed by avoiding risk factors, utilizing relaxation techniques, hypnotherapy, biofeedback, cognitive behavioral therapy (CBT), and improving sleep hygiene.





What protective measures can be taken against attrition due to sleep bruxism?





To protect against attrition during sleep bruxism, full coverage intraoral appliances (splints or dental guards) can be used, which help protect the teeth and reduce muscle strain on the temporomandibular joints.





What should be done for managing erosive tooth wear with significant tooth structure loss?

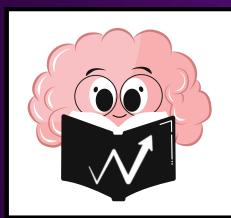




For managing erosive tooth wear with significant loss of tooth structure, it is recommended to refer to specific guidelines or notes on erosion management.



ABRACION



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Mechanism of formation ←

- Flexural forces create tension stress in a wedge-shaped area
- This tension leads to microfractures, resulting in the loss of tooth structure, termed abfracture.

Multifactorial etiology ←

- The consensus is that the etiology of NCCLs is multifactorial.
- Clinical research is needed to better understand cervical abrasion and abfraction.

Management Strategies ()

- Presence of NCCLS does not always require intervention.
- Restoration is often the preferred option for treatment.

Challenges with Hybrid Composites +

- Presence of NCCLS does not always require intervention.
- Restoration is often the preferred option for treatment.

Future directions

- More clinical studies are needed to explore the etiology and treatment of NCCL.
- Investigating alternative materials may improve restoration outcomes.

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ABFRACTION



Definition of Abfraction

- Abfractions are cervical, wedgeshaped defects on teeth.
- They are caused by excessive flexure due to heavy, eccentric occlusal forces.

Hypotheses on causative factors

- Proponents argue that microfractures increase tooth loss during abrasion.
- Opponents highlight cases without evidence of heavy occlusal forces.

Non-Carious Cervical lesions (NCCLs)

- The presence of NCCLs does not automatically require treatment.
- Assessment is necessary to determine the need for intervention.

Preferred materials for restoration

- Microfilled composites are the material of choice for NCCL treatment.
- Hybrid composites may face issue due to higher stiffness.

Conclusion

- Understanding abfraction and NCCLs is essential for effective management.
- Ongoing research is crucial for developing better treatment strategies.

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What are abfractions and what causes them?





Abfractions are cervical, wedge-shaped defects that are angular instead of rounded, unlike abrasions. The potential causative factor may include excessive flexure of the tooth due to heavy, eccentric occlusal forces.





How do abfractions lead to loss of tooth structure?





It is hypothesized that the flexural force creates tension stress in the wedgeshaped area of the tooth away from the bending direction, resulting in loss of surface tooth structure through microfractures, termed abfracture.





What additional factors may contribute to the rate of tooth structure loss in abfraction cases?





Microfractures may increase the rate of tooth structure loss during abrasion from tooth brushing and/or from acids in the diet or biofilm.





What is the general consensus among experts regarding the etiology of cervical lesions, including abfraction and abrasion?





The general consensus is that the etiology of these lesions is multifactorial, and welldesigned clinical research studies are needed to better understand the causes of noncarious cervical lesions (NCCLs).





Do the presence of NCCLs always necessitate intervention?





The presence of these lesions does not automatically warrant intervention; however, restoration is often the preferred option.





What type of materials are ideal for treating noncarious cervical lesions (NCCLs)?





Microfilled composites are the material of choice for treating NCCLs.





What issue is associated with hybrid composites when used for restorative treatments of NCCLs?





Hybrid composites are associated with pop-off dislodgement of restorations because they have a higher modulus of elasticity, making them more rigid and less capable of withstanding pressure caused by tooth flexure.





What are NCCLs generally referred to?





NCCLs are generally referred to as noncarious cervical lesions.





What different characteristics distinguish abfraction from abrasion?





Abfraction features cervical, wedge-shaped defects that are angular, while abrasion typically presents as rounded defects.





What alternative views exist regarding the correlation of heavy occlusal forces with cervical lesions?





Opponents of the hypothesis suggest that cervical lesions have been found in individuals without apparent evidence of heavy occlusal forces, such as wear facets or fremitus.



ABRASION



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Etiology of Abrasion ←

- The causes of abrasion are multifactorial.
- Cervical abrasion is primarily linked to toothbrush trauma.

Signs of Abrasion ← 🍂

- Cervical abrasion appears as a rounded notch at the gingival margin of teeth.
- These lesions are also called Non Carious Cervical Lesions (NCCL).

Prevention of Abrasion ←

- Proper brushing techniques can reduce the risk of cervical abrasion.
- Avoiding hard objects and abrasive substances can help preserve tooth structure

Risk Factots

- Poor oral hygiene habits can exacerbate abrasion.
- Age-related factors may influence susceptibility to tooth wear.

Importance of Dental Check-up

- Regular dental visits can help identify early signs of abrasion.
- Professional advice can aid in effective prevention strategies.

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ABRASION



Definition of Abrasion

- Abrasion refers to abnormal loss of tooth surface.
- It results from friction between teeth and external objects or between teeth themselves.

Common Habits Leading to Abrasion

- Chewing on hard objects like paper clips can contribute to abrasion.
- Chronic use of highly abrasive substances, such as smokeless tobacco, increases risk.

Intervention Considerations

- The presence of NCCLs does not automatically require treatment.
- Assessment is necessary to determine the need for intervention.

Treatment Options

- Fluoride treatments may help to strengthen affected areas.
- Restorative procedures can be considered in severe cases.

Long-term Effects of Abrasion

- Continuous abrasion may lead to increased sensitivity.
- It can also result in the need for more extensive dental work over time.

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What is abrasion in dentistry?





Abrasion is abnormal tooth surface loss resulting from direct frictional force between teeth and external objects or from frictional forces between contacting teeth in the presence of an abrasive medium.





What causes abrasion in teeth?





Abrasion is caused by physical means other than teeth grinding together, and it has a multifactorial etiology.





What is cervical abrasion commonly associated with?





Cervical abrasion is most commonly associated with toothbrush trauma.





What habits can lead to tooth structure loss due to abrasion?





Habitual chewing on hard objects (such as paper clips, pens, and pencils) or chronic use of highly abrasive agents (like smokeless tobacco and inadequately washed vegetables) can lead to loss of occlusal-surface tooth structure.





How is cervical abrasion typically observed on teeth?





Cervical abrasion is commonly seen as a rounded notch in the gingival portion of the facial aspects of the teeth.





What are Non-Carious Cervical Lesions (NCCL)?





Non-Carious Cervical Lesions (NCCL) refer to lesions commonly associated with cervical abrasion.





Do the presence of NCCLs automatically require intervention?





The presence of these lesions does not automatically warrant intervention.





What is the significance of the abrasive medium in tooth abrasion?





The abrasive medium plays a crucial role in the frictional forces that contribute to the wear of dental hard tissues.





Can abrasion occur between contacting teeth?





Yes, abrasion can occur between contacting teeth in the presence of an abrasive medium.





What is a common misconception about cervical abrasion?

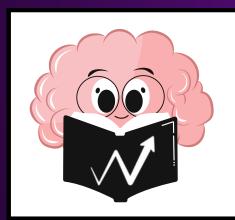




A common misconception is that the presence of cervical abrasion lesions always requires treatment or intervention.



CRACKED TOOTH



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Predisposing Factors for Cracks

- Extensive caries increase fracture risk.
- Large restorations and minimal dentin support heighten the likelihood of cracks
- Heavy occlusal loading (grinding or bruxism) predisposes teeth to fracture

Diagnosis of Cracked Tooth ←

- Proper diagnosis of pulp status is essential for management options.
- A provisional diagnosis may involve reversible pulpitis based on pulp condition.

Restoration Options for Cracked Teeth

- Treatment Options include
- i. No treatment
- ii. Removal and restoration
- iii. Full or partial indirect gold restoration
- iv. Full-coverage bonded porcelain crown
- v. Adhesive restoration
- Advantages and Disadvantages of Restoration Options
- i. No treatment may lead to further complications
- ii. Removal and restoration could risk catastrophic fracture; careful preparation
- iii. Porcelain crowns have aesthetic advantages but come with brittleness concerns
- iv. Adhesive restorations may seal cracks, but polymerization shrinkage poses risks.

Management of Cracked Teeth

- General management includes immobilization of cracked segments and treatment addressing pulp states.
- Two treatment strategies:
- a) Single-state treatment with definitive restoration.
- b) Multistage treatment for monitoring pulpal conditions



Definition of Cracked Tooth

- A crack is a defect without complete separation of fragments involving enamel and dentin.
- Cracks can lead to pupal disease depending on bacterial penetration.



- Cracks and fractures are common dental issues.
- The American Association of Endodontics classifies longitudinal tooth fractures into 5 types.

Types of Longitudinal Fractures

- Craze lines are limited so the enamel.
- Fractured cusps are common in posterior teeth, especially non-functional cusps.
- A cracked tooth has incomplete fractures starting from the crown, with a prevalence of 10%-70%.
- Split teeth result from untreated cracked teeth, leading to division into two parts.
- Vertical foot fractures expend towards the apex of the root.

Signs and Symptoms

- Symptoms of cracked teeth are non-specific and depend on underlying pulp issues.
- Common symptoms include:
- i. Pain on biting

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- ii. Sensitivity to cold
- iii. Spontaneous pain
- v. Sensitivity to heat
- vi. Pain during pressure application and release
- vii Long-standing undiagnosed pain without sensitivity
- iv. Asymptomatic progression

Biomechanics of Crack Progression

- Three major factors influence crack initiation and propagation materials, loading factors and environmental issues.
- Coronal dentin shows significant resistance to crack propagation.

Investigations for Cracked Teeth

- Identifying the crack's path is crucial for determining treatment options.
- Various diagnostic tools (eg. Tooth Slooth) help visualize cracks







What are the five types of longitudinal tooth fractures according to the American Association of Endodontics classification?





The five types of longitudinal tooth fractures are: 1. Craze lines, 2. Fractured cusp, 3. Cracked tooth, 4. Split tooth, and 5. Vertical root fracture.





What characterises craze lines in dental fractures?





Craze lines are limited to the enamel and do not progress through the DEJ into the dentin.





How is a cracked tooth defined?





A cracked tooth is defined as an incomplete fracture originating from the crown that sometimes extends subgingivally, with a prevalence of cracks varying from 10% to 70%.





What happens in the case of a split tooth?





In a split tooth, the crack extends from the crown down the root surface, splitting the tooth into two parts, often due to an untreated cracked tooth.



CRACKED TOOTH

Question 5

What are the signs and symptoms of cracked teeth?



CRACKED TOOTH

Answer 5

The symptoms of cracked teeth can include: 1. Pain on biting, 2. Sensitivity to cold, 3. Spontaneous pain, 4. Asymptomatic with minimal clinical progression, 5. Sensitivity to heat, and 6. Pain on application and release of pressure.





What factors influence the biomechanics of crack progression in teeth?





The biomechanics of crack initiation and propagation are influenced by materials properties, loading factors, and environmental issues.





What are some predisposing factors for cracks and fractures in teeth?





Predisposing factors include: 1. Teeth with extensive caries, 2. Teeth with large restorations, 3. Teeth where remaining cusps have little dentin support, and 4. Anatomically deep developmental fissures.





What is the first step in the investigation of a cracked tooth?





The first step involves the removal of all restorations, caries, and cracks from the teeth for a thorough assessment.





What treatment modalities are typically proposed for managing cracked teeth?





Treatment modalities include: 1. Single stage treatment with definitive restoration, and 2. Multistage treatment involving an interim phase to monitor pulpal conditions.



CRACKED TOOTH

Question 10

What restoration options are available for cracked teeth, and what are their main disadvantages?



CRACKED TOOTH

Answer 10

Restoration options include: 1. No treatment (not advisable), 2. Removal of the cracked portion followed by restoration (unsafe), 3. Full or partial coverage indirect gold restoration (prone to brittleness), 4. Full-coverage bonded porcelain crown (brittle), and 5. Adhesive restoration (can propagate cracks).





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Methodology of Caries Diagnosis ←

- Clinical examination and radiographic evaluation form the basis of diagnosis.
- Visual and tactile evaluations help ascertain the presence of caries.

Enamel Examination Techniques (

- Isolation with cotton rolls and air drying is necessary for accurate detection
- Detection varies based on the lesion's extension to the dentin.

ICDAS Scoring System ←

- The International Caries Detection and Assessmen System categorises caries se verity.
- Codes from 0 to 6 indicate varying degrees of carious lesions

Supporting Examination Methods (

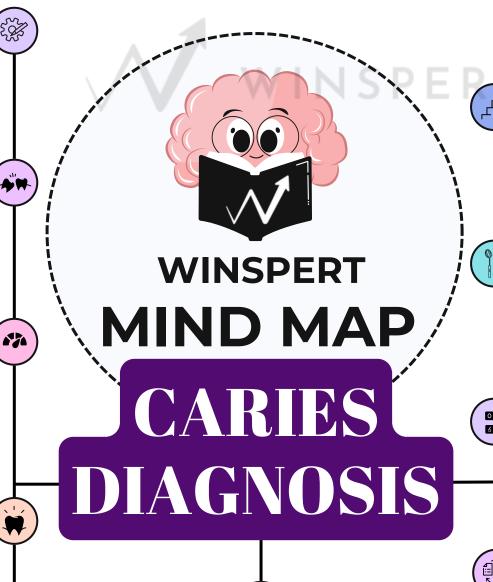
- Radiographic examination aids in revealing proximal caries not detected visually
- Temporary Elective Tooth Separation Technique improves access to surfaces.

Assessing Lesion Severity and Activity

- Once detected, assess the lesion's severity and activity status (active or arrested)
- O Different age groups have varying caries-susceptible areas that require thorough examination.

Conclusions on Diagnosis Approaches

- Radiographic evaluations are preferred in fluoridated communities for hidden caries detection,
- Management strategies depend on the extent of carious lesions and diagnostic results.



Understanding Caries

- Caries diagnosis identifies past or present occurrences of dental caries.
- Caries detection and assessment are vital for accurate diagnosis.

Clinical Examination Steps

- Removal of plaque is crucial as caries often occur beneath biofilm.
- Saliva can obscure enamel changes; therefore, refractive index measurements are important.

Visual and Tactile Examination Tools

- A blunt-ended probe is best for visual and tactile examination.
- Sharp instruments should be avoided to prevent micro cavitation of non-cavitated lesions.

Codes Explained

- Code 0: Sound Tooth Surface, no caries evidence.
- Code 1-3: Progressive stages of enamel lesions.
- Code 4-6: Progressive stages of dentin lesions and visible cavities.

Advanced Diagnostic Techniques

- Fiber-optic transillumination increases contrast between normal and carious enamel
- Quantitative Light-induced Fluorescence identifies lesions based on fluorescence patterns.

Visual Indicators of Lesions

- Initial lesions, or white spot lesions, are early indicators of caries.
- Color and texture are key indicators of active and arrested lesions.





Question 1

What does caries diagnosis involve?



Answer 1

Caries diagnosis involves the human professional summation of all signs and symptoms of the disease to identify past or present occurrences of caries.





What is the purpose of caries detection and assessment?



Answer 2

Caries detection aims to objectively determine whether the disease is present by observing changes in enamel, dentin, and cementum. Caries assessment characterises detected lesions as active, inactive, or arrested based on parameters such as colour, size, and surface integrity.



Question 3

What steps are involved in clinical examination for caries diagnosis?



Answer 3

The first step is the removal of the bulk of plaque, as caries often occur beneath biofilm. This is followed by visual and tactile examination of accessible surfaces to determine the presence of caries or sound surfaces.





Why is it important to dry enamel before examining for caries?



Answer 4

Drying enamel is necessary because sound enamel is translucent and has a refractive index that changes when wet, making it difficult to detect caries confined to enamel.



Question 5

What does the ICDAS scoring system indicate?



Answer 5

The ICDAS (International Caries Detection and Assessment System) scoring system is used to assess and score caries based on the severity of the lesion, with codes ranging from 0-6 indicating the progression of caries.



Question 6

What is described by ICDAS Code 1?



Answer 6

ICDAS Code 1 indicates the first visual change in enamel, characterised by a white or brown opacity on the enamel surface or in pits and fissures, detectable only after drying the tooth surface.



Question 7

What role do radiographic examinations play in caries diagnosis?



Answer 7

Radiographic examinations are critical for detecting proximal caries that may not be visible visually, estimating the depth of lesions, and monitoring disease progression.



Question 8

How does qualitative lightinduced fluorescence (QLF) assist in caries detection?



Question 8

QLF identifies carious lesions based on fluorescence; affected areas appear as dark spots against a bright green background, highlighting the presence of caries.





What are the characteristics of initial carious lesions?



Answer 9

Initial carious lesions typically appear as white spot lesions. The colour and texture serve as indicators, with lighter brown denoting active lesions and soft texture being a sign of activity.



Question 10

What factors influence the management of carious lesions?



Answer 10

Management depends on the extent of the carious lesions following diagnostic criteria established through both clinical and radiographic examinations.



CARIESIRISK



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Understanding Dental Caries

- Dental cares is a chronic, preventable biofilm-mediated disease influenced by diet.
- The imbalance of oral flora leads to demineralization of the tooth structure over time.

Characteristics of Caries Activities

- Caries activity results in localized demineralization of tooth structure.
- The process involves damage (demineralization) and restoration (remineralization) of tooth material.

Details of the CaMBRA Tool ←

- The CaMBRA tool was initially designed for educational settings and validated for adults.
- CaMBRA is now globally recognised in clinical practice for assessing caries risk

Details of the CAT Tool ← ♠

- The CAT tool is highly rated among instruments for assessing infants and young children.
- It is incorporated into dental policy by the American Academy of Pediatric Denistry

Components of Caries Risk Assessment

- Quantification of risk factors includes diet, saliva quality, plaque characteristics, and oral hygiene.
- Clinical examination reveals exposure to caries risk factors:
 - a) Sucrose intake
 - b) Fluoride use
 - c) Dental plaque
- d) Tooth morphology
- e) Salivary characteristics





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CARIES RISK



Definition of Caries Risk

- A risk is a possible event; understanding caries risk assessment requires context regarding health status.
- The application of risk principles relates to healthcare delivery and outcomes.





- Multiple factors influence the demineralization/remineralization cycles.
- Those factors include oral flora, diet, oral hygiene, and genetics.



- Several tools exist to assist clinicians with caries risk assessment.
- Examples include:
 - i. CaMBRA protocol
 - ii. Electronic Cariogram Programme
 - iii. Caries Risk Assessment Tool (CAT)

Details of the Cariogram Tool

- The Cariogram is popular in Europe as a predictor of caries progression, particularly in children.
- Its rapid acceptance demonstrates its effectiveness in risk assessment.

Limitations of Caries Risk Assessment Tools

- Each assessment tool has limitations, especially in predicting high-risk individuals in low-caries communities.
- Past caries experience is regarded as the most reliable predictor of future caries in children.



Key Risk Indicators

- Indicators that increase caries risk:
 - a) Past caries experience
 - b) Low socio-economic statis
 - c) Sugar consumption frequency
- d) Oral hygiene habits
- e) Salivary secretion levels
- Bacterial presence is not a reliable indicator of future caries risk.







What is dental caries and what primarily causes this oral disease?





Answer 1

Dental caries is a preventable, chronic, and biofilm-mediated disease primarily caused by an imbalance of the oral flora due to the presence of fermentable dietary carbohydrates on the tooth surface over time.





What characterises dental caries activity at the tooth level?





Answer 2

Dental caries activity is characterised by localized demineralization and loss of tooth structure.





What are the two processes that occur in dental caries lesions at the tooth surface and subsurface level?





Answer 3

The two processes that occur are demineralization (damage) and remineralization (restitution) of the tooth matter.





How often does the process of demineralization and remineralization occur over the life of a tooth?





Answer 4

This process takes place several times a day over the life of the tooth.





What are some factors that modulate the process of demineralisation and remineralisation?





Answer 5

Factors include the number and type of microbial flora in the biofilm, diet, oral hygiene, genetics, dental anatomy, dentin and enamel composition, use of fluorides and other chemotherapeutic agents, saliva composition, salivary flow, and buffering capacity.





What is a caries risk assessment (CRA)?





A caries risk assessment is an understanding and application of risk principles in the context of health status, health care delivery, and health care outcomes.





Name the three caries activity tools mentioned in the text.





The three tools are:

- 1. The Caries Management By Risk Assessment (CaMBRA) protocol
- 2. The electronic online Cariogram Programme
- 3. The Caries Risk Assessment Tool (CAT).





What is a significant limitation of the caries activity assessment tools?





Each of these instruments has limitations, particularly in predicting high-risk individuals residing in low caries communities.





What are some key risk indicators for dental caries?





Key risk indicators include past caries experience, low socio-economic status, sugar consumption frequency, oral hygiene habits, and saliva characteristics.





How does poor oral hygiene affect caries risk?





Frequency of brushing with fluoridated toothpaste is crucial; poor oral hygiene habits increase the risk of dental caries.



DIETASSESSMENT OF CARIES RISK



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Understanding Dietary Behaviours +

- Knowledge of dietary behaviours helps provide personalised recommendations
- Individual dietary recommendations are more likely to be followed if they fit patient lifestyles.

Impact of Dietary Recommendations on Energy Intake

- A patient consuming sugary beverages may struggle if advised to quit immediately without support
- Without anticipatory guidance, patients might substitute with other high-calorie drinks and snacks

Importance of Visible Plaque Indicators ←

- Visible plaque shows areas where brushing is insufficient.
- Dental plaque distribution is recorded at each appointment using a plaque index

Conducting Salivary Flow Assessment ←

- Measure resting salivary flow before manipulating soft tissues.
- Examine salivary viscosity and pH for anomalies.

Understanding Risk Determination Over Time ★♥

- Initial risk assessment is based on clinical findings. while follow-ups consider lesion progression.
- New lesions' incidence rates inform ongoing caries risk evaluations.

Clinical Examination and Radiographic Survey

- Risk assessment is conducted post-clinical examination and radiography.
- Caries risk status is determined by clinical presentation and incidence of new lesions







DIET ASSESSMENT OF CARIES RISK



Methods of Diet Assessment

- The most effective method is a 4 day written food record.
- A 24-hour dietary recall is less effective due to reliance on memory and honesty.



The Role of Sugar in Caries Development

- Frequent exposure to relined dietary sugars increases cares risk.
- Diet analysis involves lifestyle enquiry and dietary component evaluation.



Timing of Diet Assessment

- Diet analysis should occur before offering dietary advice.
- A structured assessment tool aids healthcare professionals in evaluating dietary contributors.



- Anticipatory guidelines promote health and prevent diseases.
- Recommendations must consider the patient's total energy intake.



- Twelve sites are assessed for plaque presence and thickness
- Disclosing dyes can identify immature and mature plaque biofilms.



- Overall water intake significantly affects salivary production.
- Thorough assessment of salivary parameters is crucial for caries risk evaluation.



Assessing Stimulated Salivary Flow

- Chewing paraffin gum can help measure stimulated salivary flow
- A flow rate of less than 1 mL/min indicates high caries risk.





What is one of the main risk factors for caries?





Frequent exposure to refined dietary sugar is one of the main risk factors for caries.





What are the two main elements of diet analysis?





The two main elements of diet analysis are enquiry into lifestyle and into dietary components themselves.





What is the most effective method for diet analysis according to the text?





The most effective method is for the patient to keep a written record of their diet for 4 consecutive days, including 2 working and 2 leisure days.





When should diet analysis ideally be performed?





The analysis should ideally be performed before any dietary advice is given.



DIET ASSESSMENT OF CARIES RISK

Question 5

What is the purpose of the Diet Assessment of caries risk tool?





The purpose of the Diet Assessment of caries risk tool is to help healthcare professionals efficiently assess dietary contributors to caries risk.





Why is knowledge of a patient's dietary behaviours important for healthcare professionals?





Having knowledge about the patient's dietary behaviours that are associated with caries risk is essential for providing specific individualised recommendations that may reduce caries risk.





How can anticipatory guidelines assist healthcare practitioners?





Anticipatory guidelines are designed to promote health and prevent diseases by providing health promotion guidance.



DIET ASSESSMENT OF CARIES RISK

Question 8

What does visible plaque indicate according to the text?





Visible plaque indicates that the toothbrush with the toothpaste has not reached that part of the mouth recently to disrupt the biofilm.





What is assessed to evaluate salivary parameters for caries risk?





A thorough assessment of resting and stimulated salivary flow, viscosity, and pH should be conducted for caries risk assessment.





How is the caries risk status of a patient determined?





The caries risk status is determined pragmatically following the completion of the clinical examination and bitewing radiographic survey.



CARIES MANAGEMENT



BY DR. JIGYASA SHARMA

V V III S F E K

Key Concepts in Caries Management

- Understanding pathologic factors that lead to demineralization
- Identifying protective factors that enhance remineralization

Prevention Strategies

- Avoidance of sticky foods and refined sugars
- Emphasis on effective oral hygiene practices

Dietary Modifications ←

- Understanding the impact of diet on caries development
- Recommendations to avoid cariogenic snacks

Clinical Management Strategies

- Risk-based management options: preventive, preservative, and operative
- Non-cavitated lesions managed non-invasively; cavitated lesions require operative intervention

Monitoring and Follow-up

- Regular recall appointments to assess caries activity
- Review of dietary trends and oral hygiene competence



WINSPERT MIND MAP

MANIA CEME

MANAGEMENT



Overview of Caries Management

- Comprehensive approach combining prevention, early diagnosis, and restorative interventions
- Balancing demineralization and remineralization is essential



Patient-Centered Approach

- Focus on total patient management through risk assessment
- Restoration is not a cure; managing risk factors is essential



Non-Invasive Caries Management

- Introduction of the 10-step non-invasive strategy
- Use of remineralizing agents for tooth surface modification



Plaque Management

- Instruction on proper brushing and interdental cleaning
- Aim to reduce plaque index score through effective oral hygiene



Treatment Sequencing for High-Risk Patients

- Prioritising treatment phases for optimal outcomes
- Removal of carious tissue based on the MID approach



Adjusting Care Based on Risk

- Importance of fluoride exposure in caries control
- Customization of professional and home care regimes as needed



Recall Protocols

- Different protocols for adult, primary, and mixed dentition
- Individualized recall strategies based on patient demographics

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CARIES MANAGEMENT

Question 1

What is the overall approach to managing dental caries?



CARIES MANAGEMENT

Answer 1

The management of dental caries involves a comprehensive approach that combines preventive strategies, early diagnosis, and appropriate restorative interventions to combat tooth decay.



Question 2

What two main processes are involved in the caries management balance?



Answer 2

The balance between demineralization and remineralization is illustrated in terms of pathologic factors (favoring demineralization) and protective factors (favoring remineralization).



Question 3

What should caries management efforts focus on according to the text?



Answer 3

Caries management efforts must be directed not only at the tooth level (traditional or surgical treatment) but also at the total-patient level (caries management by risk assessment).



Question 4

What is the key to managing the caries process?



Answer 4

Identifying and managing the risk factors for caries must be the primary focus, along with the restorative repair of damage caused by caries.



Question 5

What are some early intervention strategies in the prevention of dental caries?



Answer 5

Prevention and minimal intervention management of dental caries include strategies that promote remineralization and arrest further decay, often before cavitation occurs.



Question 6

What is a noninvasive strategy for early lesions in caries management?



Answer 6

The caries management system is a 10 step noninvasive strategy to arrest and remineralize early lesions.



Question 7

What type of dietary advice should be given to patients at risk of caries?



Answer 7

Patients should understand the diet-caries relationship and be advised to avoid sticky foods, high consumption of refined sugars, and between-meal snacks.



Question 8

How should non-cavitated lesions be managed according to the text?



Answer 8

Non-cavitated lesions are managed by home care measures to control plaque, including tooth brushing twice with fluoridated toothpaste and professional fluoride varnish.



Question 9

What is the recommended method for removing carious dentine when restoration is required?



Answer 9

The removal of caries should follow the minimally invasive cavity preparation (MID) approach, which involves removing infected dentine while leaving behind affected dentin.



Question 10

How is caries activity monitored during patient recalls?



Answer 10

Caries activity is monitored through the review of bitewing radiolucency, with comparisons made between new and older radiographs at recall appointments.





MIND MAP & CUE CARDS



BY DR. JIGYASA SHARMA

Water Sorption and Solubility

- Composite resins absorb water, which can weaken mechanical properties.
- Prolonged exposure leads to marginal staining and expansion.

Wear Resistance

- Microfilled composites have better wear resistance but may fail under fatique.
- Size and type of filler impacts wear characteristics.

Bonding to Enamel and Dentin ←

- Bonding to enamel relies on micromechanical retention using acid etching.
- Dentin bonding is less reliable due to higher water content and different composition

Indications and Contraindications </r>

- Suitable for diverse restorations like Class I-VI and aesthetic procedures.
- X Contraindicated in cases of poor isolation or excessive wear.

Proximal Restoration Techniques

- Specific matrices like ultrathin bands ensure optimal





COMPOSITE RESINS RESTORATION



Introduction to Restorative Materials

- Restorative materials are essential for repairing damaged teeth.
- Appropriate selection enhances appearance and functionality.



- Setting time varies by activation method: 3-6 minutes (chemically) or 3-40 seconds (light).
- Thermal expansion is greater than that of amalgam, impacting the restoration's integrity.

Mechanical Properties

- Increased filler volume enhances hardness and strength.
- Microfilled composites are less suitable for stress-bearing areas.

Polymerization Shrinkage

- Shrinkage varies from 1% to 5%, creating stresses affecting tooth structure.
- Techniques to mitigate shrinkage include incremental placement and the use of 1 liners.

Classification of Composite Resins

- Categorised by polymerization method: chemically cured, light activated, dual cure.
- Based on filler size: macrofilled, microfilled, hybrid, and nano filled composites.

Advantages and Disadvantages

- Advantages include aesthetics, conservative preparation, and repairability.
- Disadvantages involve technique sensitivity, potential poor adaptation, and higher costs.

Proximal Restoration Techniques

- Organic phase includes Bis-GMA and TEGDMA.
- Inorganic phase consists of glass fillers like quartz and strontium.

- Matrix systems are crucial for establishing proper proximal contacts.
- outcomes for restorations.







Question 1

What role do restorative materials play in dental practice?



Answer 1

Restorative materials are critical for repairing and reconstructing damaged teeth, improving both appearance and functionality, which significantly contributes to overall oral health.



Question 2

What are the major components of a composite resin?



Answer 2

The major components of a composite resin are the organic phase (typically Bis-GMA and TEGDMA), inorganic phase (filler particles like glasses and silica), interfacial phase (coupling agents), and miscellaneous phases (accelerators and initiators).





Question 3

What affects the setting time of composite resins?



Answer 3

The setting time of composite resins depends on the method of activation: for chemically activated composites, it ranges from 3-6 minutes, while for light-activated composites, curing time can range from 3-40 seconds based on light intensity.



Question 4

How does the coefficient of thermal expansion (CoTE) of composite resins compare to that of amalgam and tooth structure?



Answer 4

The CoTE of composite resins is higher than that of amalgam and approximately three times greater than that of tooth structure, leading to increased risk of marginal gaps and microleakage over time.



Question 5

What impact does water sorption have on composite resins?



Answer 5

Water sorption causes composite resins to absorb water and expand, which reduces their mechanical properties over time, such as hardness and wear resistance, and may lead to marginal staining.



Question 6

What are the mechanical properties of composite resins influenced by?



Answer 6

The mechanical properties of composite resins vary with filler volume percent; increased filler loading improves hardness, stiffness, strength, and fracture toughness, while microfilled composites have less filler and should not be used in stress-bearing areas.



Question 7

What are the advantages of composite resins in dental restorations?



Answer 7

Advantages of composite resins include excellent aesthetics, conservative tooth preparation, low thermal conductivity, universality of use, adhesion to tooth structure, and repairability.



Question 8

What are some challenges or disadvantages associated with composite resins?



Answer 8

Disadvantages include potential poor marginal adaptation, the complexity of placement, longer time required for insertion, greater occlusal wear under stress, and higher costs compared to amalgam restorations.





What is the bonding mechanism for composite to enamel and dentine?



COMPOSITE RESINS IN DENTAL RESTORATION

Answer 9

Bonding to enamel is achieved through micromechanical retention via acid etching and resin bonding, while bonding to dentine involves hybridisation using acid etching, priming, and adhesive, making it less reliable due to dentine's higher water content.





What are the indications and contraindications for the use of composite restorations?



COMPOSITE RESINS IN DENTAL RESTORATION

Answer 10

Indications include various classes of restorations, sealants, esthetic enhancements, and temporary restorations, while contraindications include issues with isolation, excessive wear, and operator factors affecting successful bonding.



GLASSIONOMER CEMENTS



MIND MAP & CUE CARDS



BY DR. JIGYASA SHARMA

Properties of GIC

- Chemical Bonding: Achieves adhesion to tooth structures through an acid-base reaction.
- Fluoride Release: Releases fluoride ions to aid in remineralisation and decay prevention.

Strength and Wear Resistance

- GIC has moderate compressive strength, suitable for non-load-bearing areas.
- Wear resistance is lower compared to composite materials, making it less suitable for high-stress areas.

Radiopacity and Aesthetic Properties

- GIC is radiopaque for clear identification on X-rays.
- Available in various shades but may not match tooth colour as well as composite

Disadvantages of GIC ← ♠

- Lower fracture resistance, unsuitable for high occlusal loads.
- Limited aesthetic appeal, as it may discolor and not match natural tooth colour.

Properties of RMGIC

- Offers improved mechanical strength and wear resistance compared to conventi onal GIC.
- (Enhanced aesthetic properties make it more suitable for anterior restorations.

Silver Diamine Fluoride (SDF) Overview

- SDF is a topical solution used as a caries-arresting and antihypersensitivity agent.
- Effective for desensitising and preventing carious lesions, especially for young patients.

Disadvantages of SDF ← 🖾

- Stains carious lesions black, may also stain skin and clothes.
- Has an unpleasant metallic taste and can transiently irritate gums





WINSPERT MIND MAP

GLASS IONOMER CEMENTS



Overview of Glass Ionomer Cements (GIC)

- GIC is a dental restorative material that bonds chemically to enamel and dentin.
- Comprised of a powder (fluorosilicate glass, radiopaque fillers) and a liquid (polyacrylic acid, water).



Biocompatibility and Thermal Expansion

- GIC is biocompatible with minimal irritation to pulp
- It has a low thermal expansion rate, matching that of natural tooth



Cohesion and Workability

- GIC shows good initial adhesion but may degrade in long-term humidity.
- Offers a short working time, sets quickly, and achieves full strength over hours.



Advantages of GIC

- Releases fluoride, hindering secondary caries development.
- Provides a chemical bond that negates the need for bonding agents.



Introduction to Resin-Modified Glass Ionomer Cement (RMGIC)

- RMGIC combines GIC benefits with added resin advantages for improved performance.
- It has two setting reactions: acid-base and chemical-cure resin.



Indications and Contraindications of RMGIC

- Recommended for root caries and repair of recurrent caries.
- A Not suitable for stress-bearing situations where higher strength materials are needed.



Applications and Benefits of SDF

- Simple application procedures, making it suitable for apprehensive or special needs patients.
- Affordable and shows effective remineralising effects.



Conclusion

- Both GIC and RMGIC have distinct advantages and drawbacks to consider in dental restorative practices.
- SDF provides an alternative approach for caries management, particularly in sensitive patient populations.

····> Map Your Way to ADC Success!





What is glass ionomer cement (GIC) and its primary components?





Glass ionomer cement (GIC) is a type of dental restorative material that can chemically bond to both enamel and dentin. It is made from two primary components: powder, which typically contains calciumaluminium-fluorosilicate glass and radiopaque fillers, and liquid, which typically contains polyacrylic acid and water.





What makes glass ionomer cement unique in terms of bonding?





One of the most distinctive features of GIC is its ability to bond chemically to tooth structure, achieved through an acid-base reaction between polyacrylic acid in the liquid and glass particles in the powder.





How does glass ionomer cement contribute to dental health?





GIC releases fluoride ions over time, which helps in remineralising adjacent tooth structures and preventing further decay, with the highest release occurring initially and continuing at a reduced rate for several months.





What are the biocompatibility properties of glass ionomer cement?





GIC is biocompatible with dental tissues, minimising chances of adverse reactions when used appropriately, and it does not irritate the pulp or cause allergic reactions.





What are some advantages of using glass ionomer cement?





Advantages of GIC include fluoride release to prevent secondary caries, chemical bonding to tooth structure that eliminates the need for bonding agents, good biocompatibility, moisture tolerance during placement, and ease of handling.





What limitations are associated with glass ionomer cement?





Limitations include relatively low fracture resistance, lower mechanical strength compared to composites or amalgam, wear resistance concerns in heavy occlusal areas, aesthetic limitations due to poor colour match, and susceptibility to dehydration after placement.





What distinguishes resinmodified glass ionomer cement (RMGIC) from traditional GIC?





RMGIC is a hybrid material that combines traditional GIC advantages with resins to improve mechanical properties, providing higher compressive and flexural strength, better wear resistance, and improved aesthetic properties.





What are the applications of silver diamine fluoride (SDF)?





SDF is used as a topical solution for cariesarresting and anti-hypersensitivity, effectively blocking open dentinal tubules, arresting carious lesions, managing dental caries in young children, and serving as a root canal disinfectant.





What are the benefits and drawbacks of using silver diamine fluoride (SDF)?





Benefits of SDF include antimicrobial activity, remineralising effects from fluoride, simple application procedures, and low cost. However, drawbacks include staining of caries lesions and skin, an unpleasant metallic taste, transient gingival erythema, and potential fluorosis in young children.





In what situations is resinmodified glass ionomer cement contraindicated?

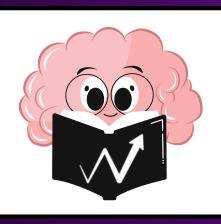




RMGIC is contraindicated in stress bearing areas. In contrast, Composite resin is preferred for radiation caries, dry mouth cases and in NCCL's subgingivally if < or equal to 0.5 mm: give mircofilled composite if >0.5mm subgingivally- rmgic is choice of material.



AMALGAMIN DENTISTRY



MIND MAP & CUE CARDS



BY DR. JIGYASA SHARMA

Composition of Amalgam

- Low copper alloys have a copper content below 6%.
- High copper alloys exceed approximately 12% copper content.

Zinc Component

- Zine containing alloys have over 018 Zine.
- Zinc-free alloys have less than 0.01% zine and can experience excessive expansion if moisture is present.

Gamma 2-Phase Content ←

- Low copper amalgams contain the slow-setting and weak y2 phase.
- High copper amalgams are $\gamma 2$ -free, leading to better performance.

Mercury Content

- Mercury accounts for 40-53% of the amalgam by weight, impacting properties.
- Metallic mercury in liquid or vapor form poses toxicity risks.

Clinical Manipulation of Amalgam

- Trituration mixes amalgam with mercury using a mechanical mixer.
- Condensation involves incrementally placing amalgam into the cavity to minimise voids.

Disadvantages of Dental Amalgam

- Aesthetics are poor compared to tooth-coloured materials.
- Fractures can occur in large restorations due to brittleness.

Contraindications for Use $\leftarrow \varnothing$

- Not suitable for visible anterior teeth where aesthetics are a concern.
- Contraindicated for patients allergic to amalgam components or concerned about mercury exposure.

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WINSPERT MIND MAP

SAMALGAM IN DENTISTRY



What is Amalgam?

- Amalgam is an alloy composed of one or more metals with mercury.
- It includes silver-tin alloy combined with copper and sometimes zine.



- High copper amalgam alloys possess superior physical properties.
- Low copper amalgams have a tin/mercury (Y2) reaction product that causes corrosion.

(a) → Minor Elements

- Additives like indium, palladium, and platinum may be included in small amounts (less than 1%).
- These elements enhance specific properties of amalgams.

Particle Shape

- Lathe cut particles are irregularly shaped filings from alloy ingots.
- Spherical particles are produced by atomizing the alloy, yielding different properties.

Properties of Amalgam

- Corrosion influences the longevity of restorations.
- Tarnishing occurs due to oxidation processes, affecting performance over time.

→ Advantages of Dental Amalgam

- High strength and durability make it ideal for posterior teeth.
- Cost-effective compared to other materials, offering good longevity.

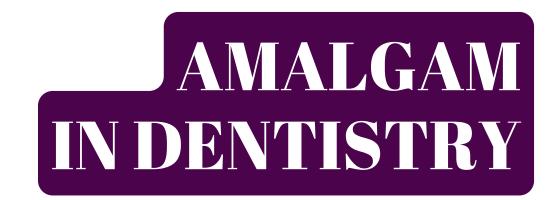
→ Indications for Use

- Ideal for posterior restorations and large cavities needing extra strength.
- Beneficial for patients seeking economical dental treatments.



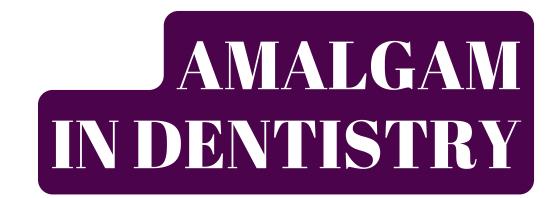






What is amalgam and what are its main components?





Amalgam is an alloy of one or more metals with mercury. The amalgam alloy is a silver-tin alloy to which varying amounts of copper (Cu) and small amounts of zinc (Zn) have been added.





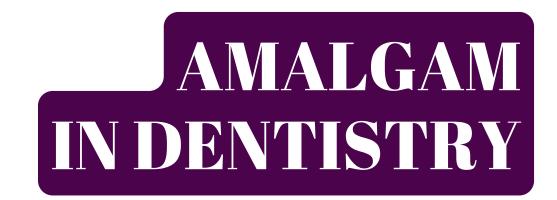
What distinguishes low copper amalgam alloys from high copper amalgam alloys?





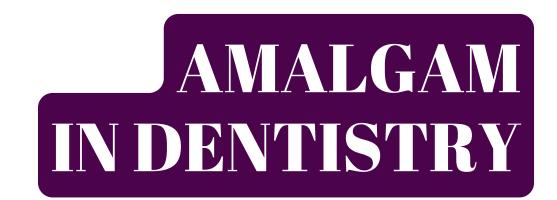
Low copper amalgam alloys have a total copper content of less than 6%, while high copper amalgam alloys have a total copper content greater than approximately 12%. High copper amalgams possess superior physical properties and clinical performance due to the absence of the tin/mercury (gamma-2, y2) reaction product.





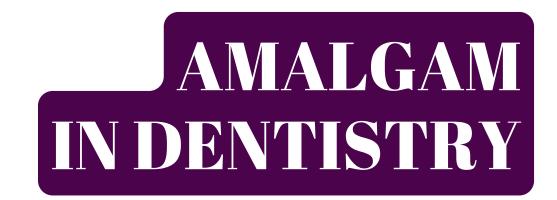
What effect does zinc have in amalgam?





Zinc-containing alloys contain more than 0.01% zinc and may exhibit a lower rate of margin fracture under clinical loading. However, if contaminated with moisture during placement, these amalgams can experience excessive delayed expansion.





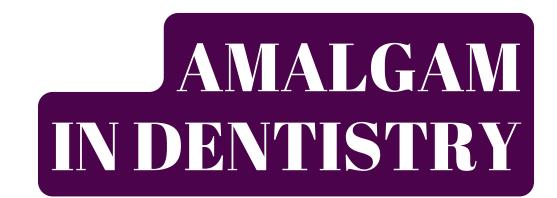
What is the significance of gamma 2-phase content in amalgams?





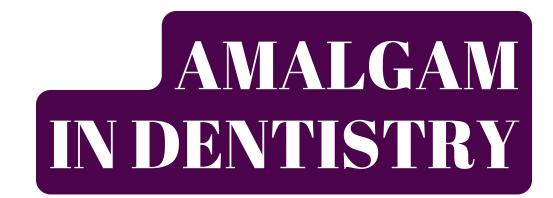
Amalgams may be classified as γ 2-containing or γ 2 free. Low copper amalgams contain the weak and easily corroded γ 2 phase, while correctly manipulated high copper amalgams are γ 2 free and thus more stable.





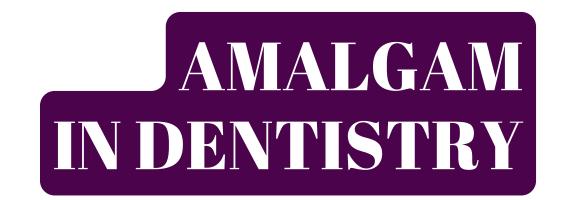
How does the shape of amalgam particles affect their properties?





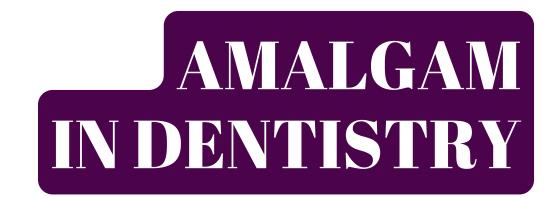
Lathe cut particles refer to irregularly shaped filings produced by cutting alloy on a lathe, while spherical particles are created by atomizing liquid alloy into an inert gas. The shape and type of particles influence the amalgam's performance and physical characteristics.





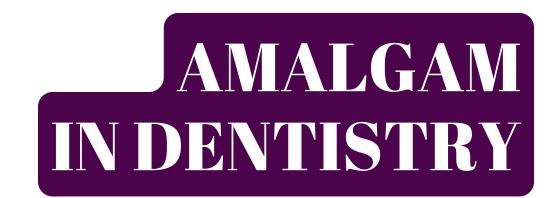
What range of mercury content is typically required for good amalgamation?





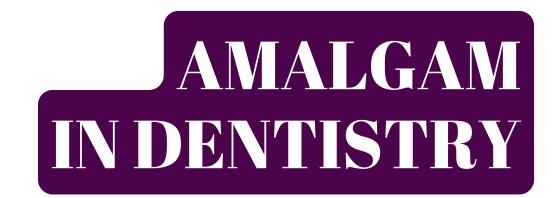
The amount of mercury required for effective amalgamation can vary from 40-53% by weight, depending on the shape, size, and composition of the alloy particles.





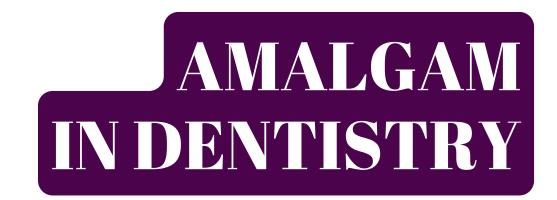
What are the main properties of dental amalgam that influence its clinical longevity?





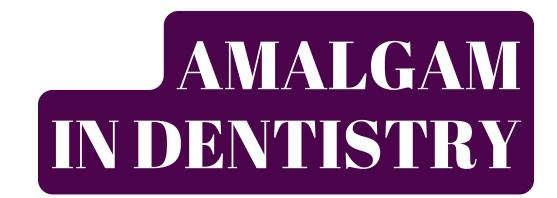
Corrosion, tarnishing, crevice corrosion, creep, and galvanic corrosion are key properties that affect the clinical longevity of dental amalgam restorations.





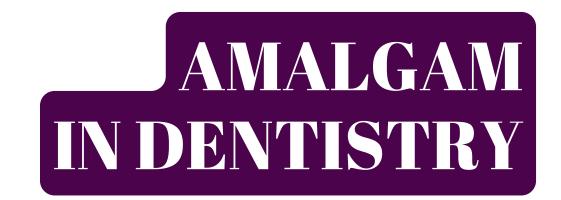
What are the advantages of using dental amalgam for restorations?





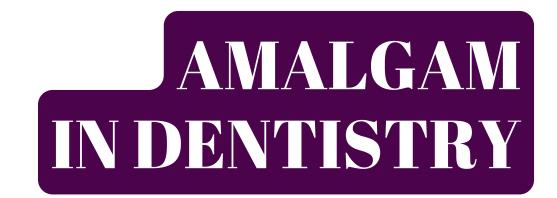
The advantages of dental amalgam include high strength and durability, cost-effectiveness, long-lasting restorations, ease of placement, and a self-sealing property that reduces microleakage.





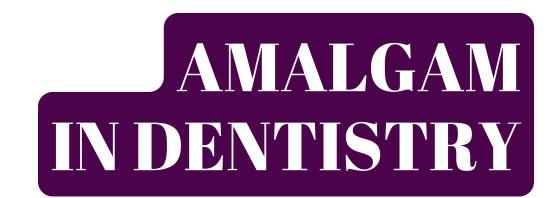
What are some contraindications for the use of dental amalgam?





Contraindications for dental amalgam include aesthetic areas where tooth-coloured materials are preferred, allergies to amalgam components, small cavities in low-stress areas, concerns about mercury exposure, and extremely large cavities with thin tooth structure.





What clinical manipulation techniques are important for handling amalgam?

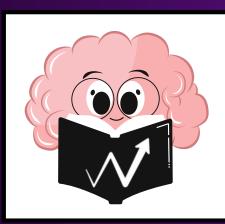




Key manipulation techniques include trituration (mixing), condensation (incremental placement), pre-carve burnishing, carving, post-carve burnishing, and finishing the amalgam restoration at a later appointment.



DRUGABUSE SORAL HEALTH



MIND MAP & CUE CARDS



BY DR. JIGYASA SHARMA

Meth Mouth Overview

- "Meth mouth" refers to severe dental decay in methamphetamine users
- Rapid decay can occur within a year of meth use

Tooth Decay in Meth Users ← 🛈

- High sugar intake and poor oral hygiene lead to rampant decay
- Ineffective dental practices worsen the condition

General Health Implications of Meth Use ←

- Meth can cause increased heart rate, hypertension, and respiratory issues
- Additional health risks include nausea, vomiting, and possible permanent heart damage

Oral Health Education for Patients

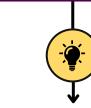
- Regular oral hygiene practices, including brushing and flossing, should be promoted
- Patients must reduce consumption of carbonated foods and drinks

Referral and Multidisciplinary Approach

- Dentists should refer patients to specialized addiction treatment centers
- A multidisciplinary approach addresses both prevention and restoration of dental health



DRUG ABUSE 8 ORAL HEALTH



Illicit Drug Use and Its Oral Health Impact

- Illicit drugs can lead to dry mouth and increased dental issues
- Common drugs affecting oral health include amphetamines and opioids



Mechanism of Meth's Oral Effects

- Meth reduces salivary flow, leading to dry mouth
- Increased cravings for sugary foods aggravate dental issues



Periodontal Effects of Meth

- Meth reduces blood flow to gums, increasing infection risk
- Users may grind teeth, leading to further dental complications

Dental Management Strategies

- Encouraging cessation of methamphetamine use is crucial for recovery
- Patient counselling should inform about the long-term effects of drug use



Preventive Care and Professional Treatment

- Regular fluoride applications can help prevent dental caries progression
- Managing xerostomia in meth users is essential for oral health

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What are the adverse effects of illicit drug use on oral health?





Illicit drug use can lead to dry mouth, dental caries, oral candidiasis, and other oral infections, particularly when combined with a cariogenic diet and poor oral hygiene.





Which drug is most commonly associated with dental implications?





Amphetamine (Methamphetamine) is the most common drug associated with dental implications.





What is "meth mouth"?





"Meth mouth" refers to the typical caries pattern seen in methamphetamine users, characterised by severe tooth decay and loss.





What are the effects of methamphetamine on salivary production?





Methamphetamine reduces salivary production, leading to dry mouth, which increases cravings for sugary foods and drinks, ultimately damaging teeth and gums.





What is the sequence of effects that contributes to "meth mouth"?





The sequence is: poor salivary flow (SSP), cravings for sugary drinks and food, and poor oral hygiene.





How does methamphetamine use impact periodontal health?





Meth use causes a reduction in blood supply to the gums, increasing susceptibility to infection and gum disease, while weakening the immune system.





What are some general health effects of methamphetamine use?





Methamphetamine use can lead to increased hypertension, respiratory issues, nausea, vomiting, hyperthermia, diarrhoea, irregular heartbeat, and even permanent heart damage.





What is a critical aspect of dental management for methamphetamine users?





Encouraging the patient to stop abusing methamphetamine is a critical aspect of dental management.





What oral hygiene practices should be recommended to patients using methamphetamine?





Patients should be advised to brush twice a day with fluoridated toothpaste, floss regularly, and reduce their consumption of carbonated foods and drinks.





What should dentists do if they suspect a patient is using illicit drugs?





Dentists should refer suspected patients to a specialised addiction treatment centre and provide education on the effects of drug use.



RADIATION TO THE HEAD & NECK REGION



MIND MAP & CUE CARDS



BY DR. JIGYASA SHARMA

Effects on Normal Tissue

- Radiotherapy damages vital, radiosensitive tissues like salivary glands and thyroid.
- Mild damage can occur after 4 Gy, while severe damage arises from doses over 30 Gy.

Adverse Effects of Radiation

- Early effects include oral mucositis, characterized by inflammation and soreness
- Long-term effects lead to conditions like radiation caries.

Characteristics of Radiation Caries

- Typically affects cervical areas of teeth; rapid progression due to impaired saliva flow.
- The classic distribution includes incisal edges and cervical margins, with potential for unnoticed extensive decay

Understanding Osteoradionecrosis (ORN)

- ORN is a severe complication from radiotherapy, showing exposed irradiated b one not healing for 8 weeks.
- Symptoms may include pain, redness, swelling, and possible fractures.

Extracting Teeth Before Radiotherapy

- Extract teeth that are infected, unrestorable, or have deep pockets before therapy.
- Consider the strategic importance and position of each tooth during assessment.



RADIATION TO THE HEAD & NECK REGION



Introduction to Radiotheraphy

- Radiotherapy uses ionizing radiation to treat diseases, predominantly cancer.
- Adverse effects can significantly impact oral and overall health.



Protection Methods for Sensitive Tissues

- **Fractionation**: Splitting total radiation dose into smaller daily treatments for recovery.
- Intensity Modulated Radiotherapy (IMRT): Utilizes multiple beamlets to target tumours while protecting normal tissues.



Understanding Radiation Caries

- Radiation caries stem from radiation therapy, especially affecting head and neck cancer patients.
- The risk increases with higher doses to the mouth and salivary glands due to reduced saliva.



Factors Contributing to Radiation Caries

- Impaired saliva quantity and quality from radiation effects.
- Other risk factors: high-sugar diet, poor oral hygiene, reduced mouth opening, changes in oral flora.



Factors Influencing ORN Incidence

- Dentoalveolar surgeries can increase risk without proper timing concerning radiotherapy.
- Continued tobacco use and diabetes can complicate healing, increasing ORN risk

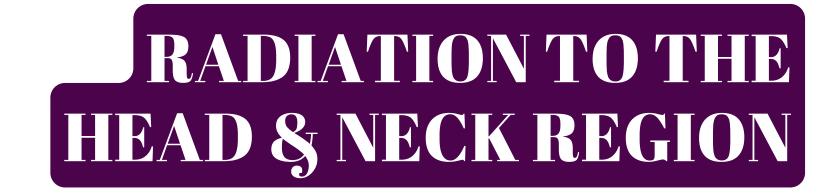


Management of Osteoradionecrosis

- ORN is challenging to treat; antibiotics are often ineffective due to low vascularity
- Regular dental reviews are essential, with referrals to specialists when needed







What is radiotherapy and what are its general effects on oral health in patients?





Radiotherapy is the use of ionising radiation to treat diseases, typically using x-rays for cancer treatment. It has many adverse effects on oral and general health, particularly damaging normal tissues in the head and neck region, such as the salivary glands, eyes, spinal cord, and thyroid gland.





What is the full curative dose for most head and neck cancers, and what dose leads to mild and severe salivary gland damage?





The full curative dose for most head and neck cancers is 60–65 grays (Gy). Mild salivary gland damage can be detected after only 4 Gy, while severe permanent damage occurs with doses above 30 Gy to the glands.





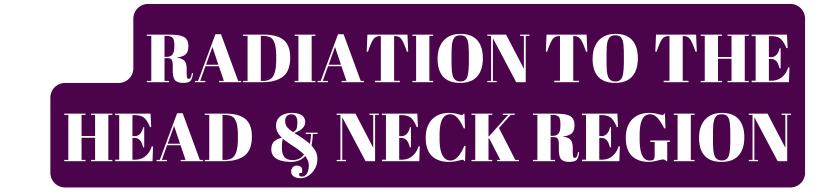
What is fractionation in radiotherapy, and how does it help reduce toxicity?





Fractionation in radiotherapy involves delivering the total dose in small daily amounts or fractions, usually 2 Gy each weekday for 6 weeks. This method allows some recovery time between treatments, thus reducing toxicity to normal tissues.





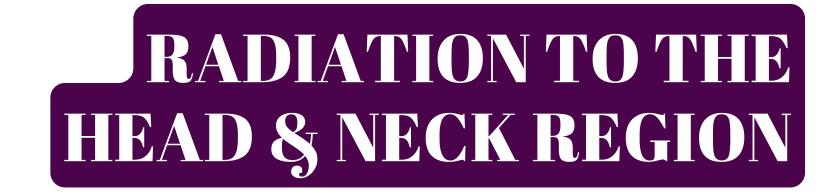
How does intensity-modulated radiotherapy (IMRT) minimise damage to normal tissues while treating cancer?





IMRT uses multiple smaller 'beamlets' to converge on the cancer from different directions. The intensity and shape of the beams are adjusted at each fraction to match the size of the tumour, ensuring a high dose to the tumour while greatly reducing the dose to the sensitive surrounding normal tissues.





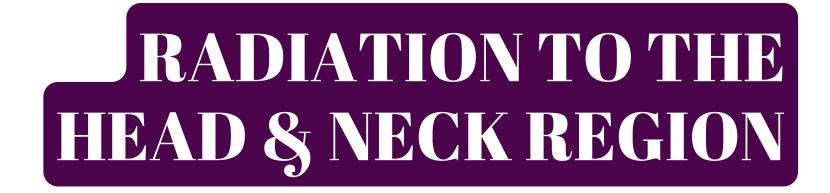
What is oral mucositis, and what are its primary symptoms?





Oral mucositis is the inflammation of the mouth that affects all patients undergoing radiotherapy initially. Its symptoms include erythema, ulceration, swelling, atrophy, and extreme soreness, which can prevent eating.





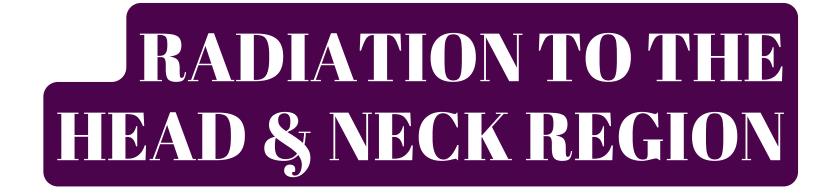
What is radiation caries, and who is most at risk for this condition?





Radiation caries is a type of dental decay that occurs as a complication of radiation therapy, particularly in patients undergoing treatment for head and neck cancers. The risk increases for patients who receive high doses of radiation to the mouth, salivary glands, and surrounding tissues.





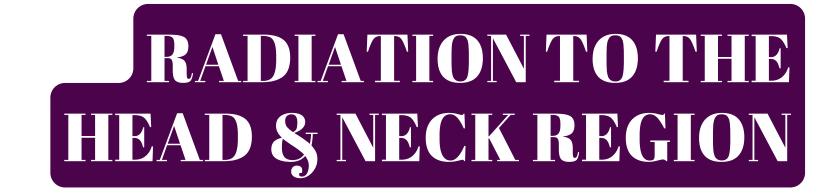
What factors contribute to the development of radiation caries?





Contributing factors to radiation caries include reduced saliva quantity and buffering capacity caused by radiation effects on the salivary glands, a high-sugar diet, poor oral hygiene, limited mouth opening, and sore mouth. Changes in oral flora may also play a role.





What is osteoradionecrosis (ORN), and what are its common symptoms?





Osteoradionecrosis (ORN) is a serious complication of radiotherapy, defined as the clinical or radiographic presence of exposed and devitalised irradiated bone without healing for at least 8 weeks. Common symptoms include pain, redness, swelling, altered sensation, discharge, skin fistula, or a pathological fracture.





What measures can be taken to prevent the incidence of ORN in patients receiving radiotherapy?





To prevent ORN, it is recommended to allow sufficient healing time after dental extractions before starting radiotherapy, avoid extractions during radiotherapy without consulting the multidisciplinary team, and consider the effects of continued tobacco use, diabetes mellitus, and total radiation dose.





What should be done with teeth deemed at risk before a patient undergoes radiotherapy?





Teeth that should be extracted before radiotherapy include those that are infected, unrestorable, have pockets greater than 5 mm depth, are partially erupted third molars, or those likely to become inaccessible after cancer treatment. Each tooth's position, volume of radiation, strategic importance, and patient choice must be assessed.



DRYMOUTH (XEROSTOMIA)



MIND MAP & CUE CARDS



BY DR. JIGYASA SHARMA

Causes of Dry Mouth

- Common causes include dehydration, alcohol, anxiety, and mouth breathing.
- Certain drugs are known to cause dry mouth; less common causes include diseases like Sjögren's Syndrome

Age and Dry Mouth ←

- Chronic dry mouth is more prevalent in older adults, often due to low fluid intake or concurrent medical conditions.
- Cardiac or renal issues, along with diuretic drugs, contribute to dehydration.

Investigations for Dry Mouth +

- Measuring salivary flow rates is challenging; both unstimulated and stimulated flow rates should be assessed.
- Salivary flow measurement is essential for accurate diagnosis and management.

Pharmacological Treatment

- Cholinergic drugs like pilocarpine can stimulate salivary flow.
- Symptomatic relief includes artificial saliva products and lozenges for stimulation

Symptoms of Sjögren's Syndrome

- Primary symptoms include dry eyes, dry mouth, fatigue, joint pain, and Raynaud's phenomenon.
- Secondary Sjogren's occurs alongside other autoimmune disorders, sharing similar symptoms.

Management of Sjögren's Syndrome

- Symptomatic relief is key in management; treat individual symptoms accordingly
- Collaboration with healthcare providers ensures comprehensive care for impacted patients.



DRY MOUTH _ (XEROSTOMIA)



Overview of Dry Mouth

- Dry mouth, or Xerostomia, may be subjective (False Xerostomia) or objective (True Xerostomia).
- True Xerostomia involves reduction in salivary output and quality.



Impact of Radiotherapy

- Dry mouth can be a side effect of head and neck radiotherapy.
- Severity of dryness correlates with radiation dose; damage can occur with doses above 30 Gy.



Effects on Oral Health

- Chronic dryness can lead to oral health issues, including tooth decay and periodontal disease.
- Difficulties with dentures, chewing, and altered taste perception may occur.



- Emphasising hydration: Aim for at least 1.5 litres of water daily.
- Maintain proper oral hygiene and schedule regular dental check-ups every 3-6 months



Sjögren's Syndrome Overview

- Sjögren's syndrome is an autoimmune condition affecting exocrine glands, leading to dry mouth and dry eyes (sicca).
- The condition may be primary (isolated) or secondary (associated with other auto immune diseases).

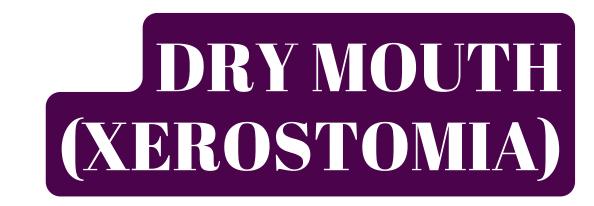


Diagnosis of Sjögren's Syndrome

- Diagnosis involves identifying sicca symptoms, positive ANA, and specific autoantibodies.
- A raised ESR and positive rheumatoid factor can support the diagnosis.

WINSPERT





What is dry mouth, and how is it classified?





Dry mouth, also known as Xerostomia, is a relatively common condition that can be classified as either False Xerostomia, where there is a subjective feeling of dryness with normal salivary flow, or True Xerostomia, which involves a reduction in salivary quantity and quality, known as Salivary Gland Hypofunction (SGH).





What are the common causes of dry mouth?





Common causes of dry mouth include dehydration, alcohol consumption, anxiety, mouth breathing, and certain medications. Less common causes can include diseases such as Sjögren's syndrome.





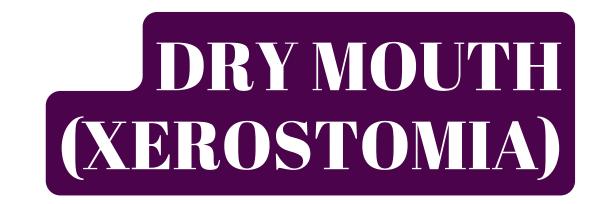
What debilitating effect does head and neck radiotherapy have on salivary flow?





Head and neck radiotherapy can significantly reduce salivary flow, with the degree of reduction depending on the dose and region of radiation. Mild damage can occur after 4 grays (Gy) of radiation, while severe permanent damage is noted with doses above 30 Gy.





Why is dry mouth more common in older individuals?





Dry mouth is more prevalent in older individuals due to factors such as habitual low fluid intake, especially in institutionalized settings, as well as the effects of cardiac or renal failure and diuretic drug usage.





What are the effects of chronic dry mouth on oral tissues?





Chronic dry mouth can lead to several oral health issues, including tooth decay and erosion, periodontal disease, oral mucosal diseases, oral candidiasis, difficulty retaining dentures, challenges with chewing and swallowing, and an altered sense of taste.





What investigations are conducted to measure salivary flow?





To measure salivary flow, investigations typically include the assessment of both Unstimulated Salivary Flow Rate (USFR) and Stimulated Salivary Flow Rate (SFR), which should be performed separately, starting with USFR.





What initial management steps are recommended for dry mouth?





Initial management for dry mouth includes reviewing the patient's medications to discontinue any nonessential ones causing dryness, ensuring adequate hydration by drinking at least 1.5 litres of water daily, and maintaining proper oral hygiene while avoiding caffeine, cigarettes, and alcohol.





Question 8

What pharmacological agents can help stimulate salivary flow?

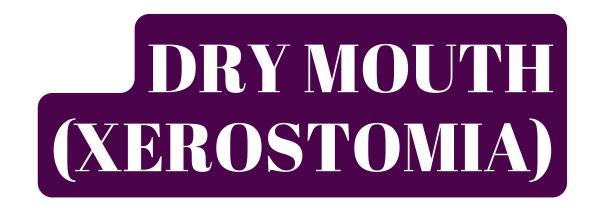




Answer 8

Cholinergic drugs, such as pilocarpine, can be used to stimulate salivary flow in patients experiencing dry mouth.





Question 9

What characterises Sjögren's syndrome?





Answer 9

Sjögren's syndrome is an autoimmune disease characterised by inflammatory infiltration of the exocrine glands, especially salivary and lacrimal glands, leading to dysfunction and symptoms of dryness (sicca), including dry eyes and dry mouth.





Question 10

How is Sjögren's syndrome diagnosed?





Answer 10

Diagnosis of Sjögren's syndrome is suggested by sicca symptoms, positive Anti-nuclear antibodies (ANA), along with autoantibodies to Ro and La, typically seen in affected individuals, as well as laboratory findings such as a raised erythrocyte sedimentation rate (ESR) and positive rheumatoid factor.





MIND MAP & CUE CARDS



BY DR. JIGYASA SHARMA

Importance of Fluoride

- Use of fluoride is essential in preventing dental caries.
- Water fluoridation is a highly effective public health measure.

Safety of Fluoridation ← €

- Current water fluoridation levels are not linked to health issues such as cognitive dysfunction or cancer.

 • Incidence of dental fluorosis has decreased, with most cases being mild.

Recommendations for Toothpaste Use +

- Avoid swallowing excess toothpaste when brushing; do not rinse mouth afterwards.
- Proper usage increases fluoride uptake for better dental health.

Mouth Rinses and Concentrations ← 🗸 🕶

- Fluoride mouth rinses should be either 220 mg/L daily or 900 mg/L weekly for effective use
- Adherence to these concentrations is crucial for caries prevention.

Fluoride Gels and Their Use

- High concentration fluoride gels (up to 12.3 mg/g) are applied by dental professionals
- Use of these gels is contraindicated for children under 10 due to ingestion concerns







Prevalence of Dental Caries

- Dental caries is the most common oral disease in Australian children and adults.
- Key factors include high sugar consumption and plaque presence.



Fluoride Levels in Water

- Optimal fluoride levels in water should range from 0.6 to 1.1 mg/L.
- Bottled water consumers should select products with 1 mg/L fluoride for optimal health.



Efficacy of Fluoridated Toothpaste

- Brushing with fluoridated toothpaste effectively promotes enamel remineralisation.
- Fluoride contributes to forming more resistant apatites than normal hydroxyapatite.



Fluoride Recommendations for Patients

- General fluoride recommendations vary based on the patient's risk levels for caries.
- Fluoride supplements in drops or tablets are advised against



Professionally Applied Fluoride Products

- Fluoride varnish such as DURAPHAT (22.6 mg/mL) is a common professional product
- Avoid varnish in patients with allergies to band-aid adhesives due to potential cross-reactivity



Advanced Fluoride Treatments

- Silver diamine fluoride (38% SDF) is used to stop carious lesions effectively.
- CPP-ACP is recommended for early-stage tooth decay but should be avoided in patients with milk allergies.



Question 1

What is the most prevalent oral disease among Australian children and adults?



Answer 1

Dental caries is the most prevalent oral disease among Australian children and adults.



Question 2

What are the key etiological factors for dental caries?



Answer 2

The frequency of sugar consumption and plaque are the key etiological factors for dental caries.



Question 3

What is considered one of the most effective public health interventions for caries prevention?



Answer 3

Water fluoridation is considered one of the most effective public health interventions for caries prevention.



Question 4

What is the recommended level of fluoride in water to prevent dental caries?



Answer 4

The recommended level of fluoride in water is within the range of 0.6 - 1.1 mg/L.



Question 5

What should people who consume bottled water be encouraged to do?



Answer 5

People who consume bottled water should be encouraged to drink labelled drinking water with 1 mg/L of fluoride.



Question 6

What type of dental condition has declined over time in Australia related to fluoride use?





Answer 6

Dental fluorosis has declined over time in Australia, and those reported are very mild or mild.



Question 7

What is the effect of tooth brushing with fluoridated toothpaste?



Answer 7

The efficacy of tooth brushing with fluoridated toothpaste is widely established in promoting enamel remineralisation.



Question 8

What should individuals do after brushing their teeth with fluoride toothpaste?



Answer 8

Individuals should remove excess toothpaste by spitting it out (do not swallow) and should not rinse their mouth after using fluoride toothpaste to increase uptake.



Question 9

What concentration of fluoride should mouth rinses contain for daily and weekly use?



Answer 9

Fluoride mouth rinses should contain a concentration of 220 mg/L for daily use or 900 mg/L for weekly use.



Question 10

What is a common fluoride varnish product applied by dental professionals?



Answer 10

The most common fluoride varnish product applied by dental professionals is DURAPHAT.