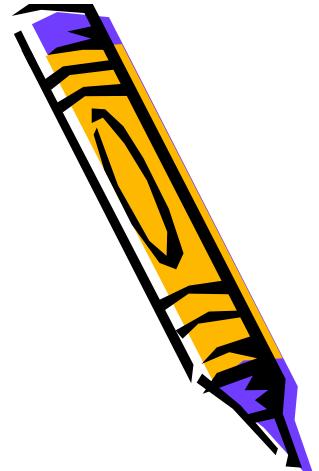


Introduction to Operative Dentistry

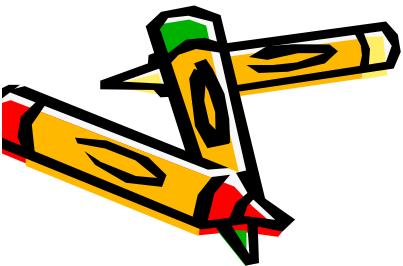


DR. NASRIEN ATEYAH



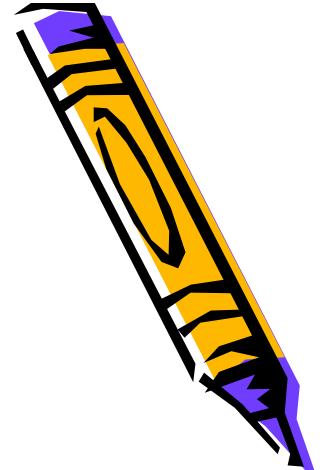
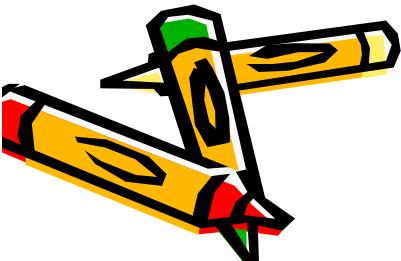
Definition

- Operative Dentistry is the art and science of the prevention, diagnosis, treatment and prognosis of defects in the enamel and dentin of individual teeth.



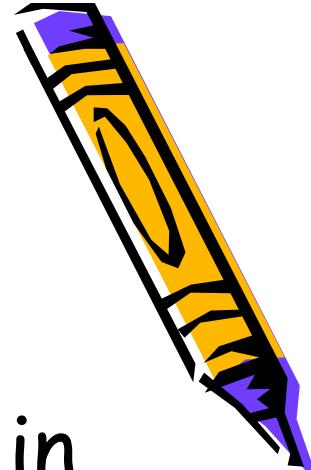
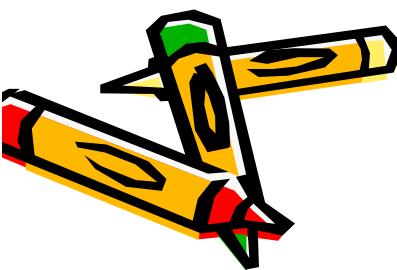
History and Epidemiology

- Operative Dentistry was considered to be the **entirety** of the clinical practice of dentistry.
- Has been recognized as the **foundation** of dentistry and the base from which most other aspects of dentistry evolved.



History and Epidemiology

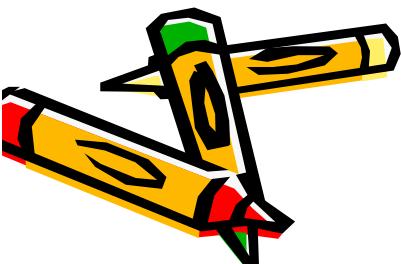
- In United States, dentistry originated in the 17th century when several barbers were sent from England.
 - The practice of these early dentists consisted mainly of tooth extraction and practice of dentistry during the founding year was not based on scientific knowledge.



History and Epidemiology

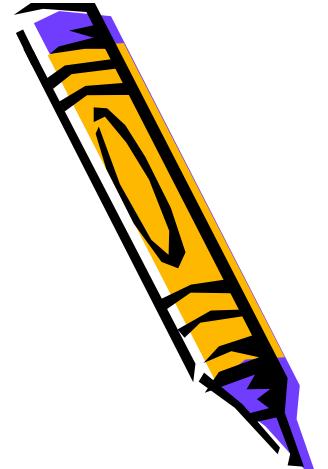
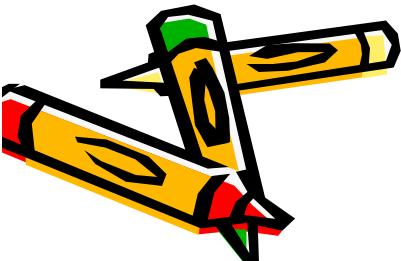


- Baltimore College of Dental Surgery in 1840 ⇒ dental education
- Harvard University in 1867 ⇒ dental program
- In France, Louis Pasteur discovered the role of microorganisms in disease ⇒ have a significant impact on the developing dental + medical profession.



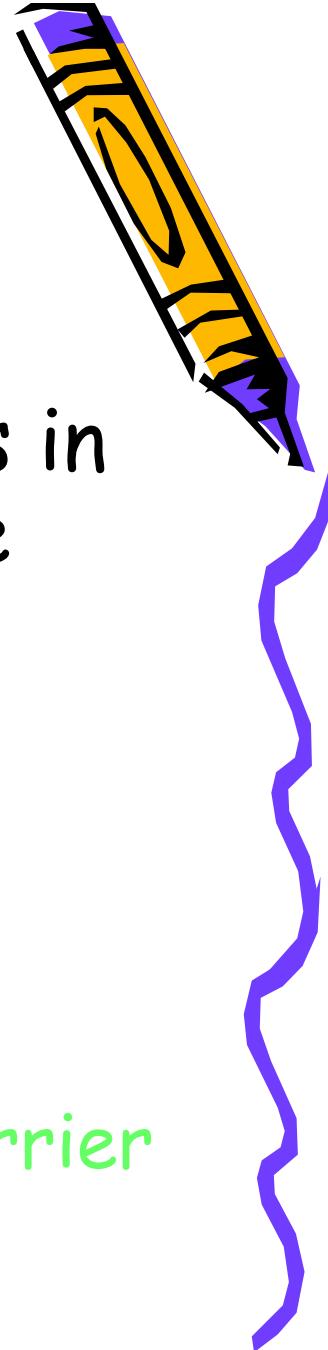
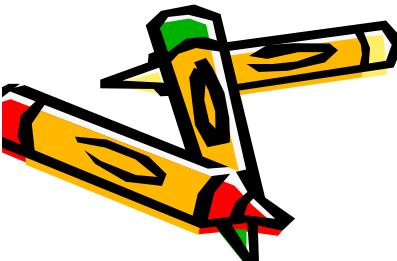
History and Epidemiology

- In United States, G.V. Black became the foundation of the dental professions ⇒ related the clinical practice of dentistry to a scientific basis.
 - The scientific foundation for operative dentistry was further expanded by Black's son, Arthur Black.



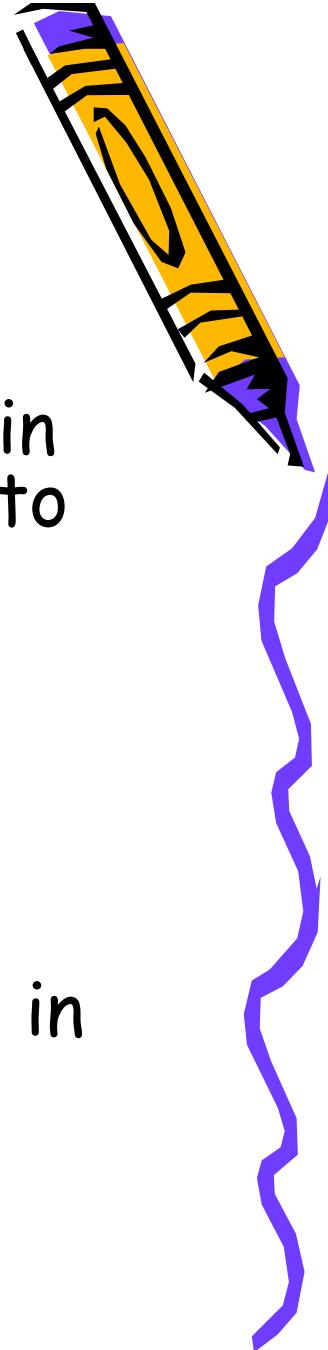
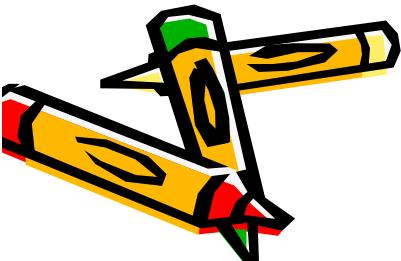
History and Epidemiology

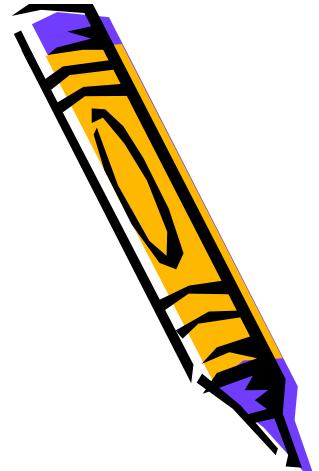
- Others made significant contributions in the early development of Operative Dentistry:
 - Charles E. Woodbury
 - E.K. Wedelstaedt
 - Waldon I. Ferrier
 - George Hollenback



History and Epidemiology

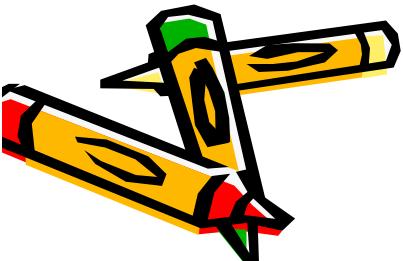
- Operative Dentistry plays an important role in enhancing dental health and new branched into dental specialities.
- Today, O.D. continues to be a **most active component** of most dental practice.
- Epidemiologically, demand for O.D. will not ↓ in the foreseeable future.





Goal of Dental Sciences

- Elimination of disease and restoration of oral **health**, **form** and **function**.



Function and Purpose



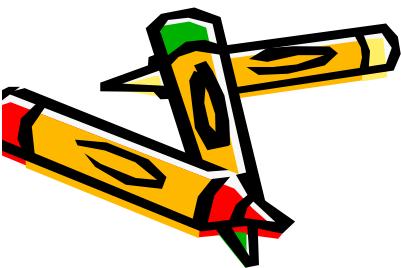
- An understanding and appreciation for infection control.
- Examination not only the affected tooth but also the oral and systemic health of the patient.
- A diagnosis of the dental problem and must be correlated with other bodily tissues.
- A treatment plan that has a potential to return the affected area to a state of health and function.

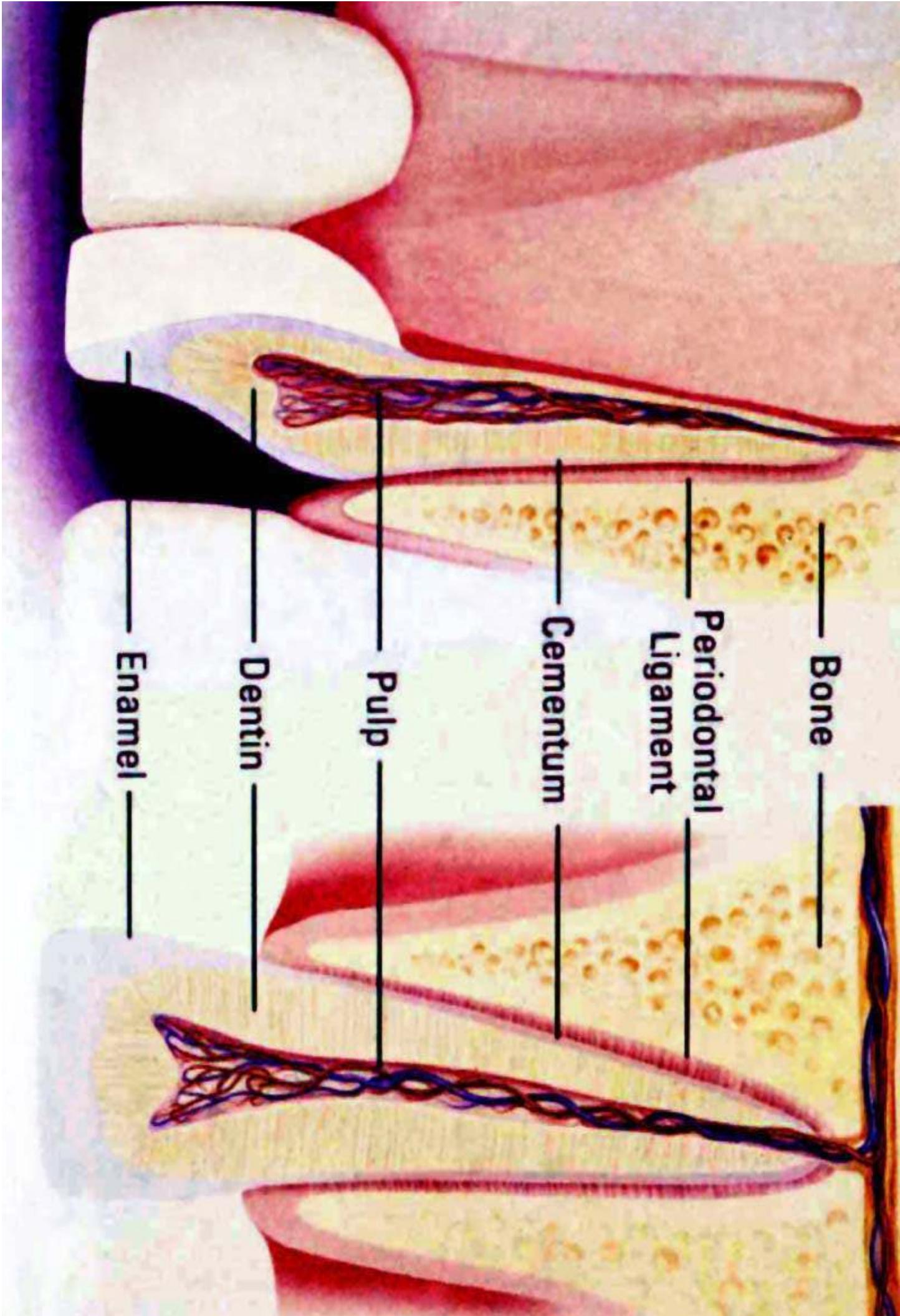


Function and Purpose



- An understanding of **material** to be used to restore the affected area with a realization of both the material limitations and demands.
- An understanding of the **oral environment** into which the restoration will be placed.
 - To understand the biological basis and function of the various **tooth components** and **supporting tissues** although the knowledge of correct **dental anatomy**.





Purposes of Operative Dentistry

DIAGNOSIS

Proper diagnosis is vital for treatment planning.

PREVENTION

To prevent any recurrence of the causative disease and their defect.

INTERCEPTION

Preventing further loss of tooth structure by stabilizing an active disease process.

PRESERVATION

Preservation of the vitality and periodontal support of remaining tooth structure.

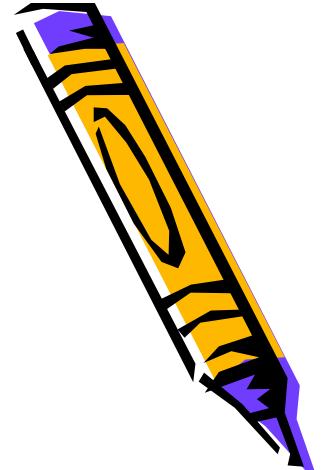
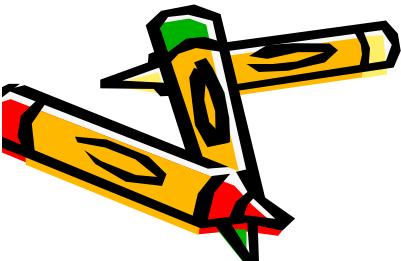
RESTORATION

Includes restoring **form, function, phonetics, and esthetics**.



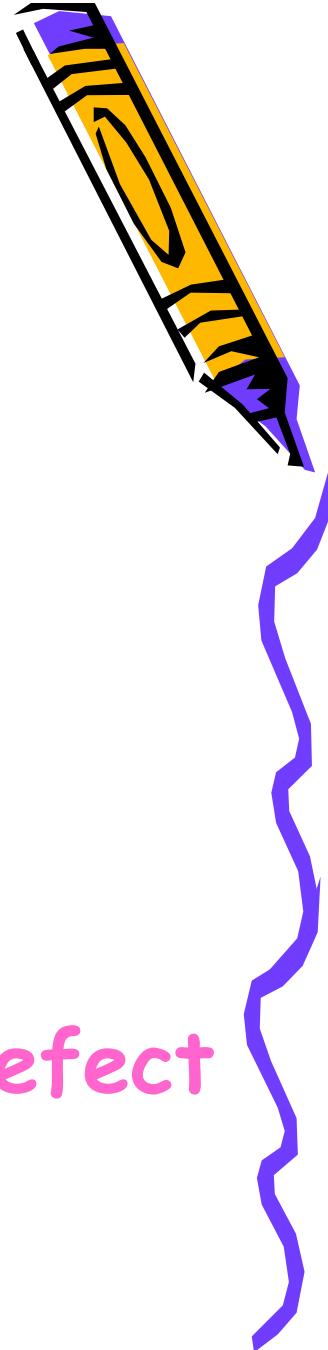
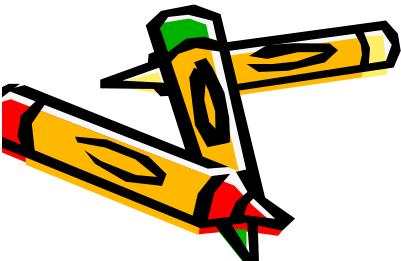
The placement of a restoration in a tooth requires the dentist to:

- Practice applied **human biology + microbiology**
- Possess highly developed **technical skills**
 - Demonstrate **artistic abilities**



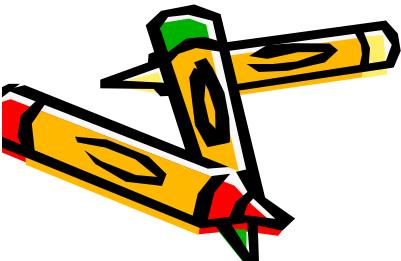
Type of Lesion in Tooth Destruction

- Dental caries
- Tooth wear
- Trauma
- Developmental defect



Dental Caries

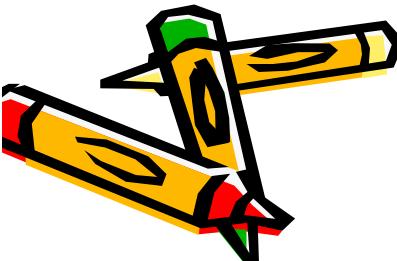
- Dental caries is an infectious microbiological disease of the teeth that results in localized **dissolution** and **destruction** of the calcified tissue, caused by the action of **microorganisms** and **fermentable carbohydrates**.

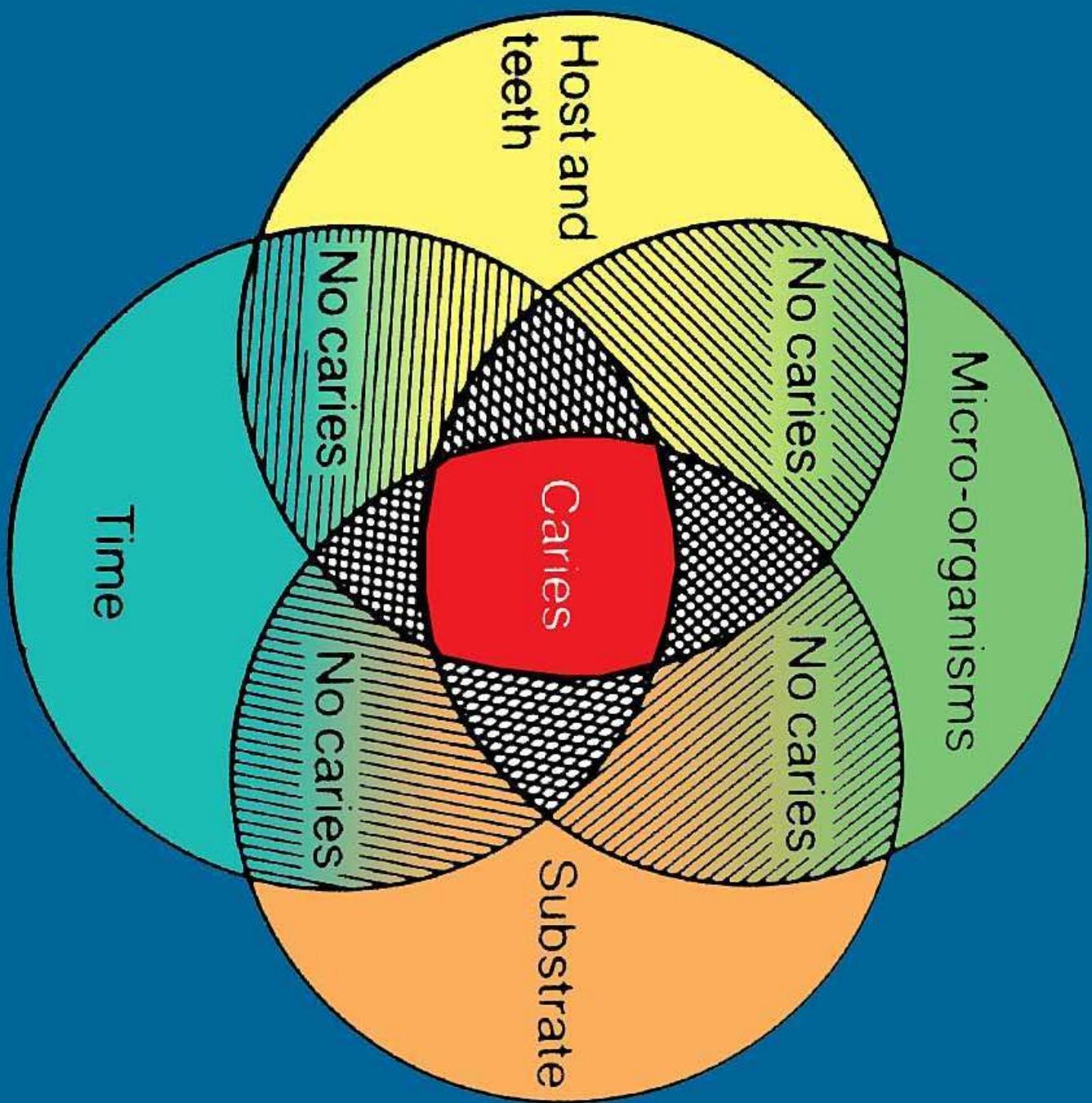


Dental Caries

Characterized by

- Demineralization of the mineral portion of **enamel** + **dentine**.
- Disintegration of their **organic material**.
- As the disease approach the pulp may result in **death of the pulp**.
- It can be arrested or prevented.

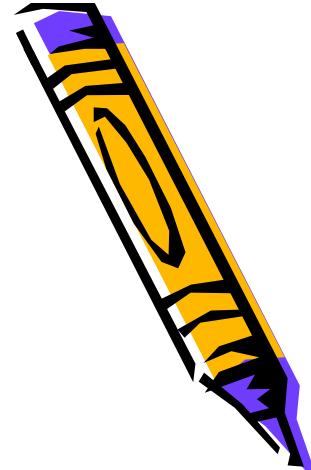
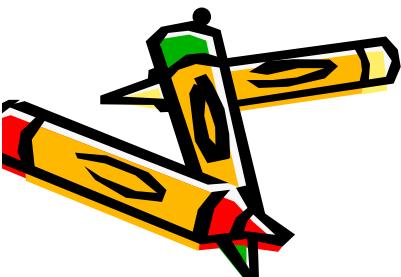


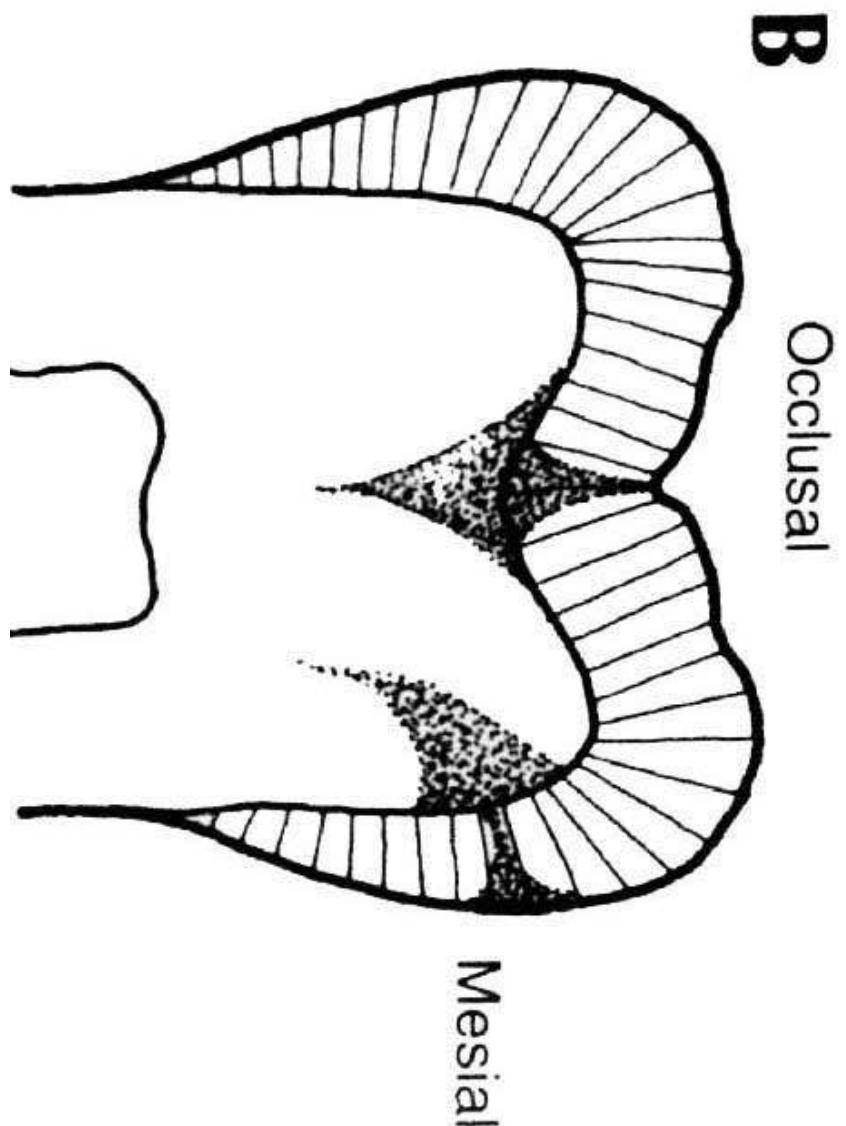
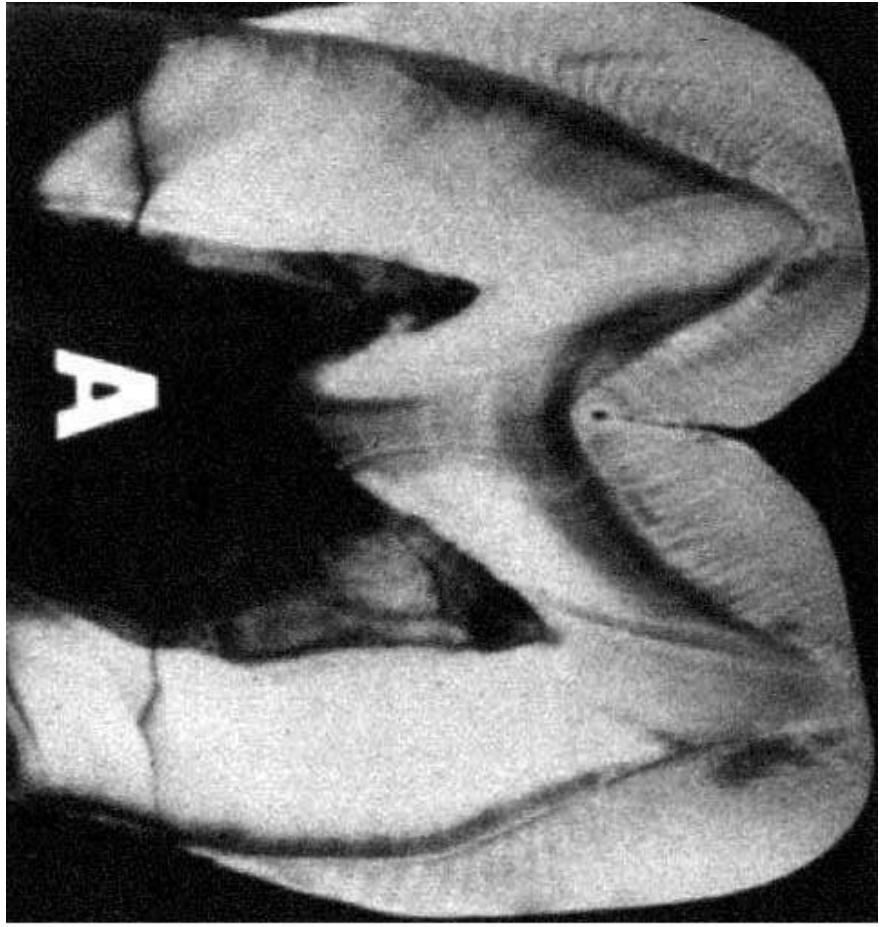




Classification of Decay

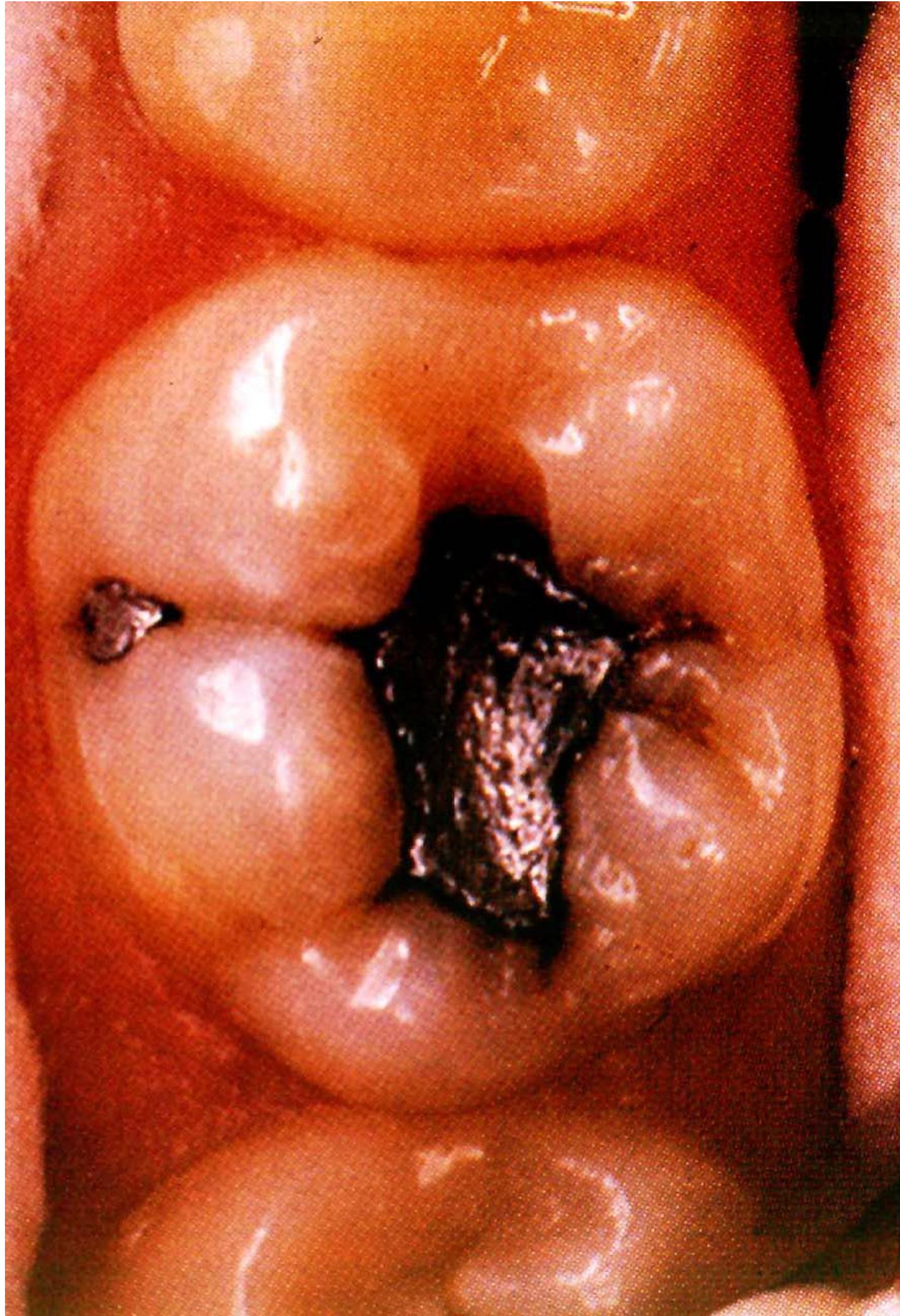
- Based on anatomy of the surface involved
- Pit and fissures carious lesions
 - *Class I* – begin in the depth of pits and fissures in enamel
 - *Occur:*
 - *Occlusal surface of post. teeth*
 - *Lingual fossa of maxillary incisors*













10

3:0

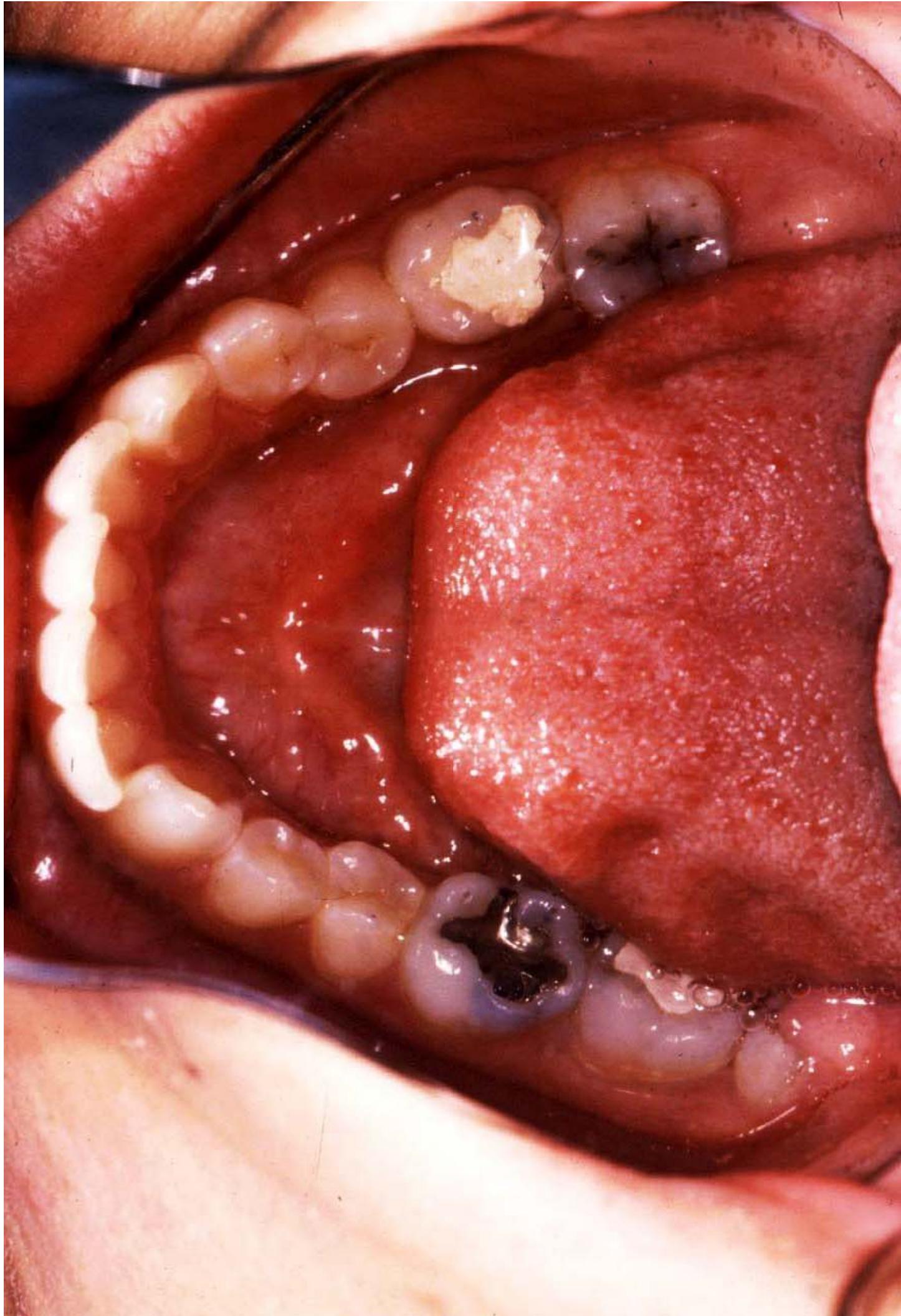
Smooth Surface Carious Lesions

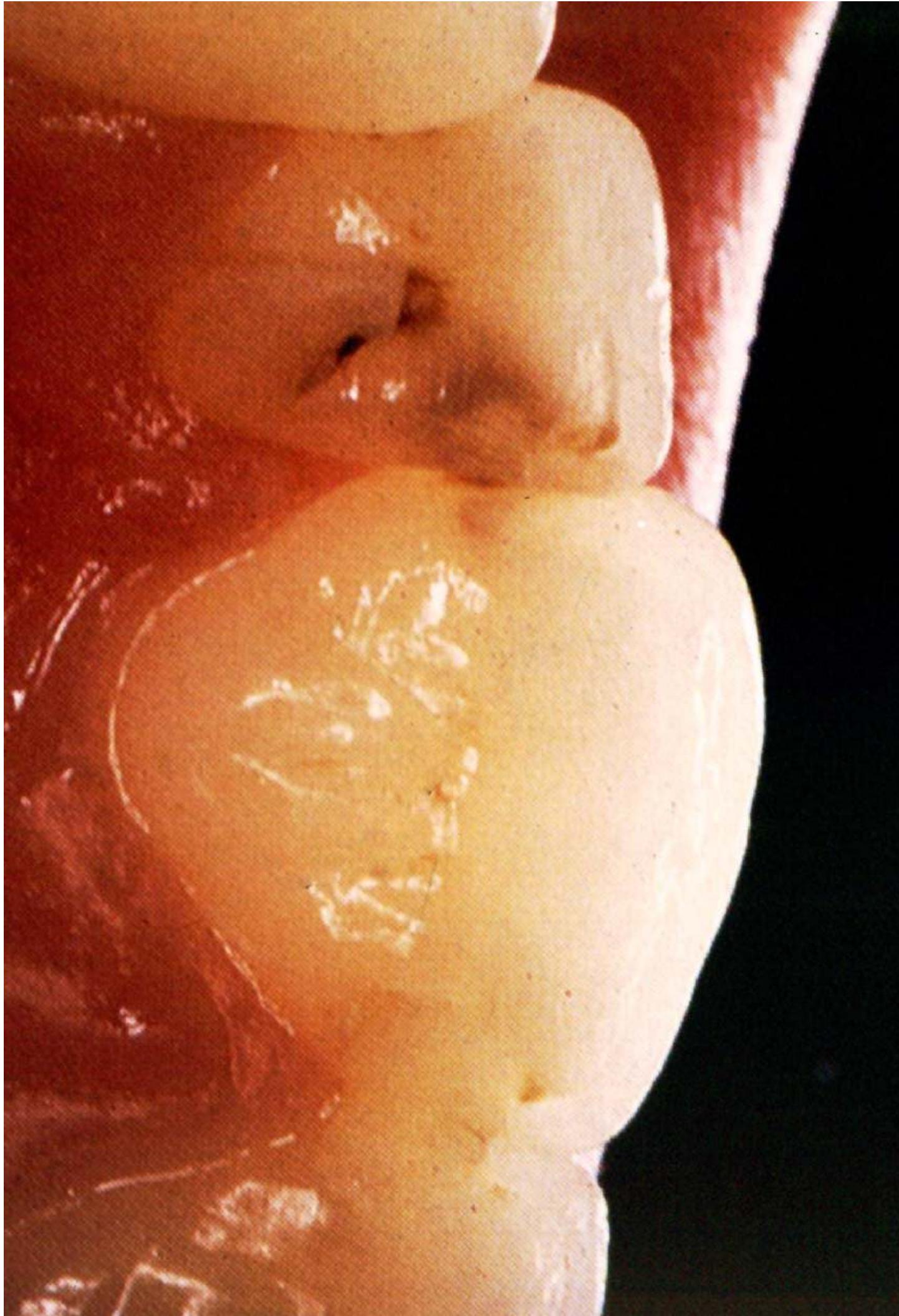
- Occur on the smooth surface of the anatomic crown of a tooth in areas that are most inaccessible to the natural cleansing action of the lips, cheeks and tongue.

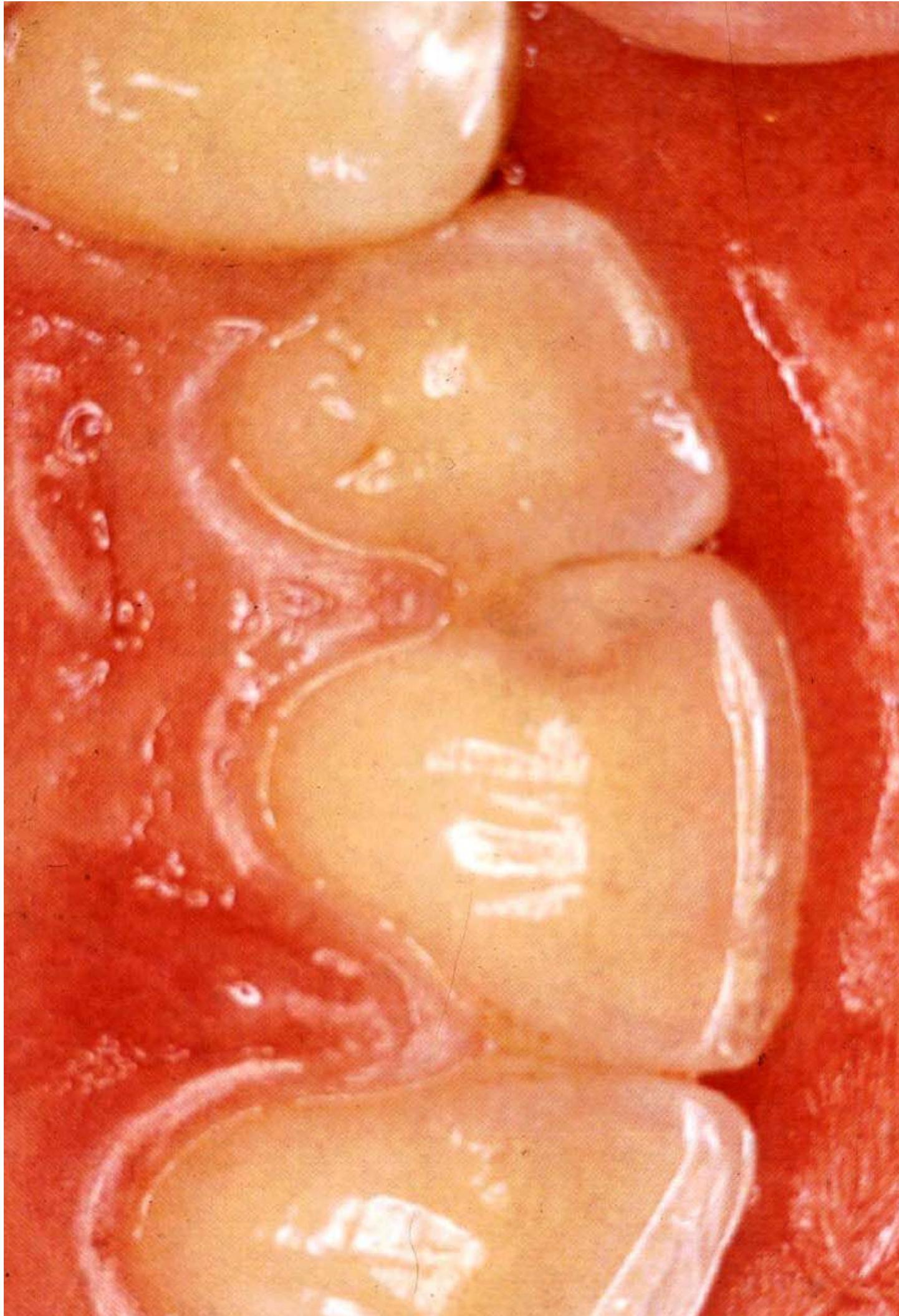
- Proximal surfaces – **class II**
- Facial and lingual surfaces –
class III, IV, V

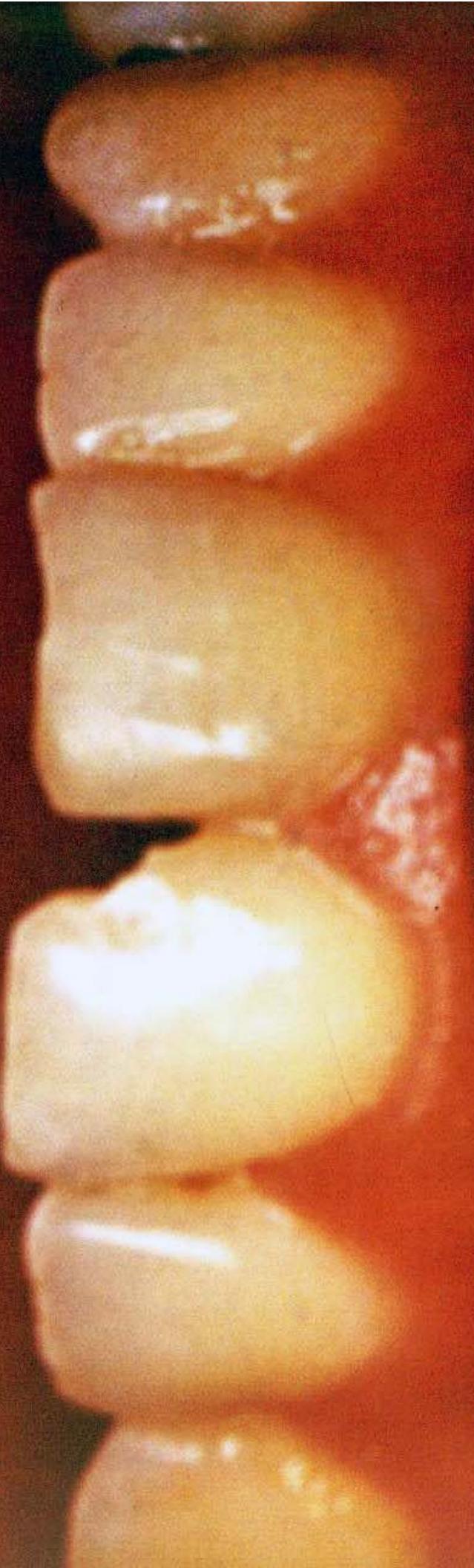
Root caries on **cementum**



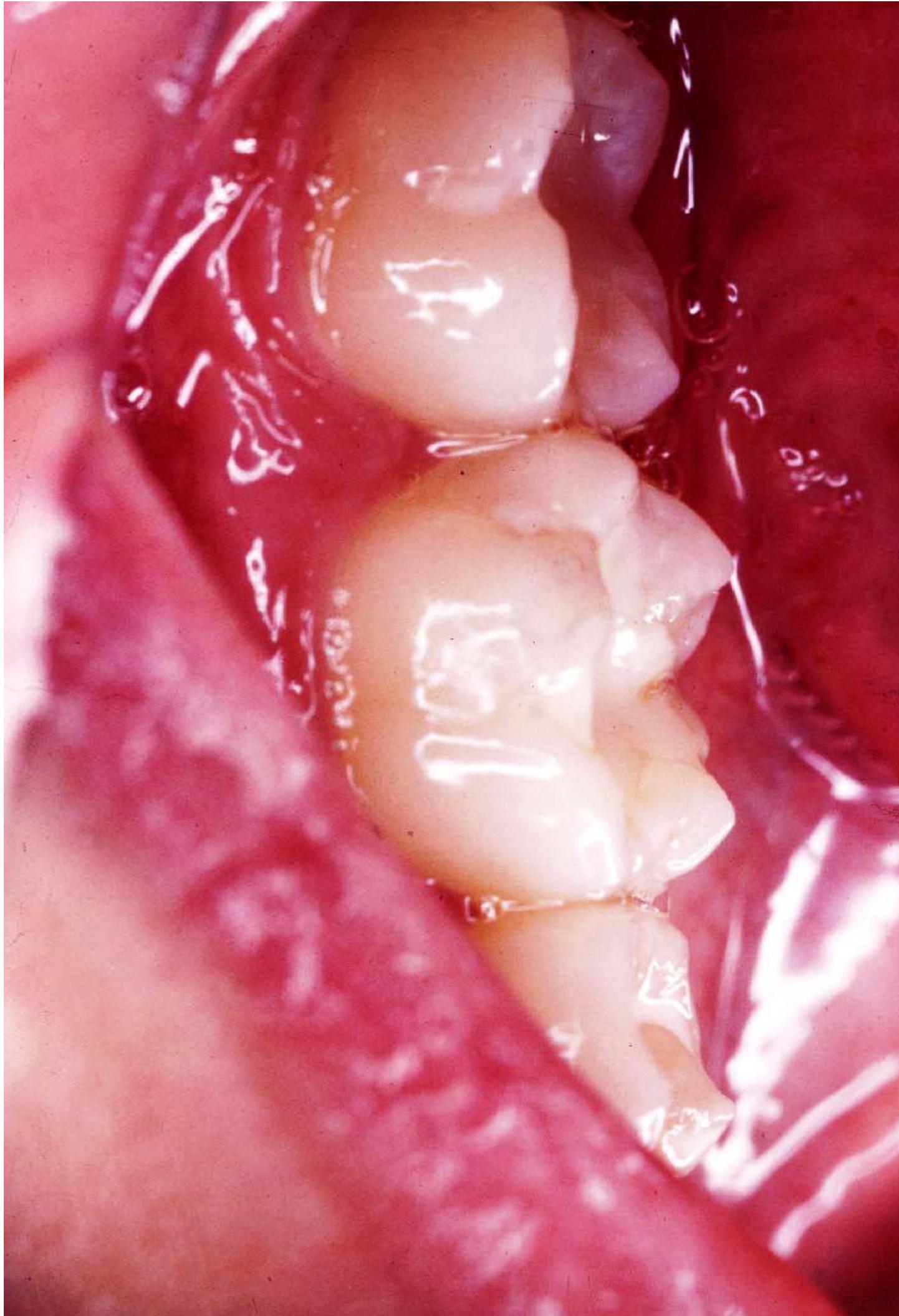














Tooth Wear

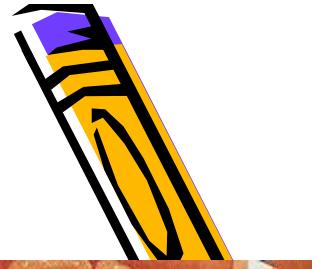
- Maybe defined as the surface loss of dental hard tissues other than by caries or trauma.

- *Erosion:*

- Loss of dental hard tissue as a result of a **chemical process** not involving **bacteria**.

- Causative agent ⇒ *acid*
 - Source of acid ⇒ *dietary*, *stomach*
 - Affected area ⇒ *palatal surface ant.*,
buccal surface post.





Tooth Wear

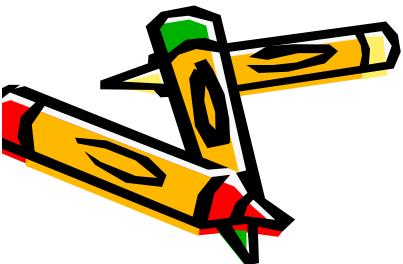
- *Attrition:*

- Mechanical wear between opposing teeth commonly occurs in combination with erosion.



- Causative agent ⇒ *abrasive diet , bruxism*

- Affected area ⇒ *occlusal or incisal surface*



Tooth Wear

- *Abrasión:*

- Wearing away of tooth substance by **mechanical means** other than by opposing teeth:

- Causative agent ⇒ *over vigorous tooth brushing*

- Affected area ⇒ *buccally at cervical margin.*

Dish-shaped or V-shaped



Trauma

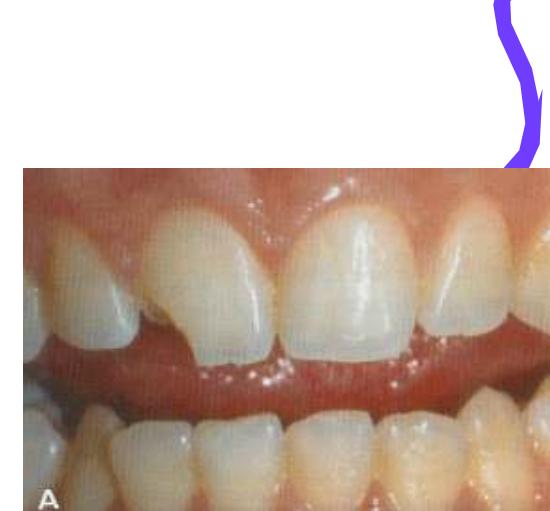
- Traumatic injuries are acquired suddenly.
- May involve the hard dental tissues and the pulp ⇒ required immediate operative management.

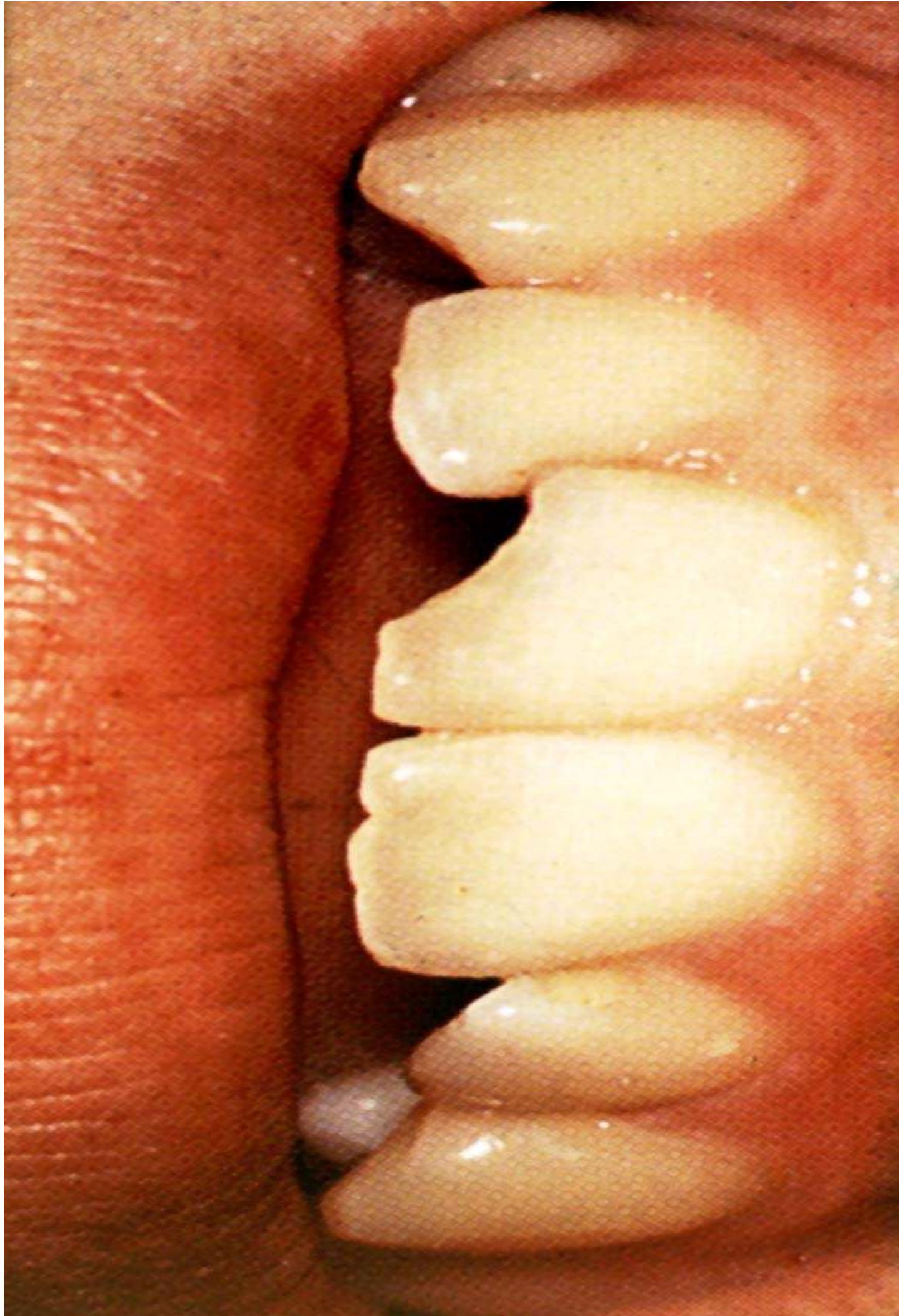
- *Local injuries:*

- Laceration of the lip, tongue, and gingival tissue

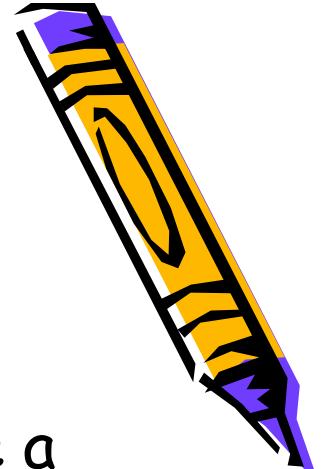
Fracture – alveolar bone, root, crown

Subluxation of a tooth





Developmental Defect



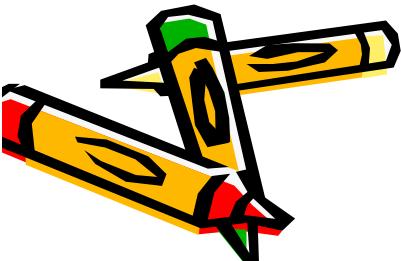
- Teeth do not always develop normally and there are a number of defects in tooth structure or shape which occur during **development** and become apparent on eruption.
- Teeth are often unsightly or prone to excessive tooth wear
⇒ *require restoration to*
Improve appearance or function
 - Protect the underlying tooth structure

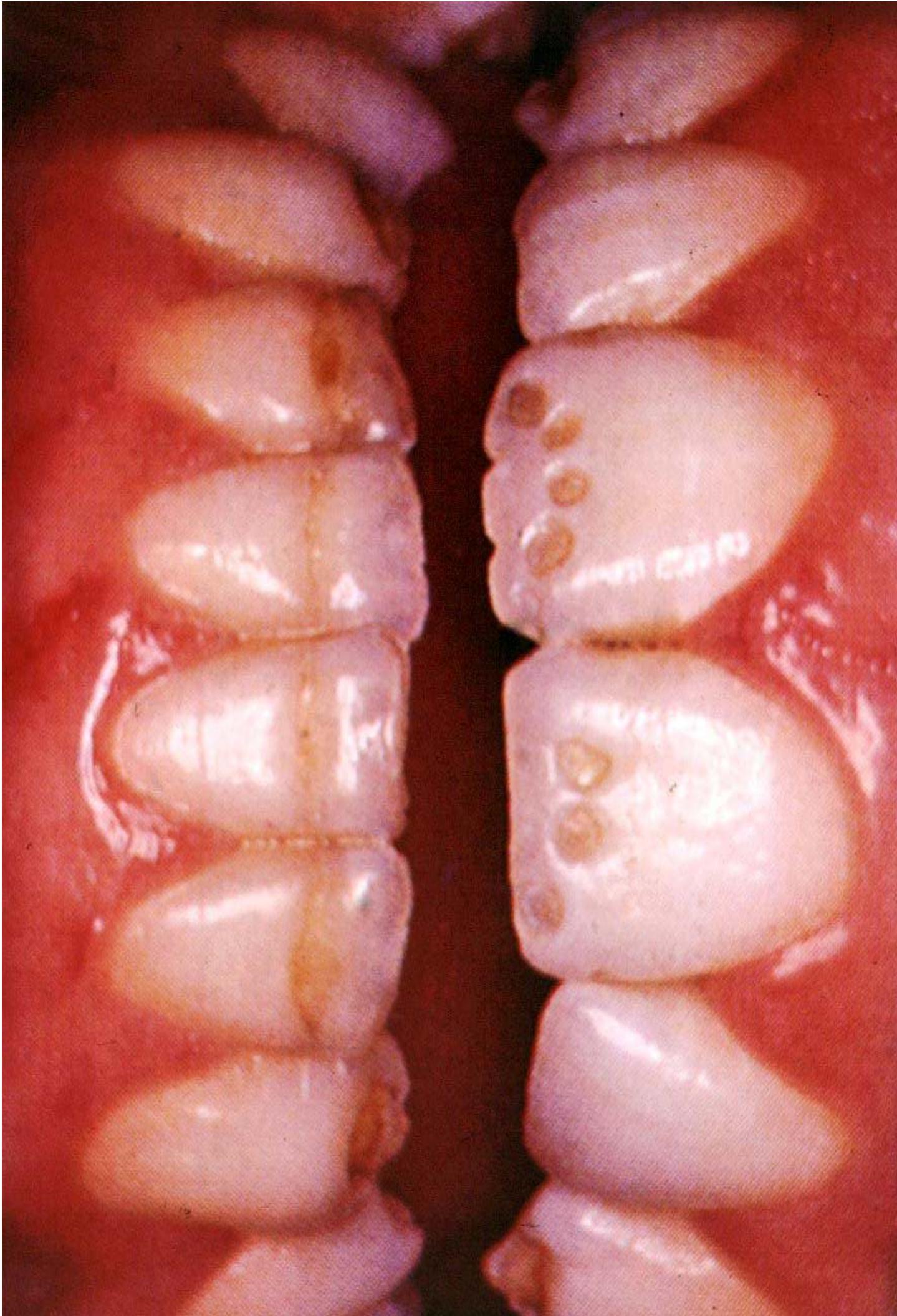
Enamel hypoplasia

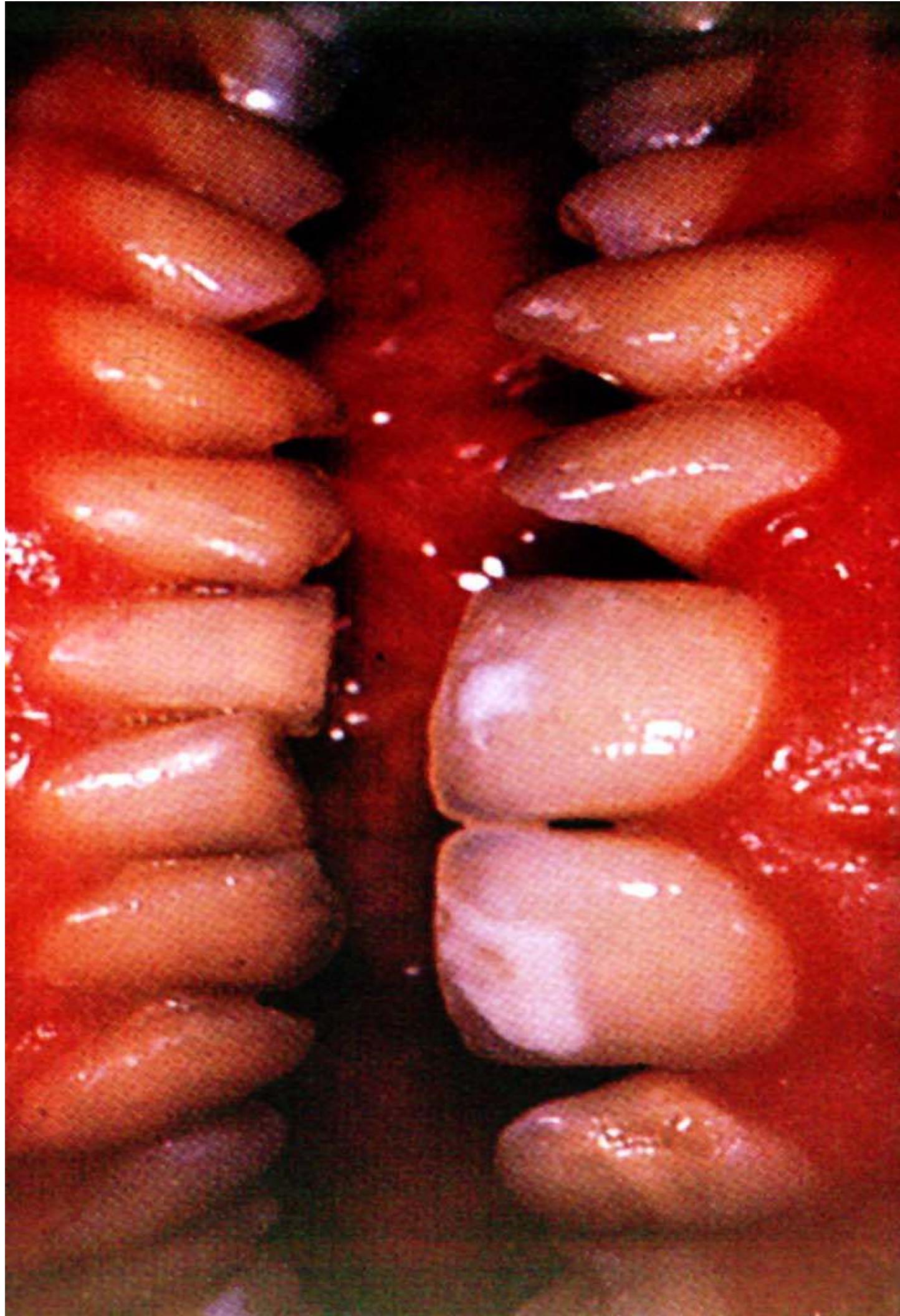
Hypo mineralized enamel

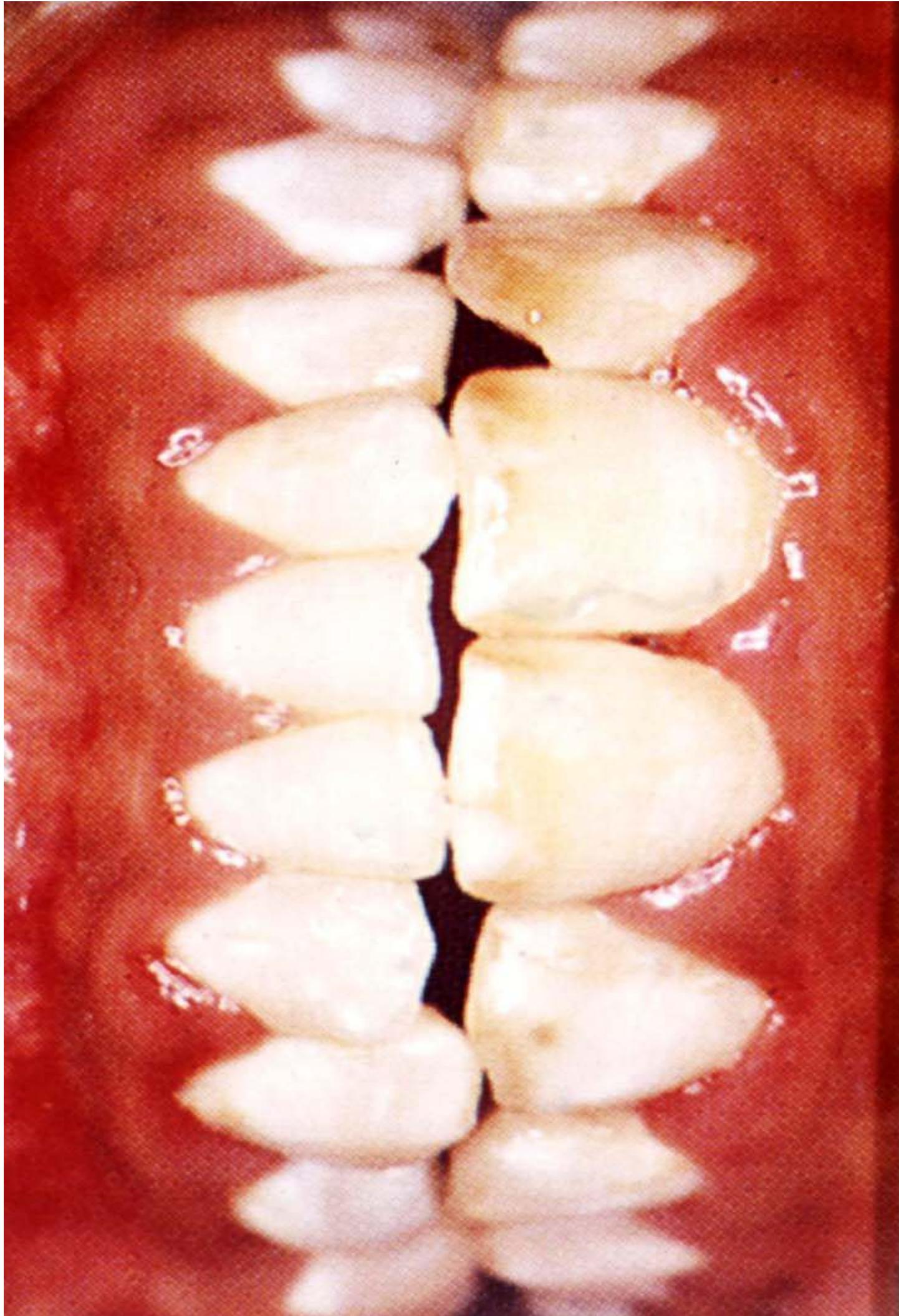
Enamel fluorosis

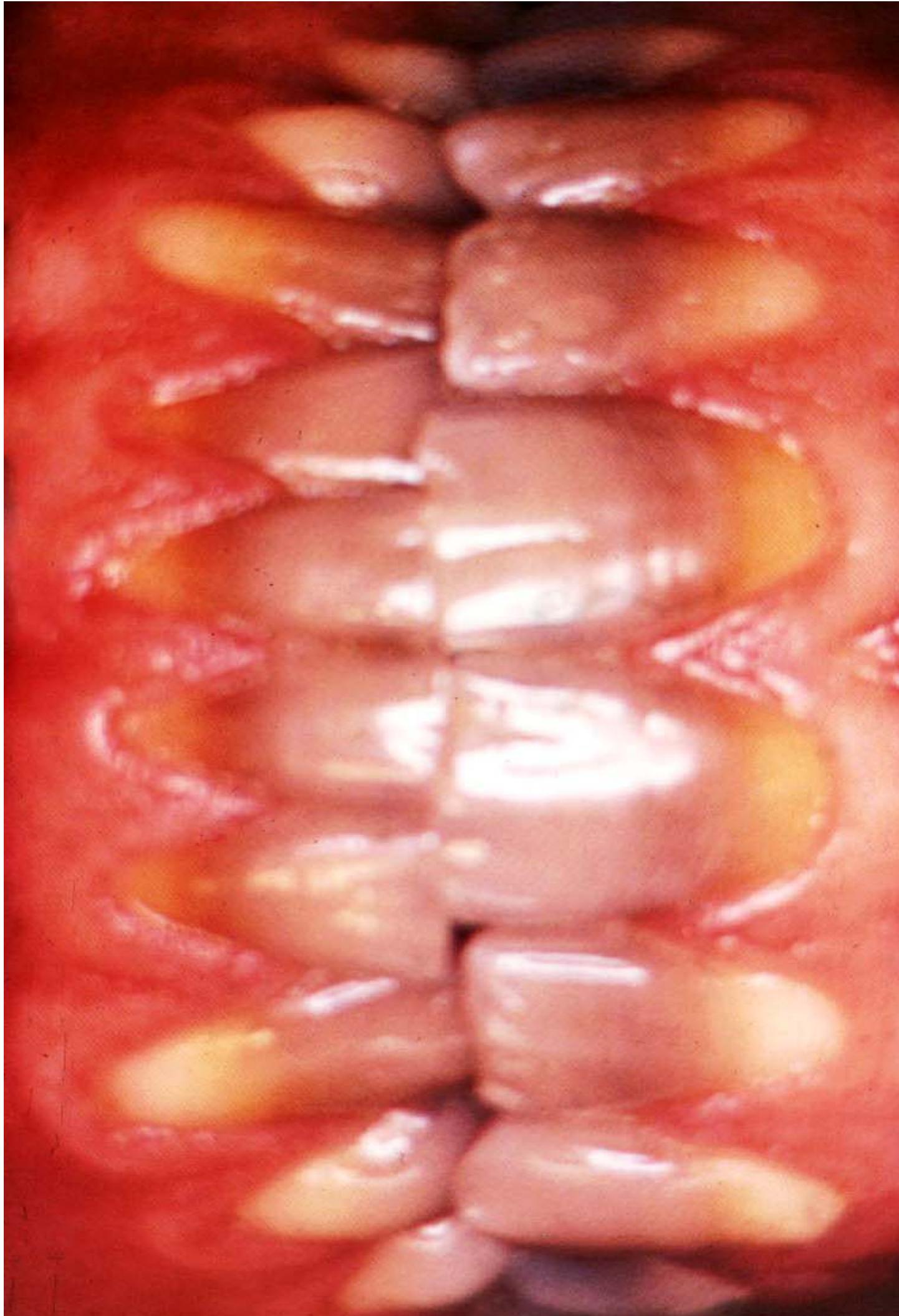
Tetracycline stain









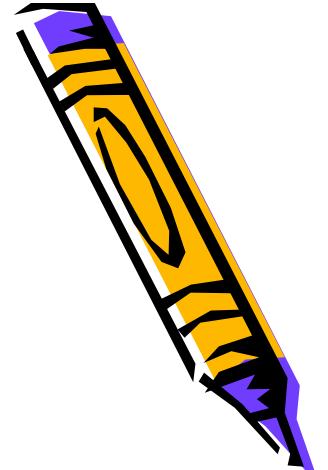
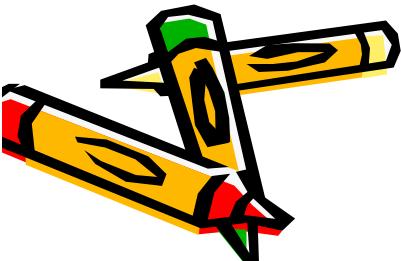


Relationship between operative dentistry and other dental specialties

When an operative procedure is performed, •
there are general guidelines when operative
treatment should occur relative to other form
of care like:

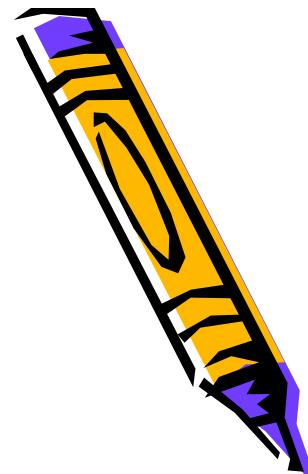
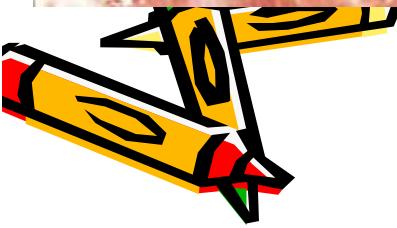
Pedodontics •
Endodontics •
Periodontics •

Orthodontics •
Oral surgeries •
Prosthodontics •



Relationship between operative dentistry and other dental specialties

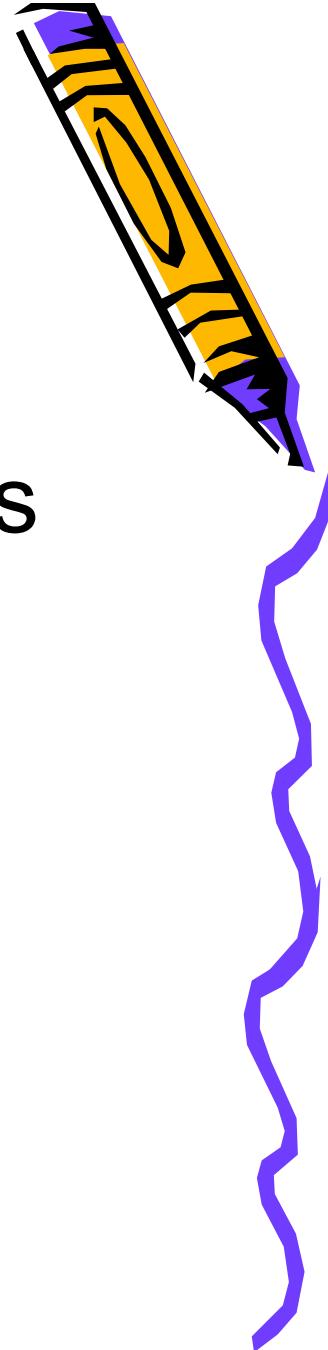
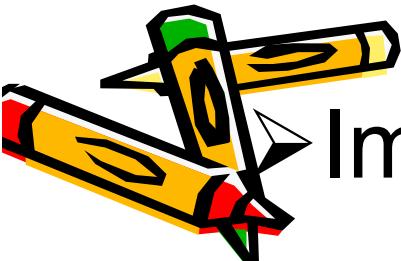
Pedodontics: restorative treatment involved.

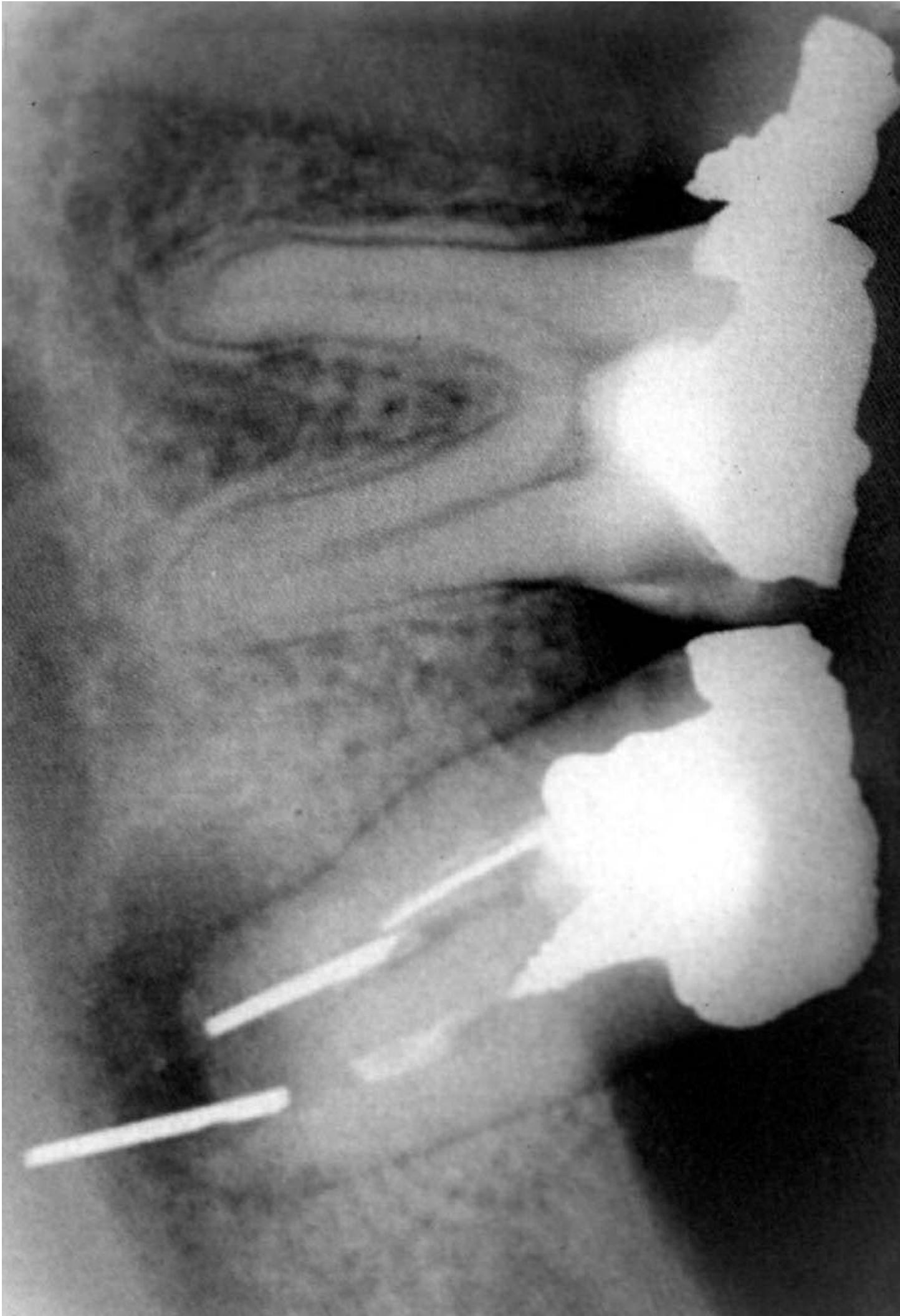


Endodontics: root canal treatment.

Pulpal / periapical area must be evaluated before operative therapy is initiated.

- Large restoration
- Cast restoration
- Improper root canal treatment

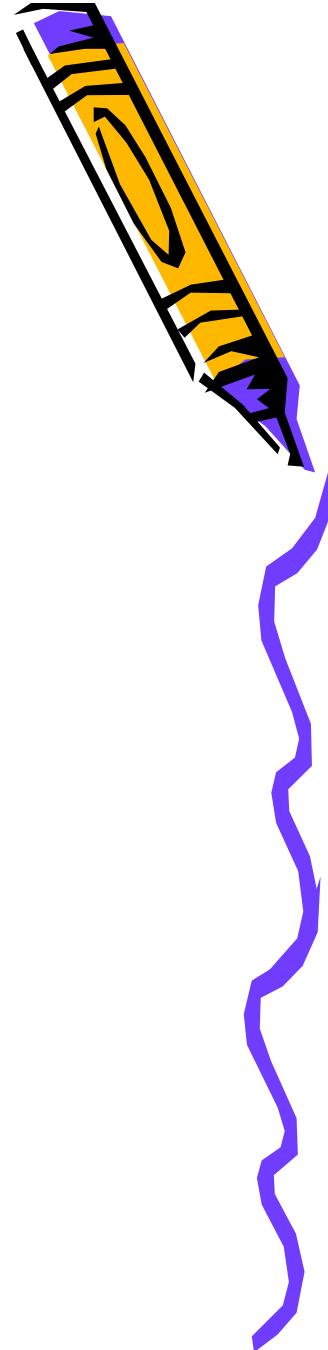
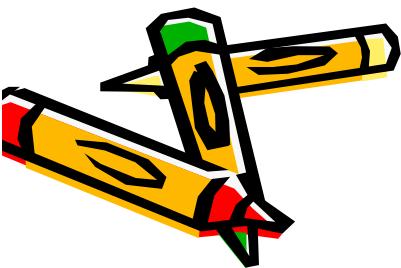




Periodontics: gingival treatment.

Generally periodontal tx. should precede operative care to create a more **desirable environment** for performing operative treatment.

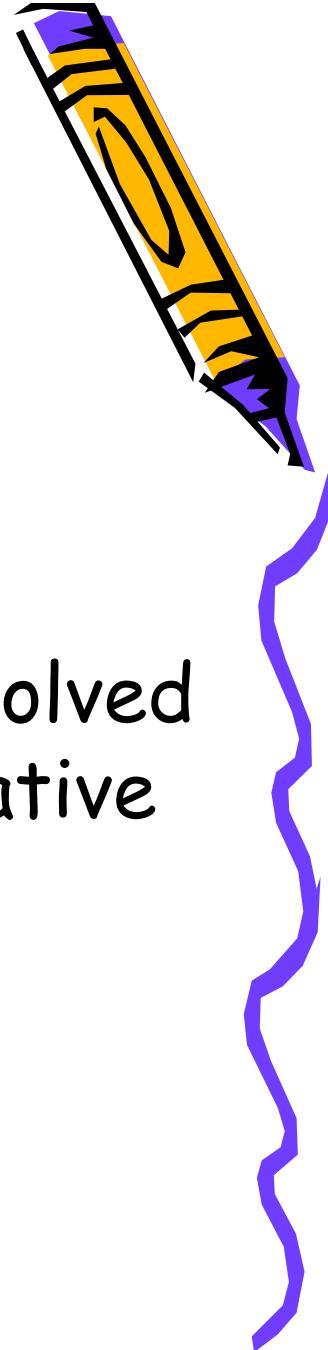
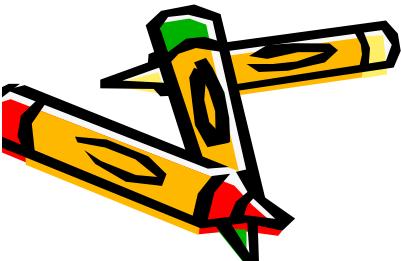
Deep caries lesion often requires caries control or root canal treatment **prior** to periodontal treatment.

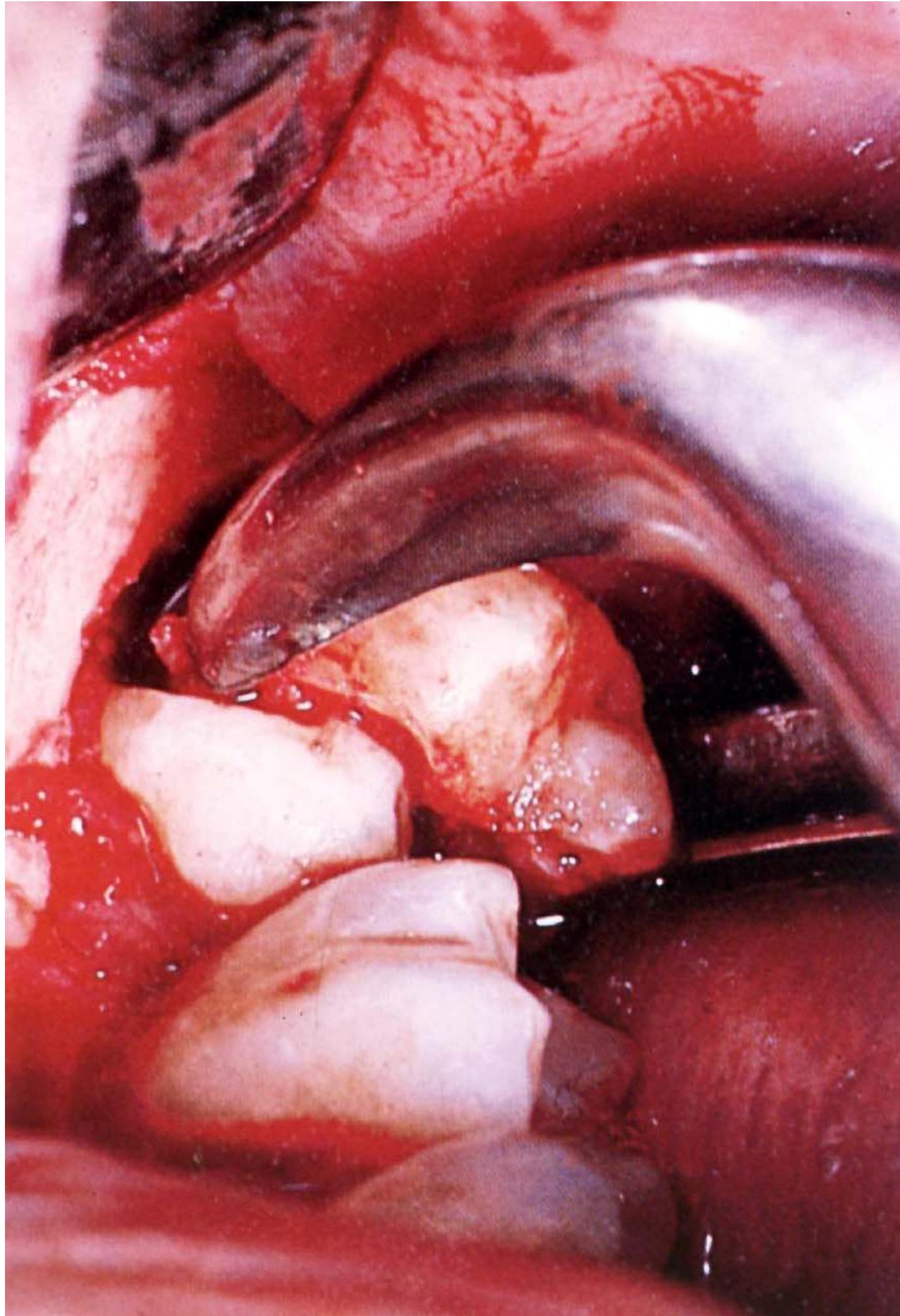


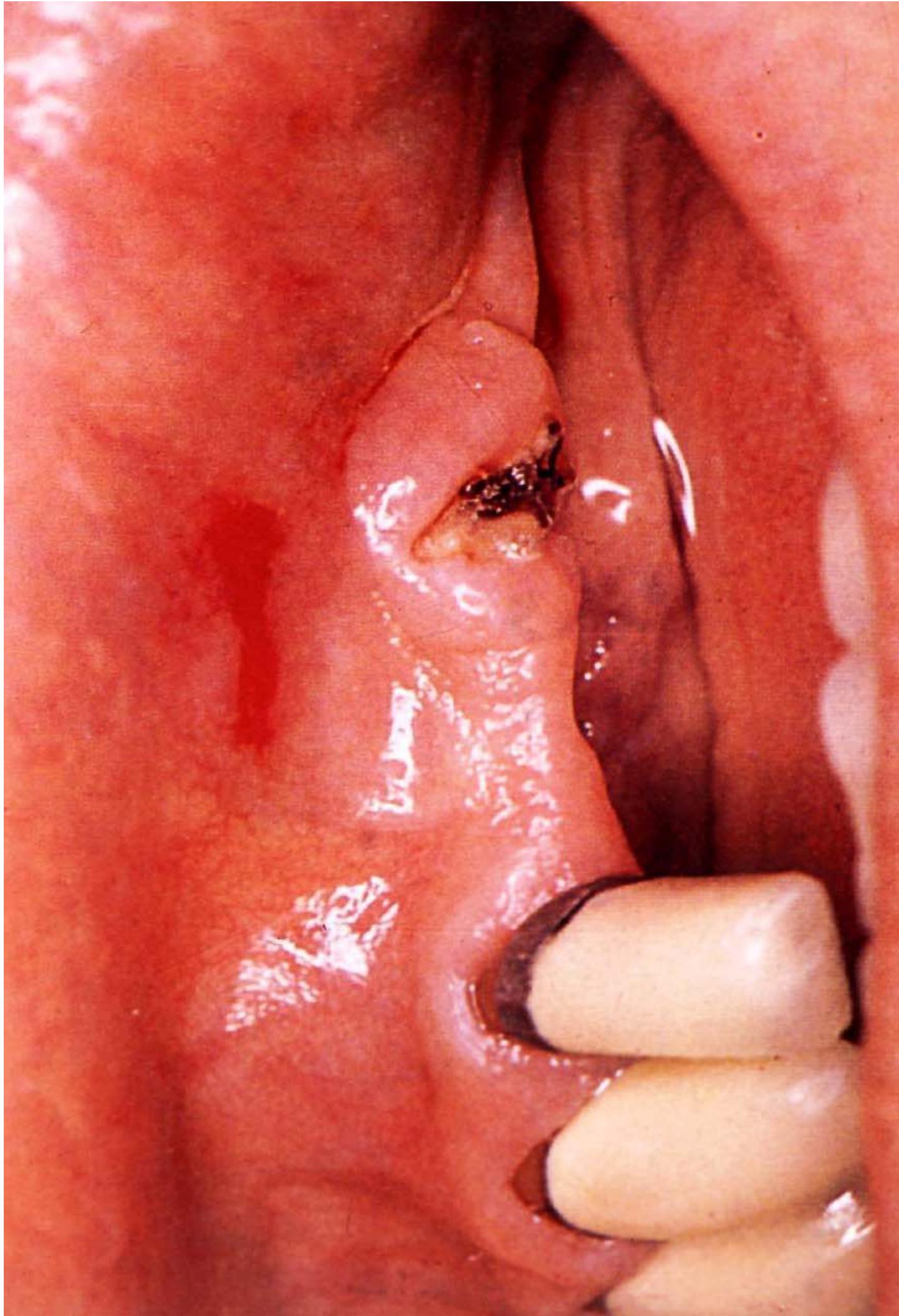


Relationship between operative dentistry and other dental specialties

- *Oral surgery*
 - Impacted, unerupted, and hopelessly involved teeth should be removed **prior** to operative treatment.



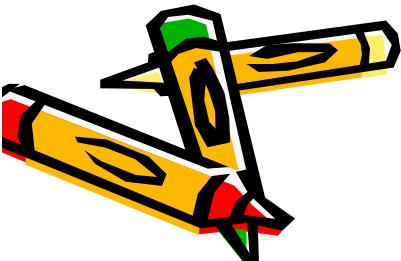




□ *Orthodontics*

Include extrusion or realignment of teeth to provide spacing, stress distribution, function and esthetics.

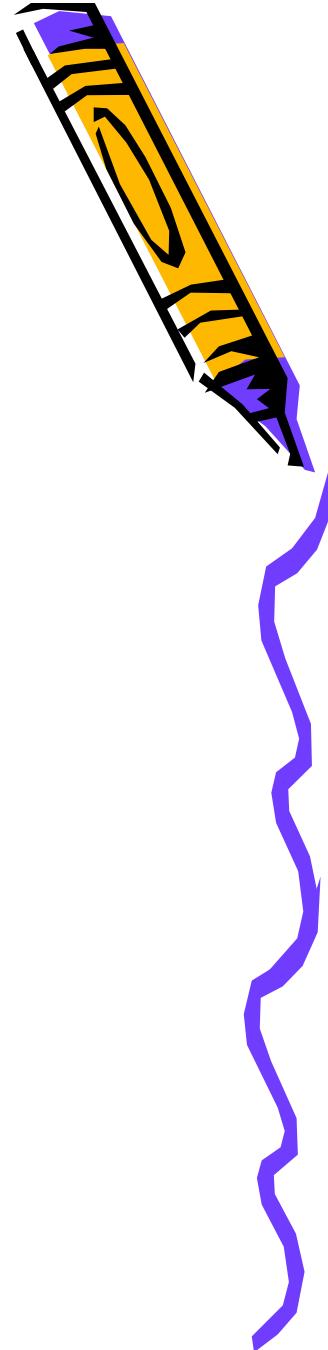
All teeth must be free of caries by operative treatment before ortho treatment is completed

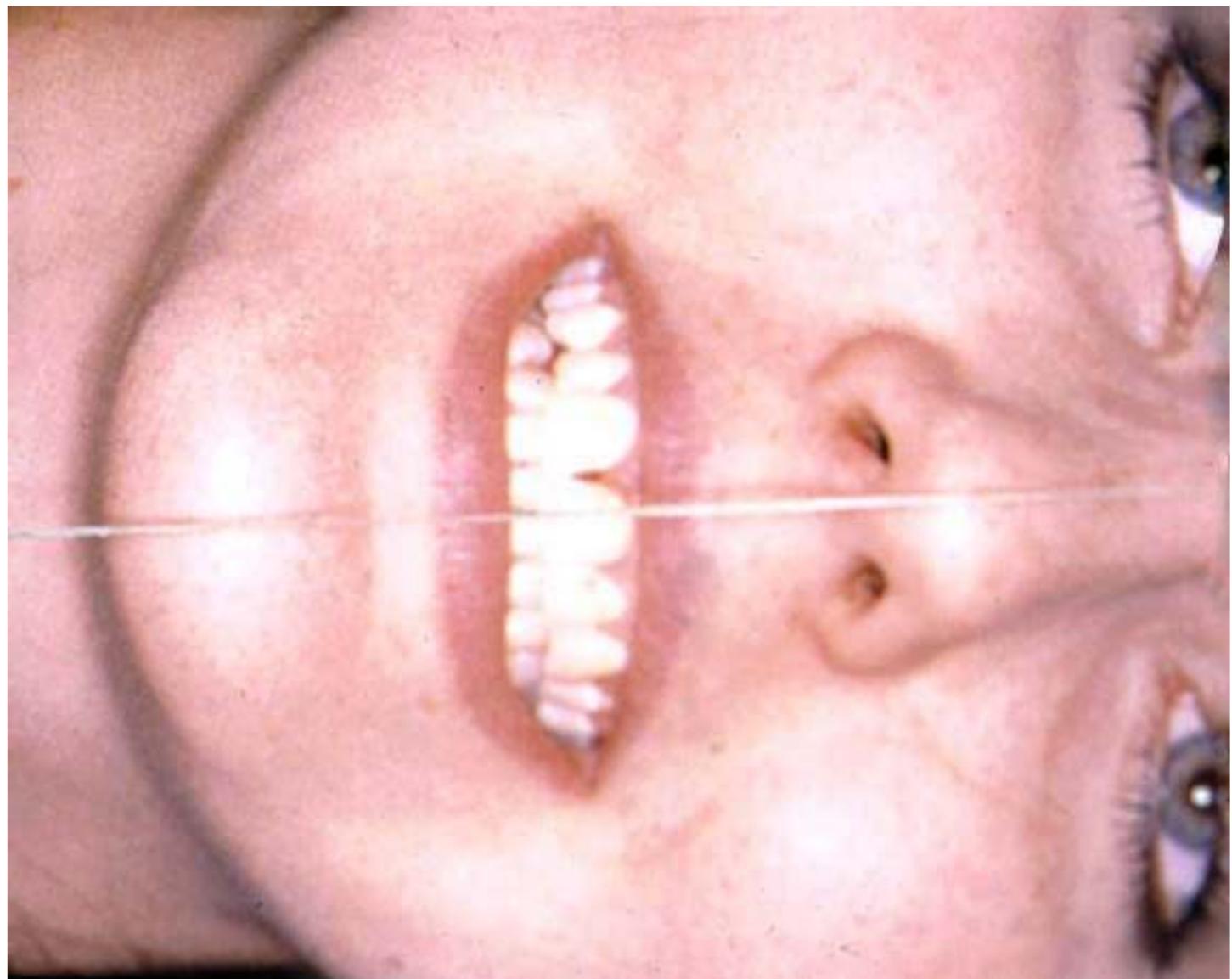


Relationship between operative dentistry and other dental specialties

□ *Occlusions*

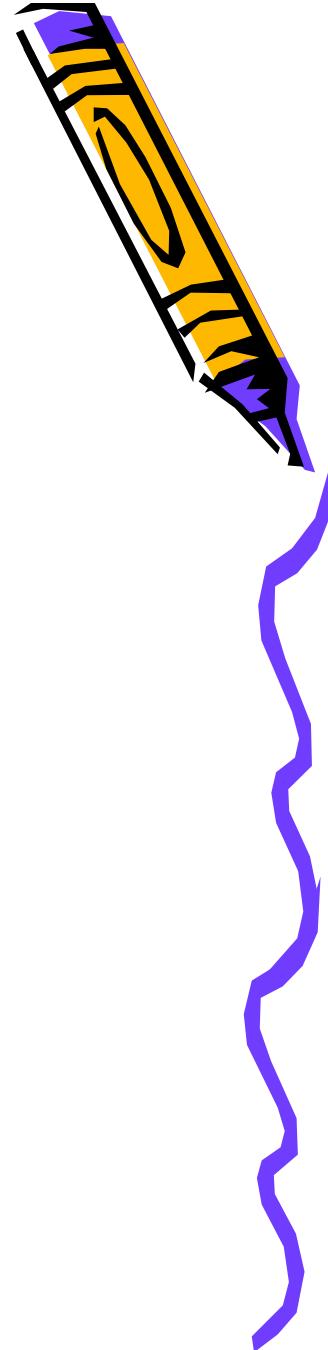
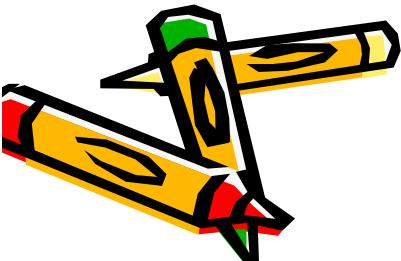
- ❖ Occlusions should be evaluated
- ❖ occlusal adjustment should occur *before* the definitive restoration treatment occur.



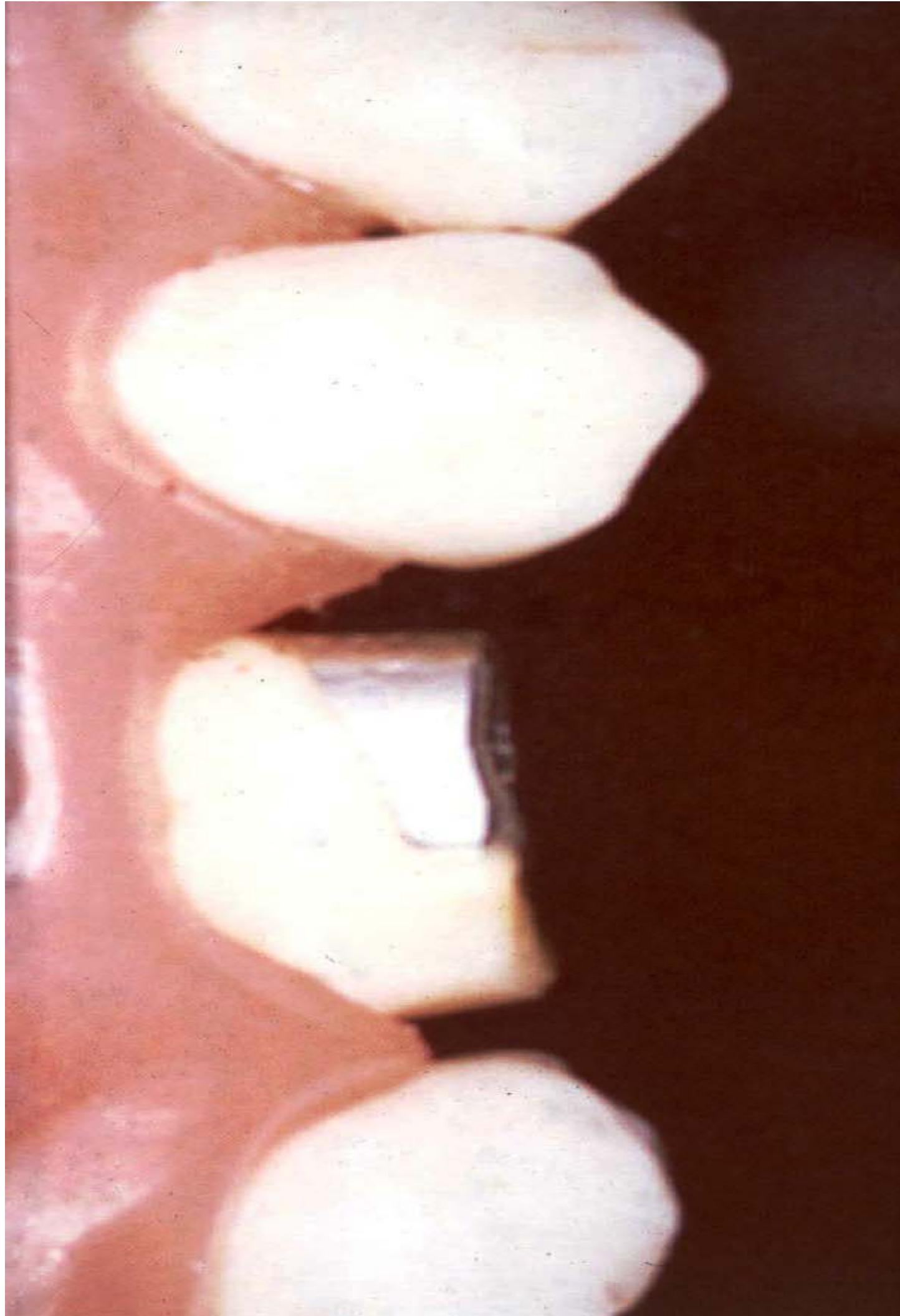


Fixed and removable prosthodontics

- ❖ A restoration must be placed as a foundation to provide improved retention for a full crown.
- ❖ Cavity preparation and appropriate restorative materials must correlate with design of the contemplated removable prosthesis











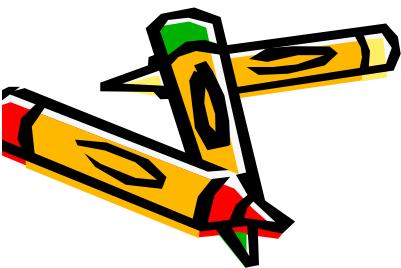
Factors Influencing Dental Practice

- Because of the dynamic status of dental practice, many developments and advancements will occur in the future.
- Advances in *technology, science and materials* will have a significant impact on the future of and demand for dental practice.
- Demographics ⇒ population ↑ and will change

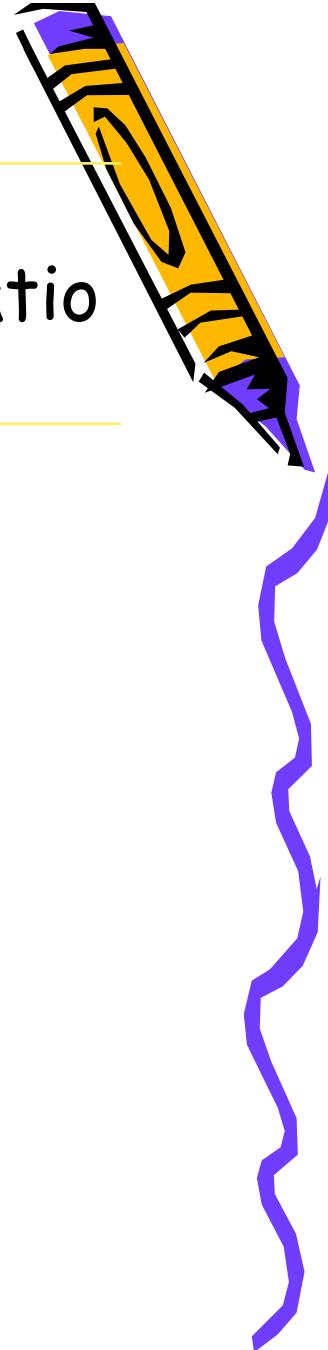
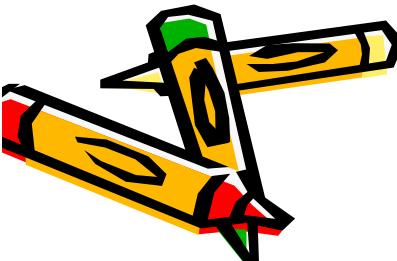
Economic factors

Dental health

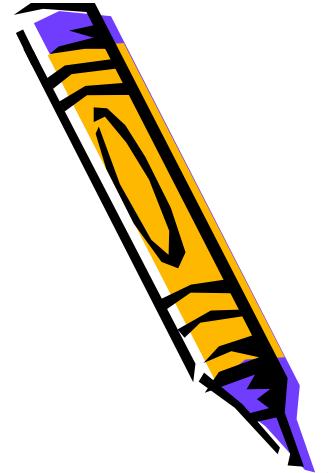
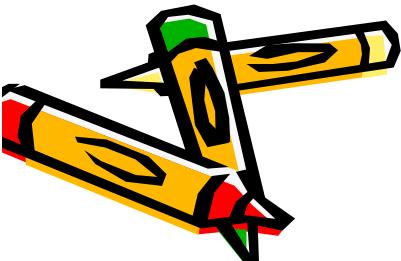
Dental manpower



Country	Dentist	Population Ratio
UK	1	3,000
SWEDEN	1	800
SAUDI ARABIA	1	8,000

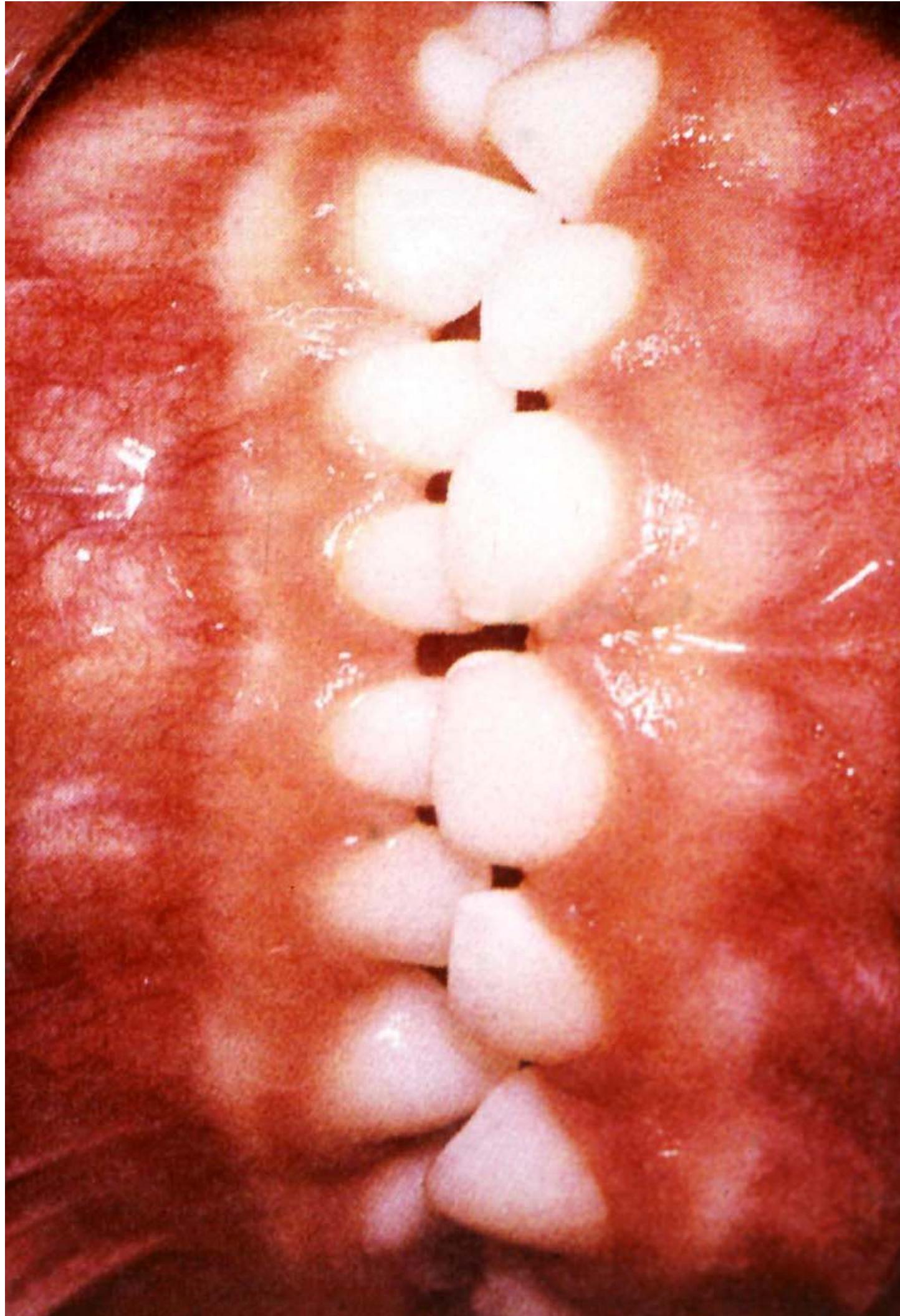


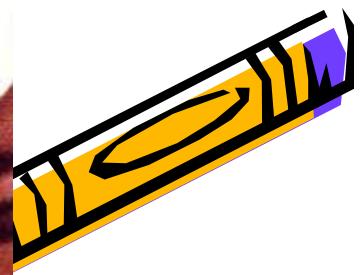
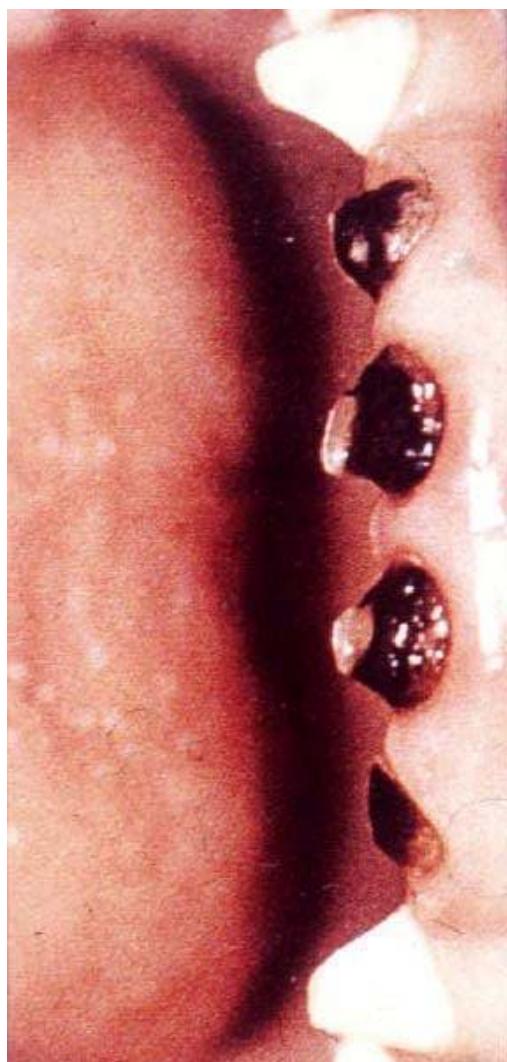
- Dentist must continue to broaden its **knowledge** on biologic basis.
- Practitioners must continually familiarize themselves with the **advances** being made.
 - Increased research activity and continued practitioner adaptability will result in **improved oral health of population** throughout the world.



**THANK
YOU**

— Best Friends —





Relationship between operative dentistry and other dental specialties

Occlusions

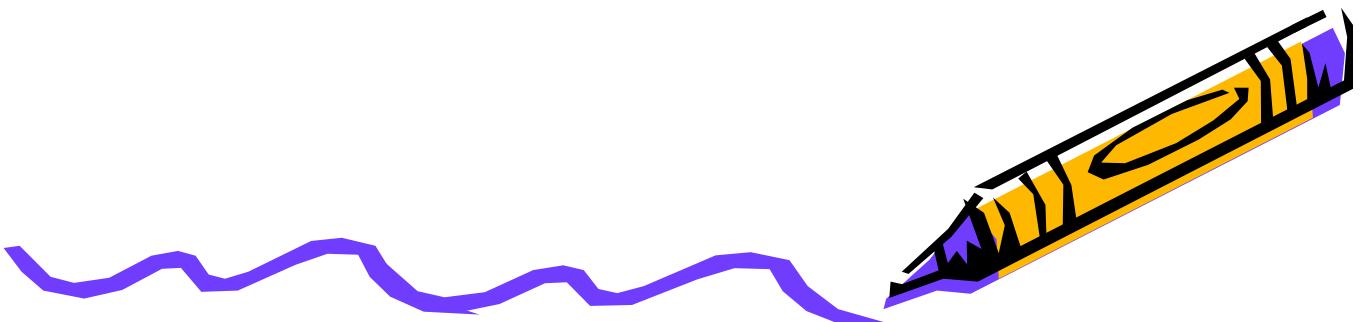
Occlusions should be evaluated; any occlusal adjustment should – occur *before* the definitive restoration treatment occur.

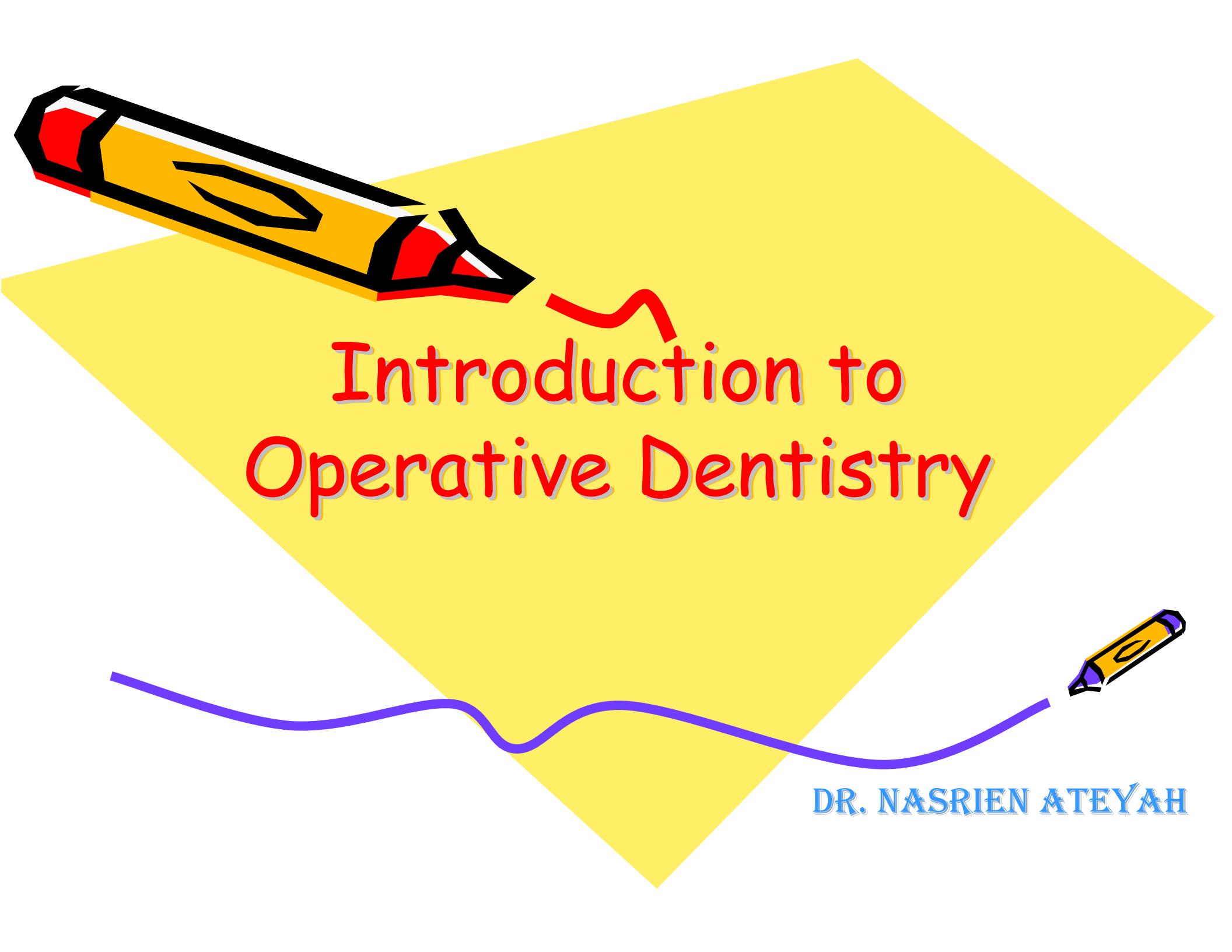
Fixed and removable prosthodontics

A restoration must be placed as a foundation to provide improved – retention for a full crown.

Cavity preparation and appropriate restorative materials must – correlate with design of the contemplated removable prosthesis.







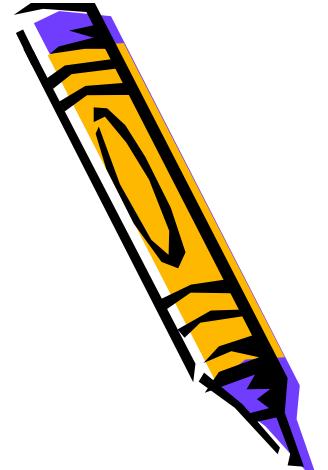
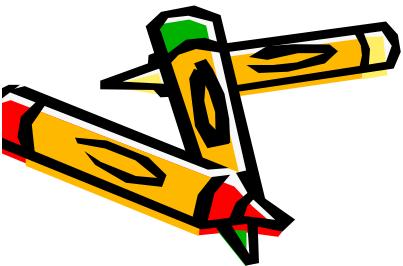
Introduction to Operative Dentistry



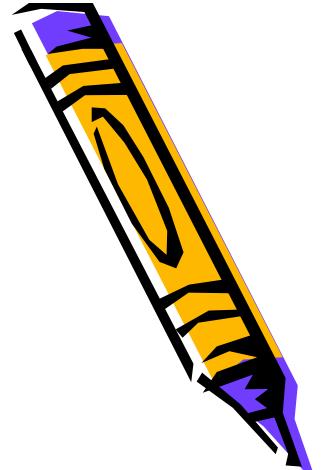
DR. NASRIEN ATEYAH

Definition

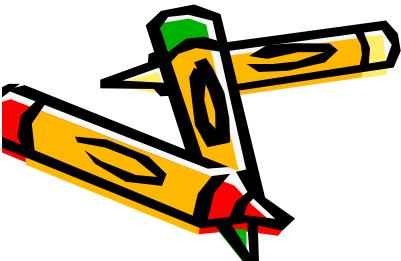
- Operative Dentistry is the art and science of the prevention, diagnosis, treatment and prognosis of defects in the enamel and dentin of individual teeth.



History and Epidemiology

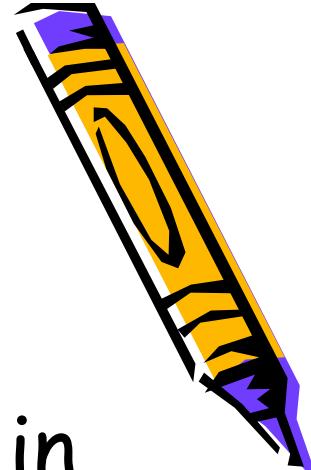
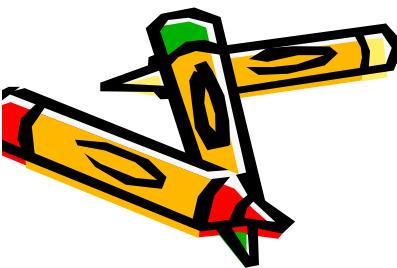


- Operative Dentistry was considered to be the **entirety** of the clinical practice of dentistry.
- Has been recognized as the **foundation** of dentistry and the base from which most other aspects of dentistry evolved.



History and Epidemiology

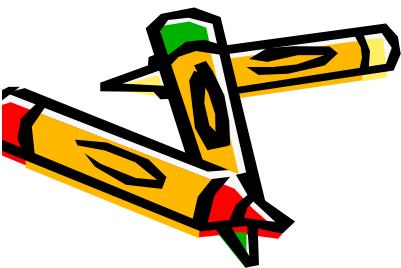
- In United States, dentistry originated in the 17th century when several barbers were sent from England.
 - The practice of these early dentists consisted mainly of tooth extraction and practice of dentistry during the founding year was not based on scientific knowledge.



History and Epidemiology

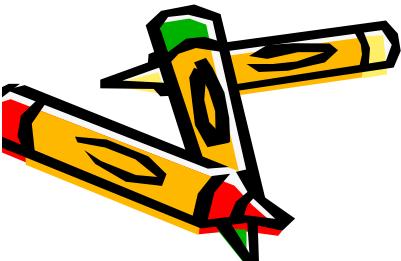
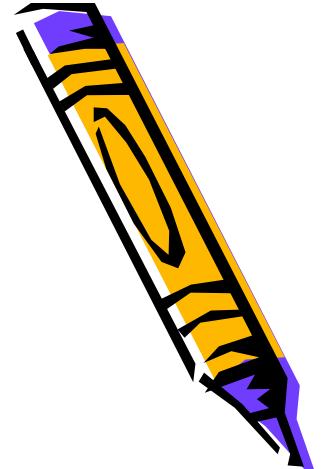


- Baltimore College of Dental Surgery in 1840 ⇒ dental education
- Harvard University in 1867 ⇒ dental program
- In France, Louis Pasteur discovered the role of microorganisms in disease ⇒ have a significant impact on the developing dental + medical profession.



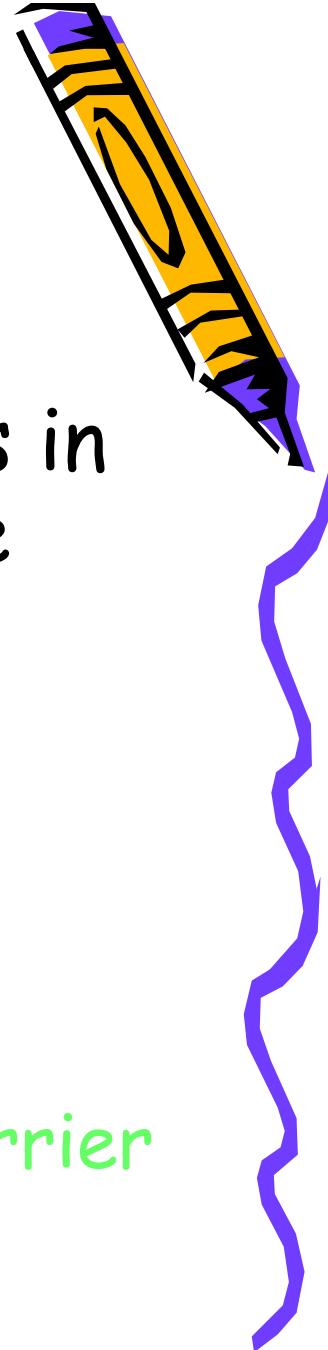
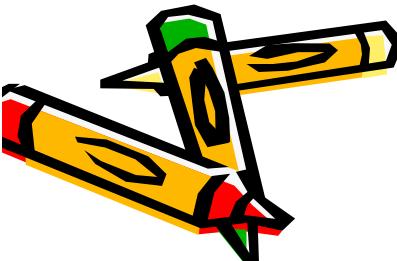
History and Epidemiology

- In United States, G.V. Black became the foundation of the dental professions ⇒ related the clinical practice of dentistry to a scientific basis.
 - The scientific foundation for operative dentistry was further expanded by Black's son, Arthur Black.

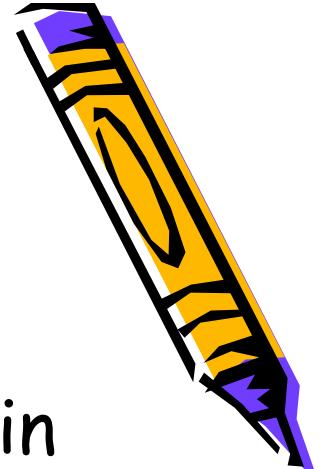


History and Epidemiology

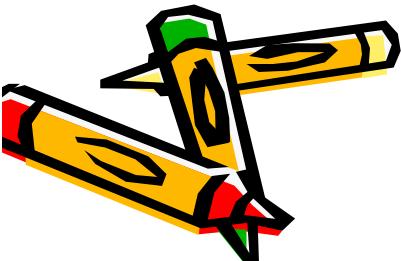
- Others made significant contributions in the early development of Operative Dentistry:
 - Charles E. Woodbury
 - E.K. Wedelstaedt
 - Waldon I. Ferrier
 - George Hollenback

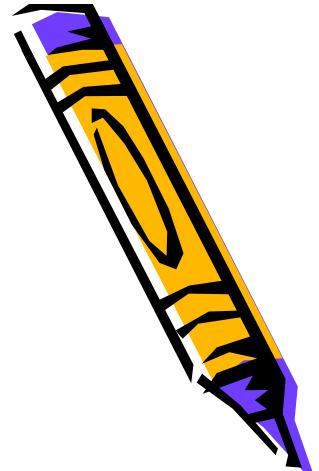


History and Epidemiology



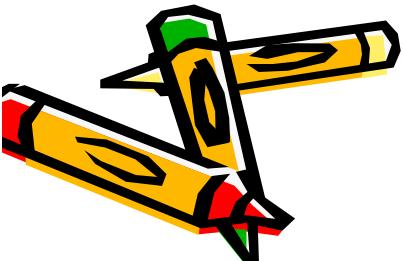
- Operative Dentistry plays an important role in enhancing dental health and new branched into dental specialities.
- Today, O.D. continues to be a **most active component** of most dental practice.
- Epidemiologically, demand for O.D. will not ↓ in the foreseeable future.





Goal of Dental Sciences

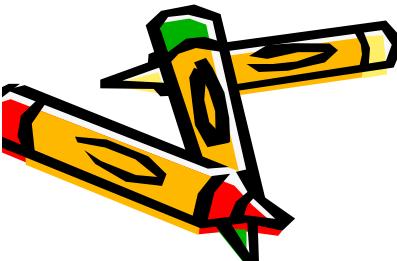
- Elimination of disease and restoration of oral **health**, **form** and **function**.



Function and Purpose



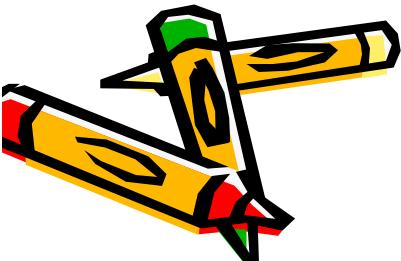
- An understanding and appreciation for infection control.
- Examination not only the affected tooth but also the oral and systemic health of the patient.
- A diagnosis of the dental problem and must be correlated with other bodily tissues.
- A treatment plan that has a potential to return the affected area to a state of health and function.

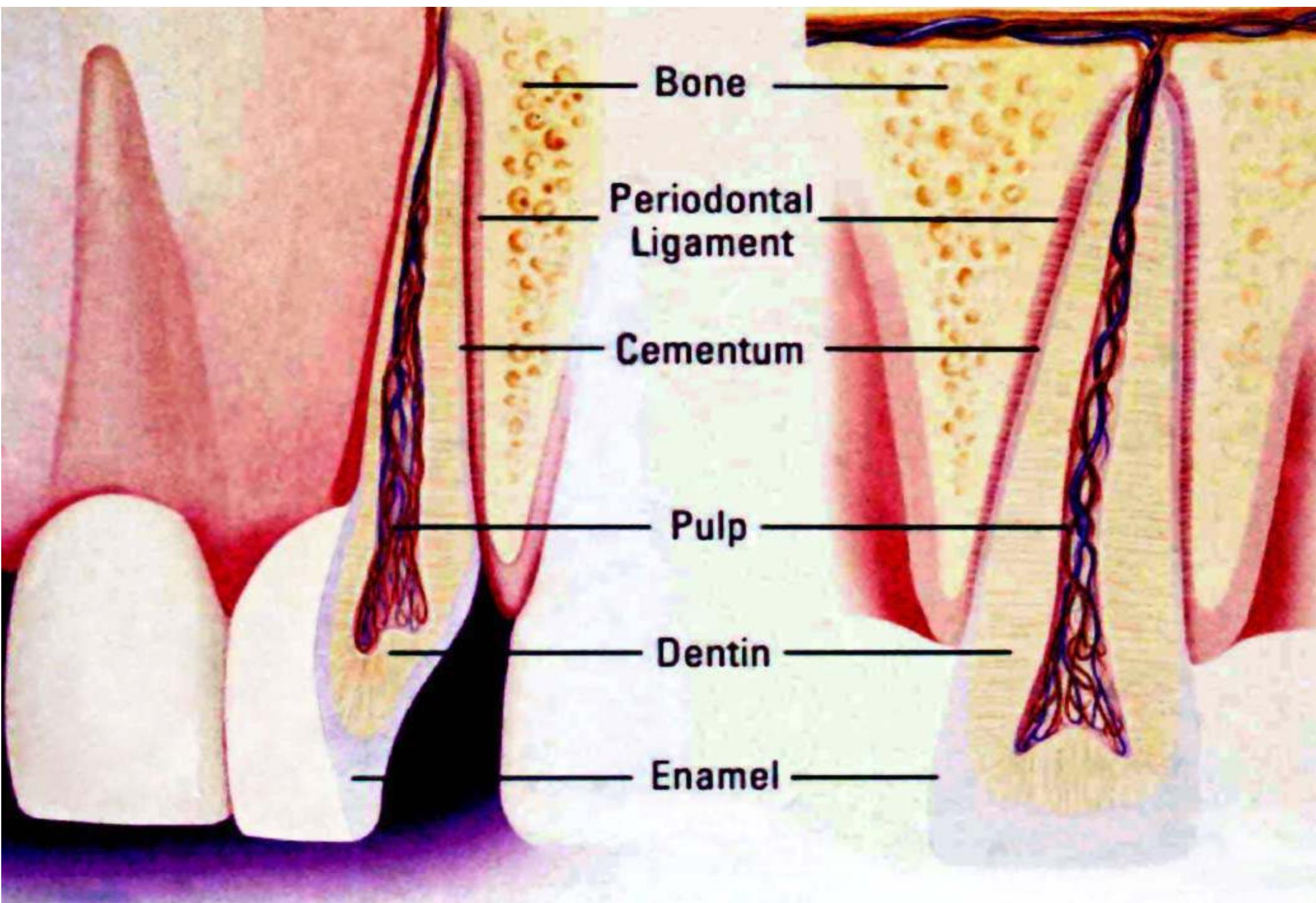


Function and Purpose



- An understanding of **material** to be used to restore the affected area with a realization of both the material limitations and demands.
- An understanding of the **oral environment** into which the restoration will be placed.
 - To understand the biological basis and function of the various **tooth components** and **supporting tissues** although the knowledge of correct **dental anatomy**.





Purposes of Operative Dentistry

DIAGNOSIS

Proper diagnosis is vital for treatment planning.

PREVENTION

To prevent any recurrence of the causative disease and their defect.

INTERCEPTION

Preventing further loss of tooth structure by stabilizing an active disease process.

PRESERVATION

Preservation of the vitality and periodontal support of remaining tooth structure.

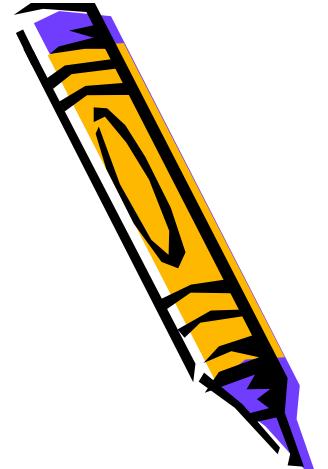
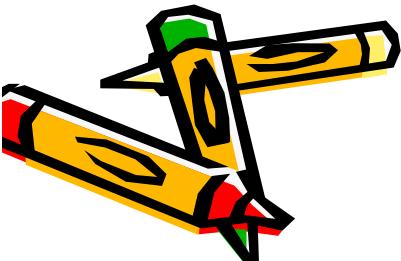
RESTORATION

Includes restoring **form, function, phonetics, and esthetics.**



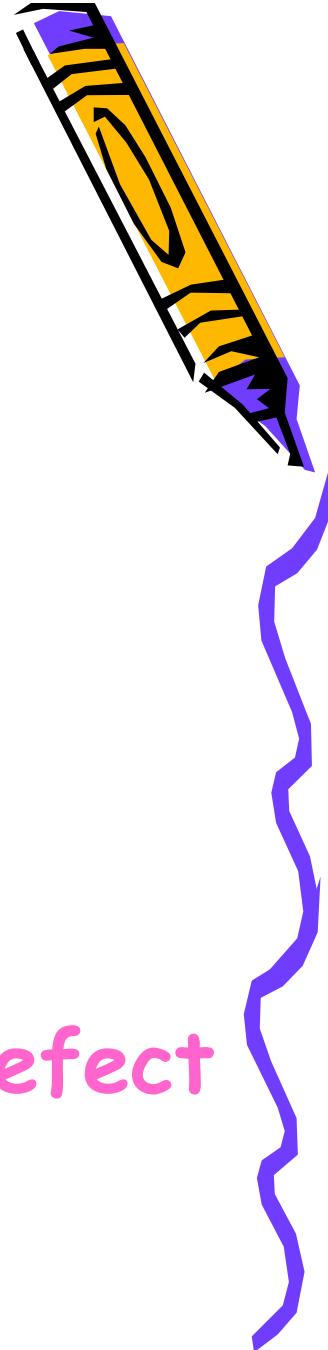
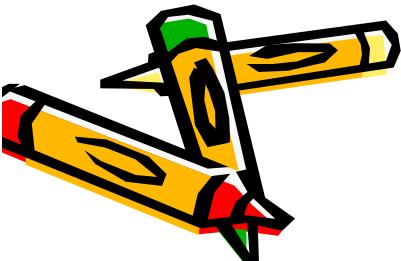
The placement of a restoration in a tooth requires the dentist to:

- Practice applied **human biology + microbiology**
- Possess highly developed **technical skills**
 - Demonstrate **artistic abilities**



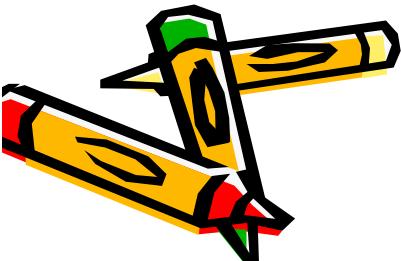
Type of Lesion in Tooth Destruction

- Dental caries
- Tooth wear
- Trauma
- Developmental defect



Dental Caries

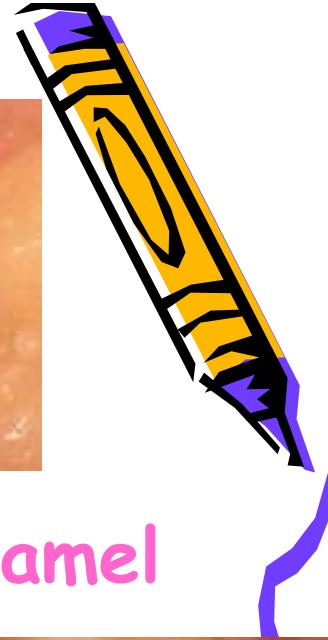
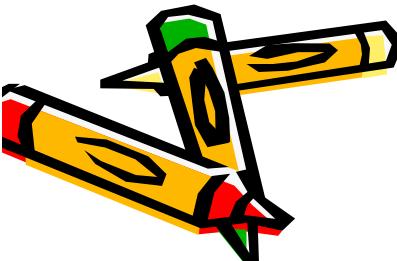
- Dental caries is an infectious microbiological disease of the teeth that results in localized **dissolution** and **destruction** of the calcified tissue, caused by the action of **microorganisms** and **fermentable carbohydrates**.

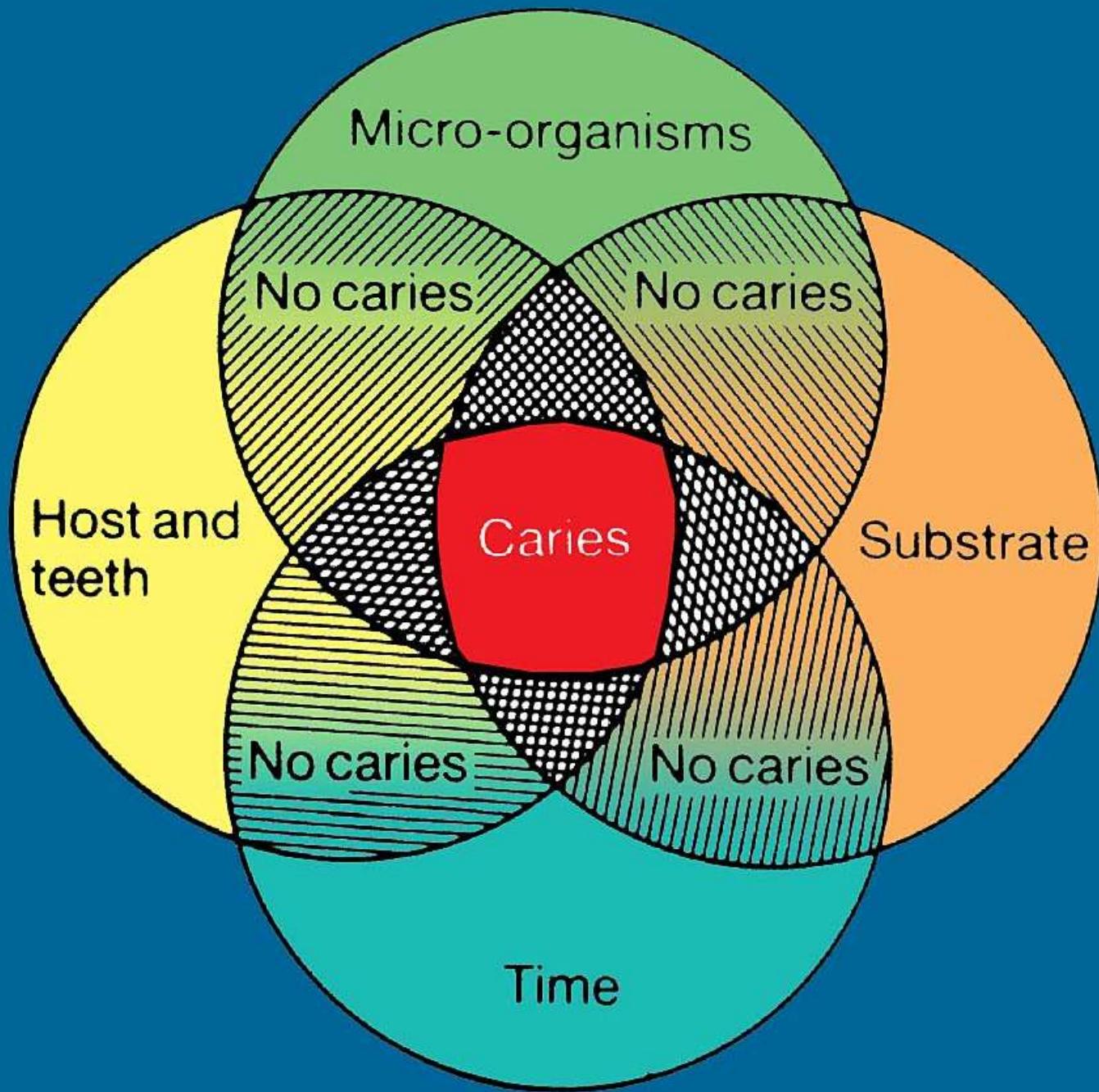


Dental Caries

Characterized by

- Demineralization of the mineral portion of **enamel** + **dentine**.
- Disintegration of their **organic material**.
- As the disease approach the pulp may result in **death of the pulp**.
- It can be arrested or prevented.





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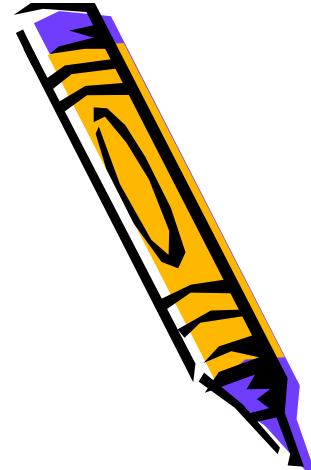
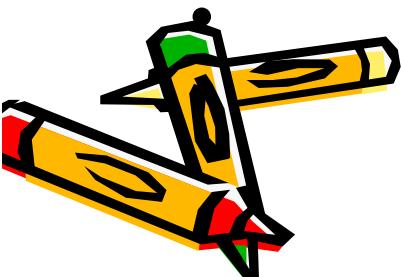


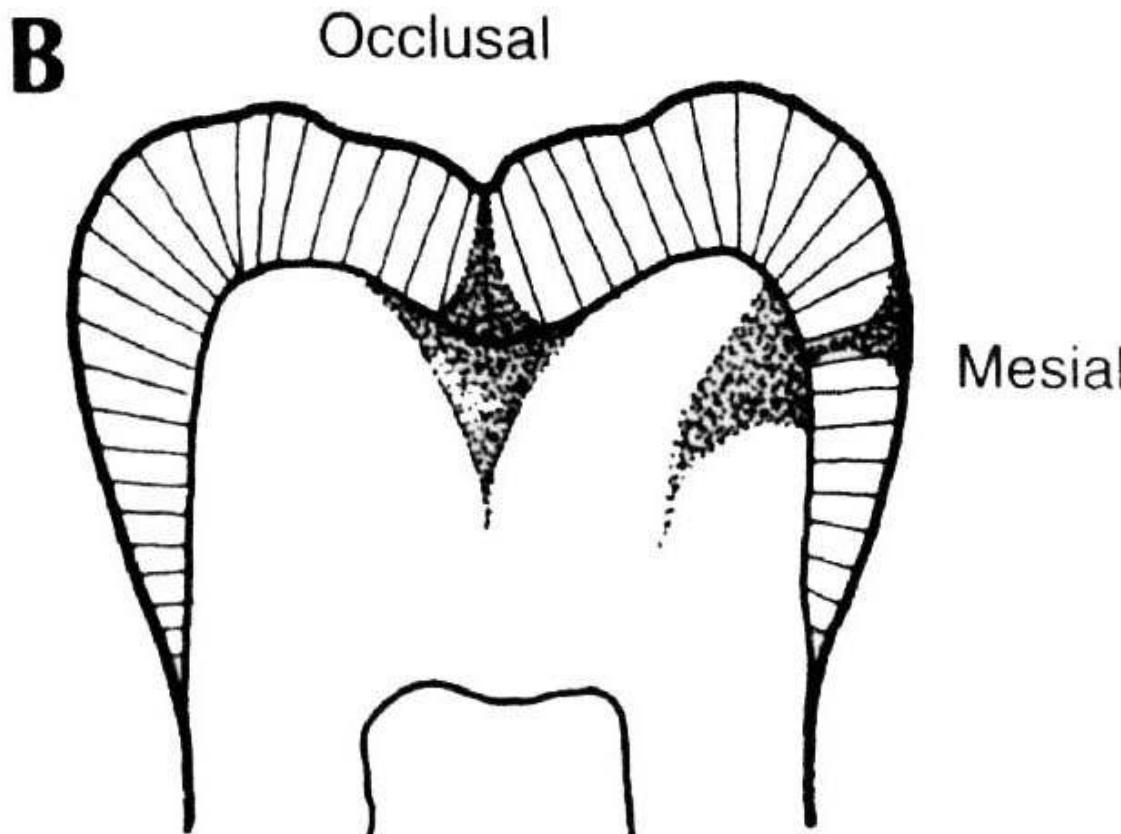
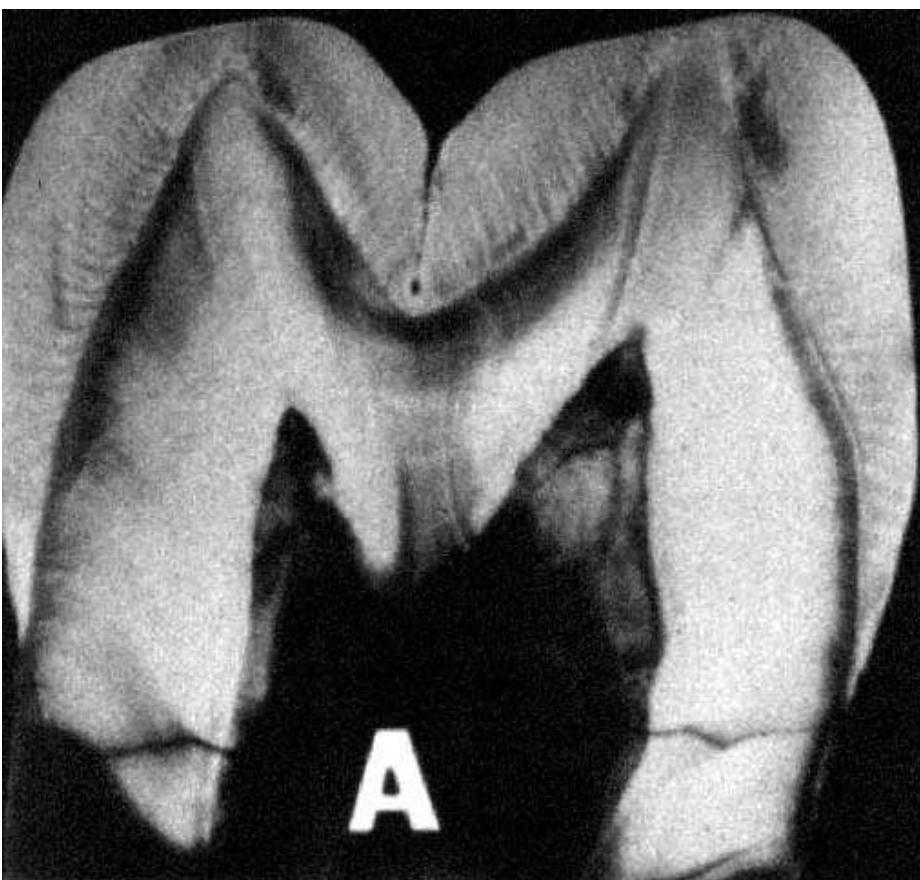
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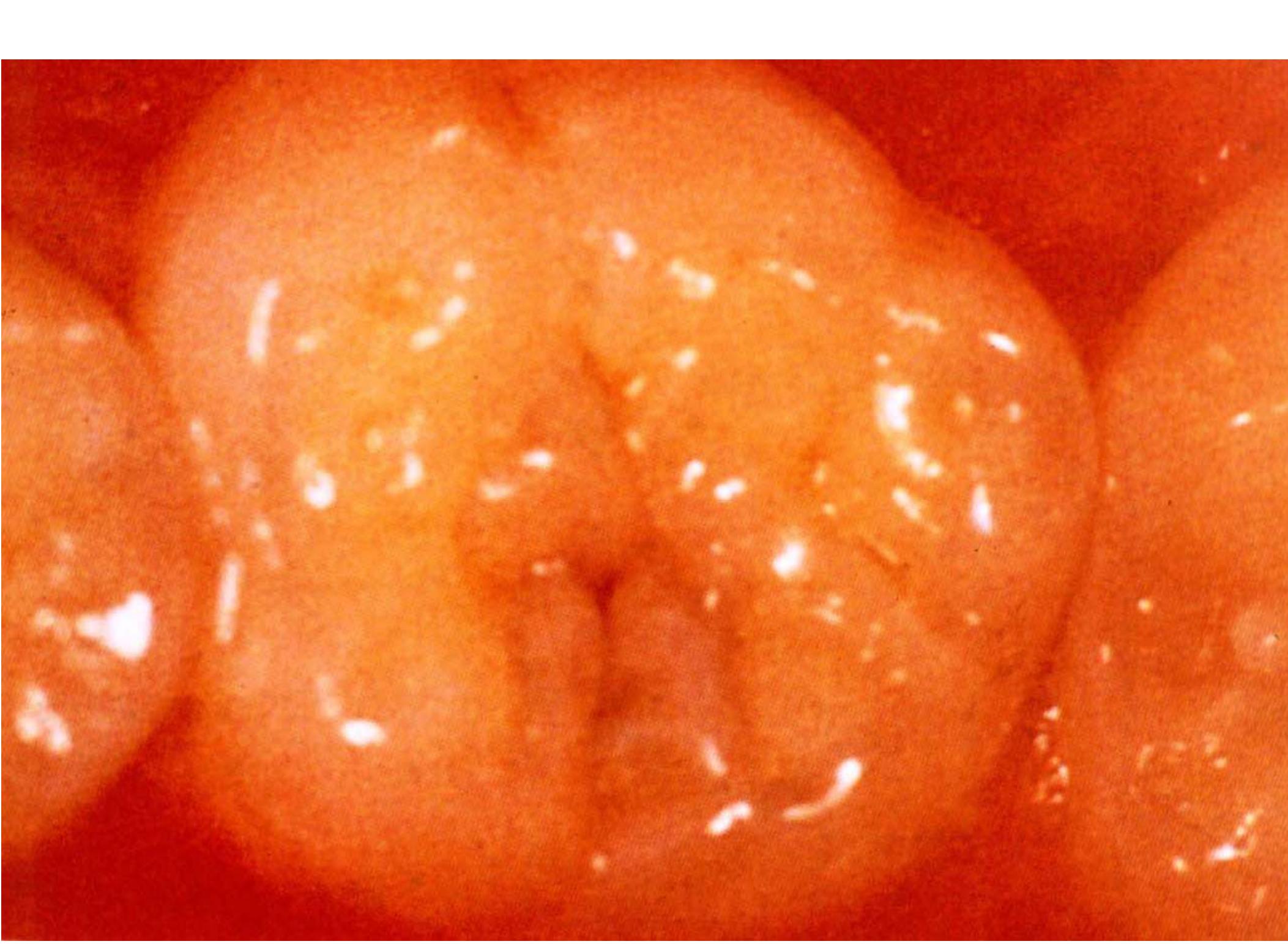


Classification of Decay

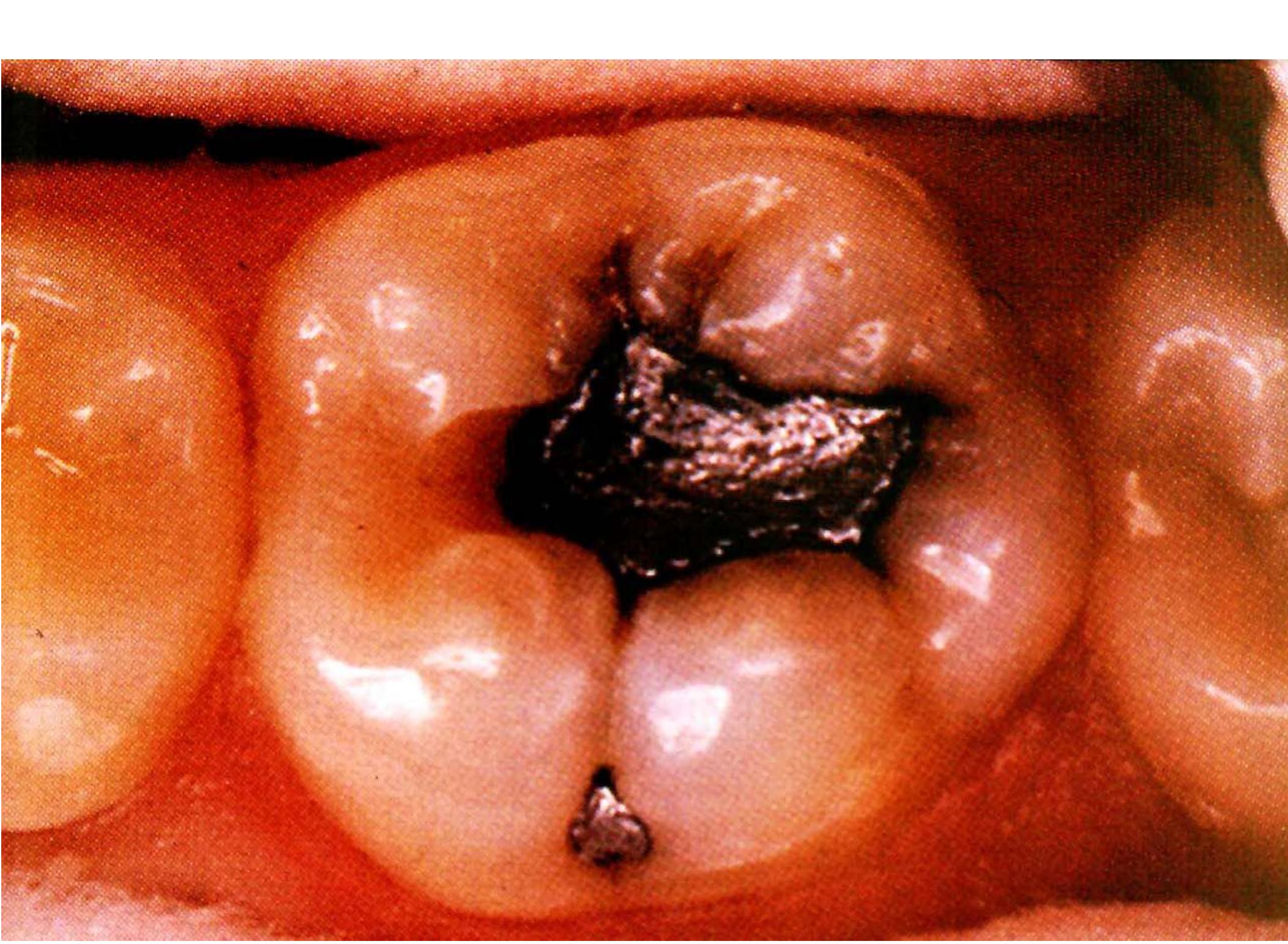
- Based on anatomy of the surface involved
- Pit and fissures carious lesions
 - *Class I* – begin in the depth of pits and fissures in enamel
 - *Occur:*
 - *Occlusal surface of post. teeth*
 - *Lingual fossa of maxillary incisors*

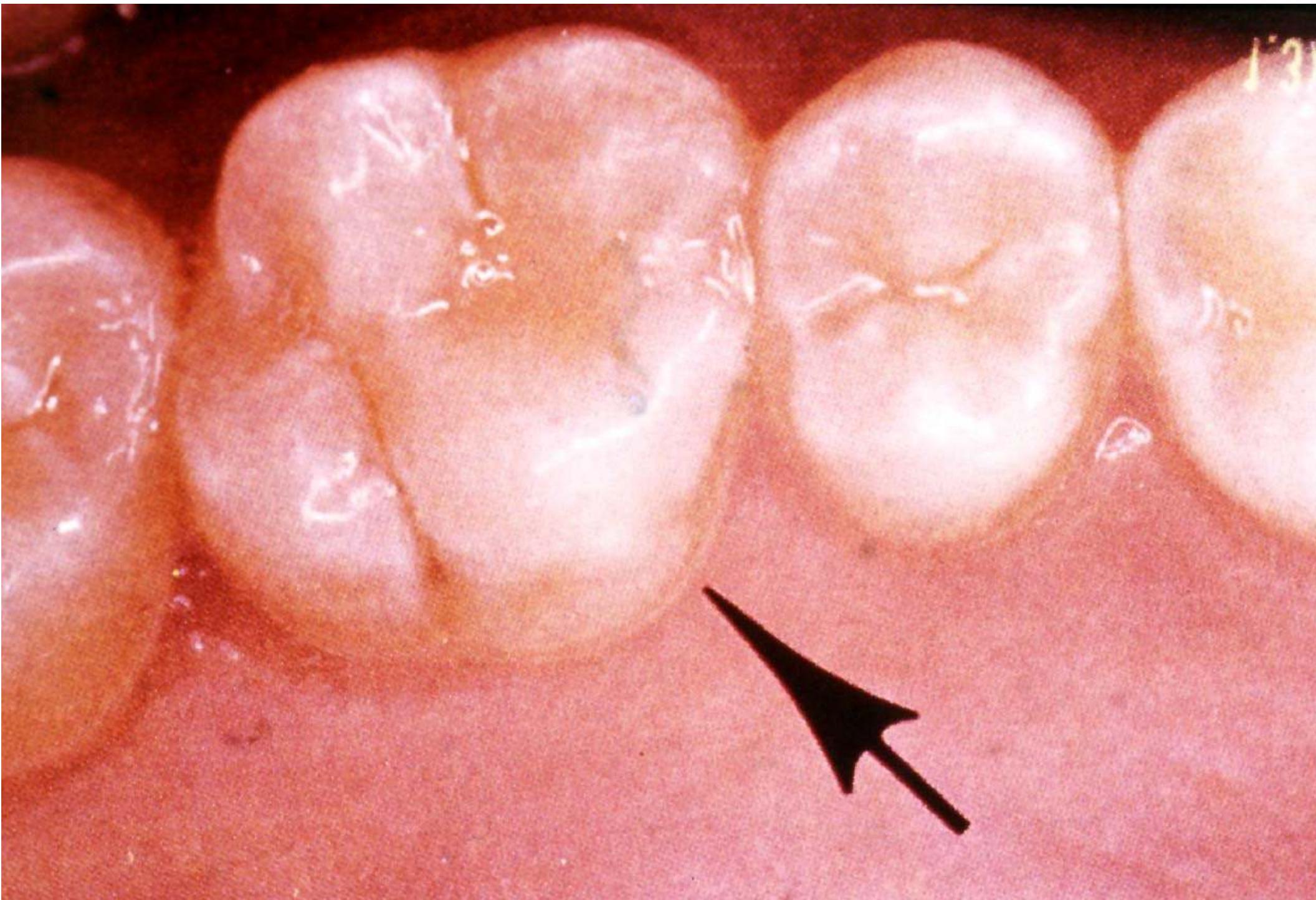










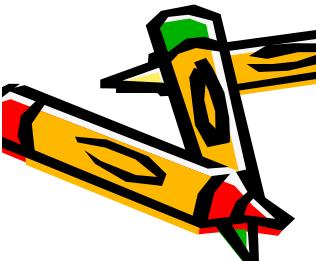
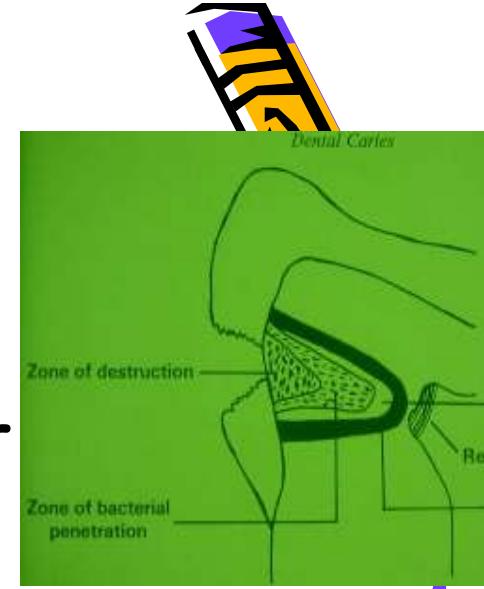


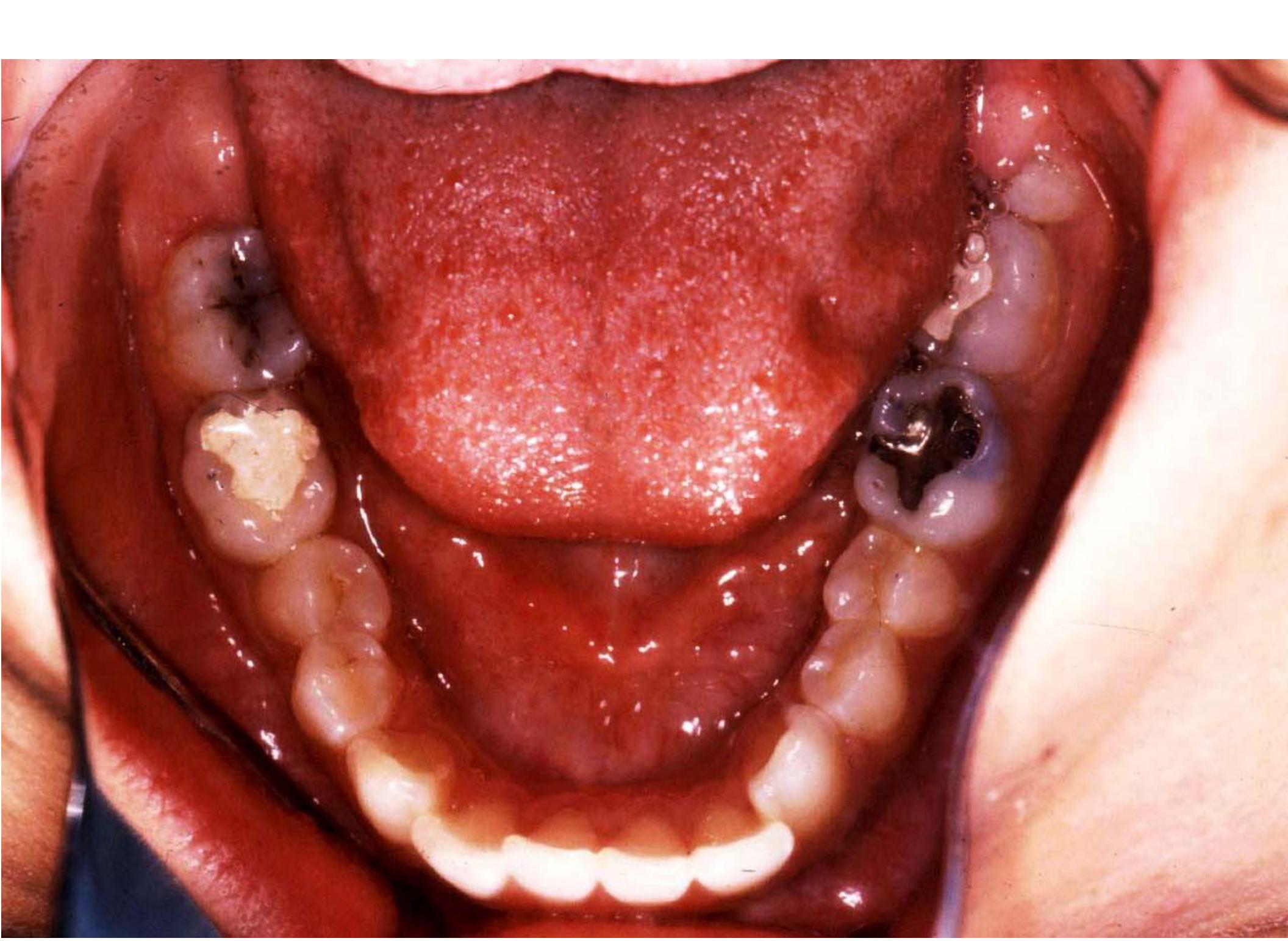
Smooth Surface Carious Lesions

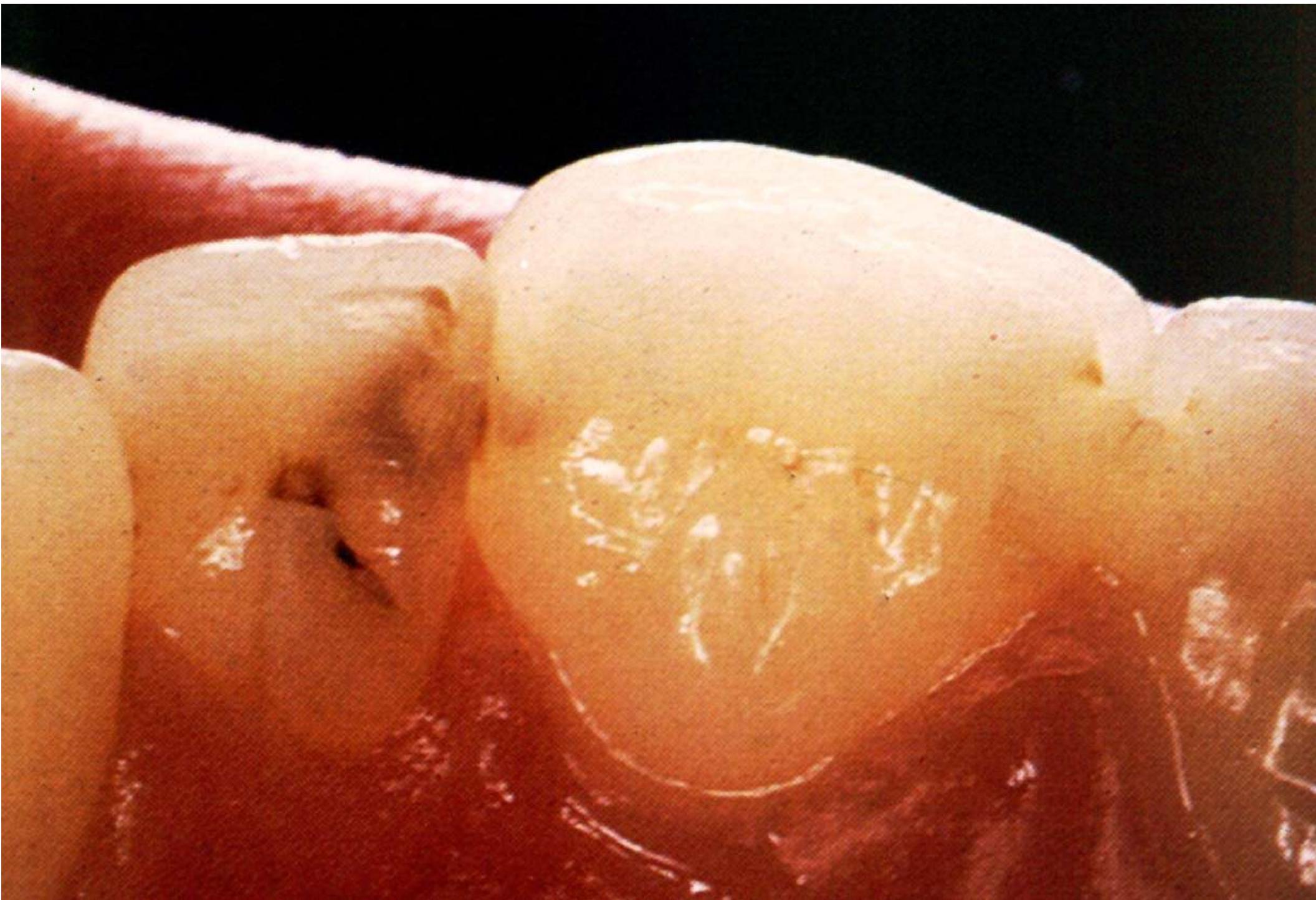
- Occur on the smooth surface of the anatomic crown of a tooth in areas that are most inaccessible to the natural cleansing action of the lips, cheeks and tongue.

- Proximal surfaces – **class II**
- Facial and lingual surfaces –
class III, IV, V

Root caries on **cementum**

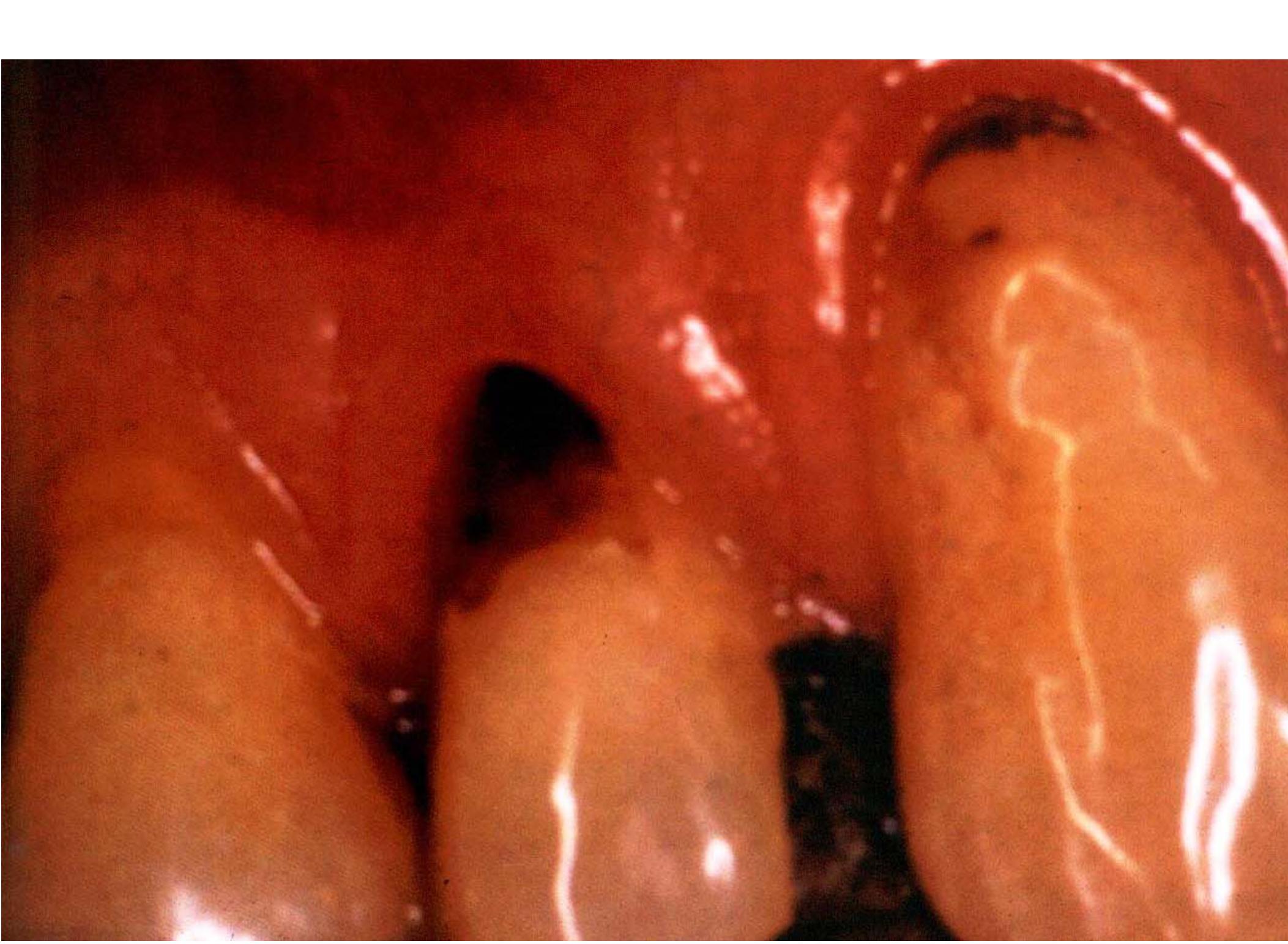




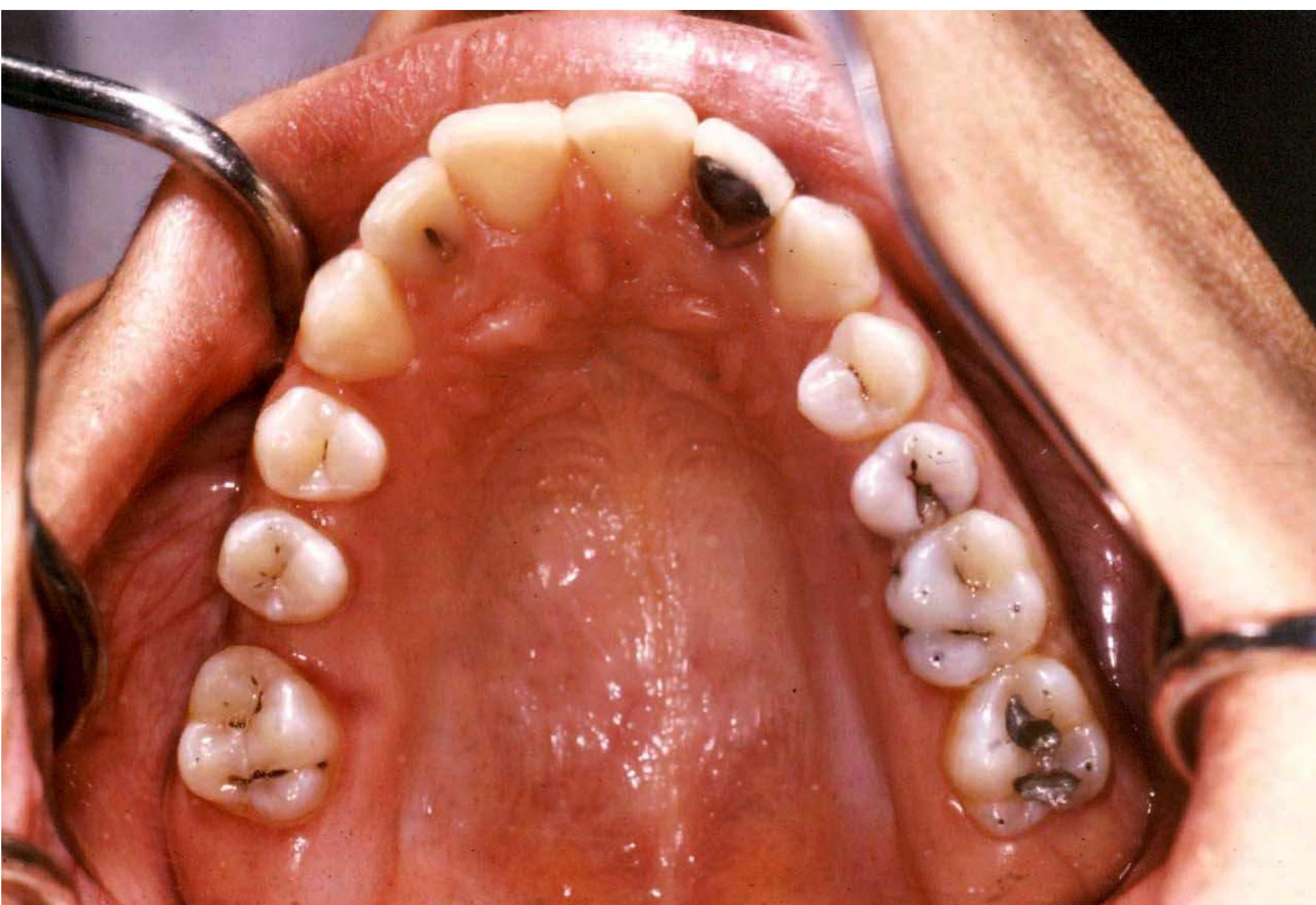


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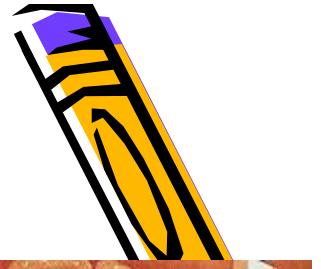




Tooth Wear

- Maybe defined as the surface loss of dental hard tissues other than by caries or trauma.
 - *Erosion:*
 - Loss of dental hard tissue as a result of a **chemical process** not involving **bacteria**.
 - Causative agent ⇒ **acid**
 - Source of acid ⇒ **dietary**, **stomach**
 - Affected area ⇒ **palatal surface ant.**, **buccal surface post.**





Tooth Wear

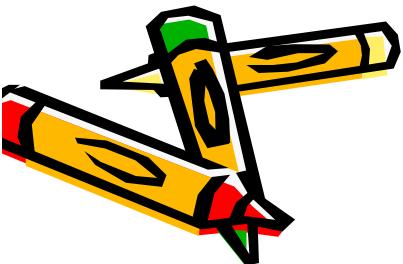
- *Attrition:*

- Mechanical wear between opposing teeth commonly occurs in combination with erosion.



- Causative agent ⇒ *abrasive diet , bruxism*

- Affected area ⇒ *occlusal or incisal surface*



Tooth Wear

- *Abrasión:*

- Wearing away of tooth substance by **mechanical means** other than by opposing teeth:

- Causative agent ⇒ *over vigorous tooth brushing*

- Affected area ⇒ *buccally at cervical margin.*

Dish-shaped or V-shaped



Trauma

- Traumatic injuries are acquired suddenly.
- May involve the hard dental tissues and the pulp ⇒ required immediate operative management.

- *Local injuries:*

- Laceration of the lip, tongue, and gingival tissue

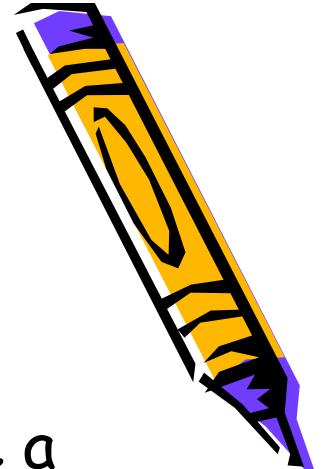
Fracture – alveolar bone, root, crown

Subluxation of a tooth





Developmental Defect



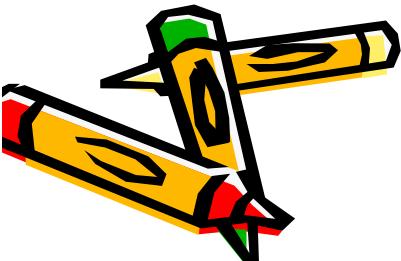
- Teeth do not always develop normally and there are a number of defects in tooth structure or shape which occur during **development** and become apparent on eruption.
- Teeth are often unsightly or prone to excessive tooth wear
⇒ *require restoration to*
Improve appearance or function
 - Protect the underlying tooth structure

Enamel hypoplasia

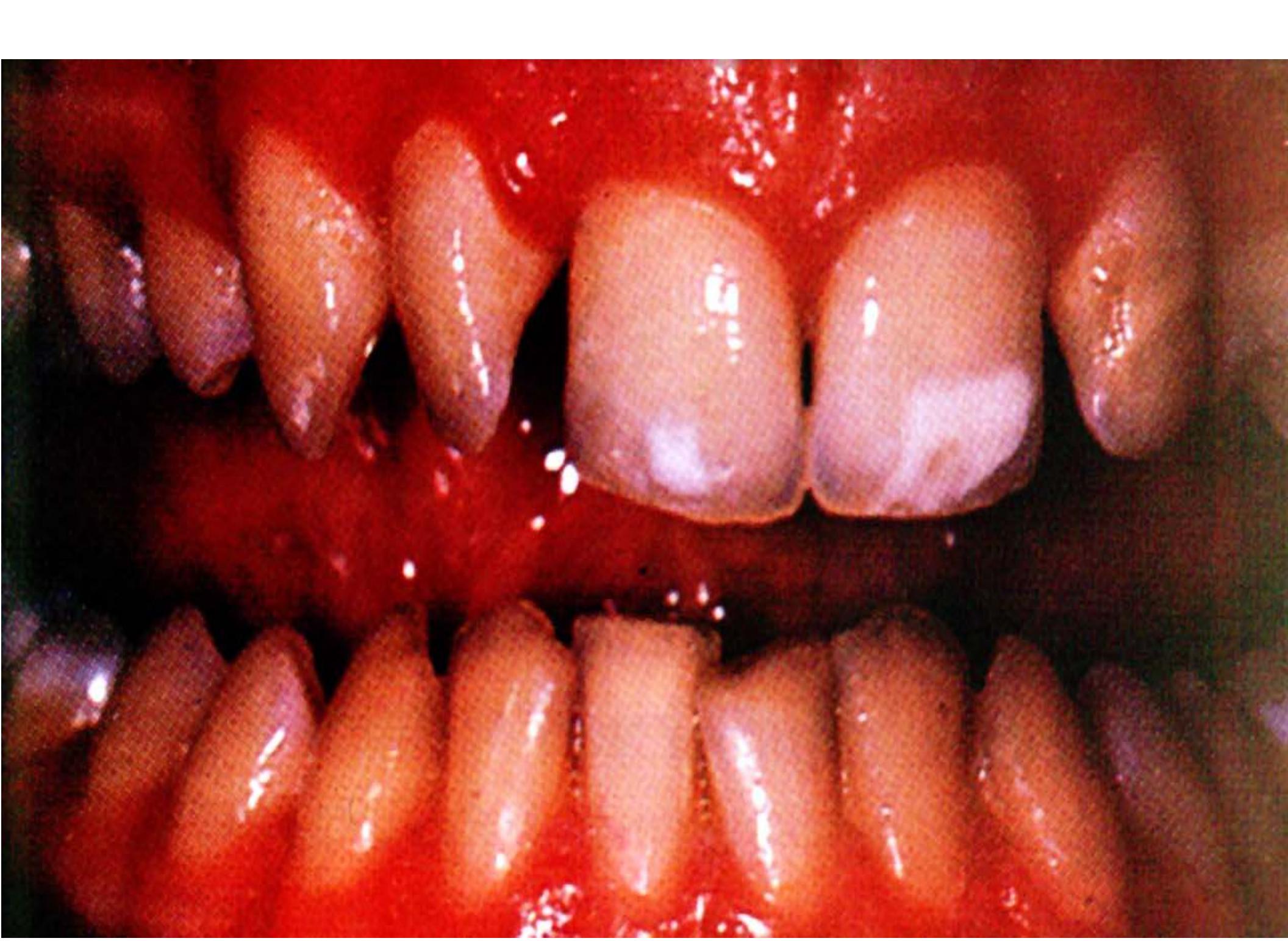
Hypo mineralized enamel

Enamel fluorosis

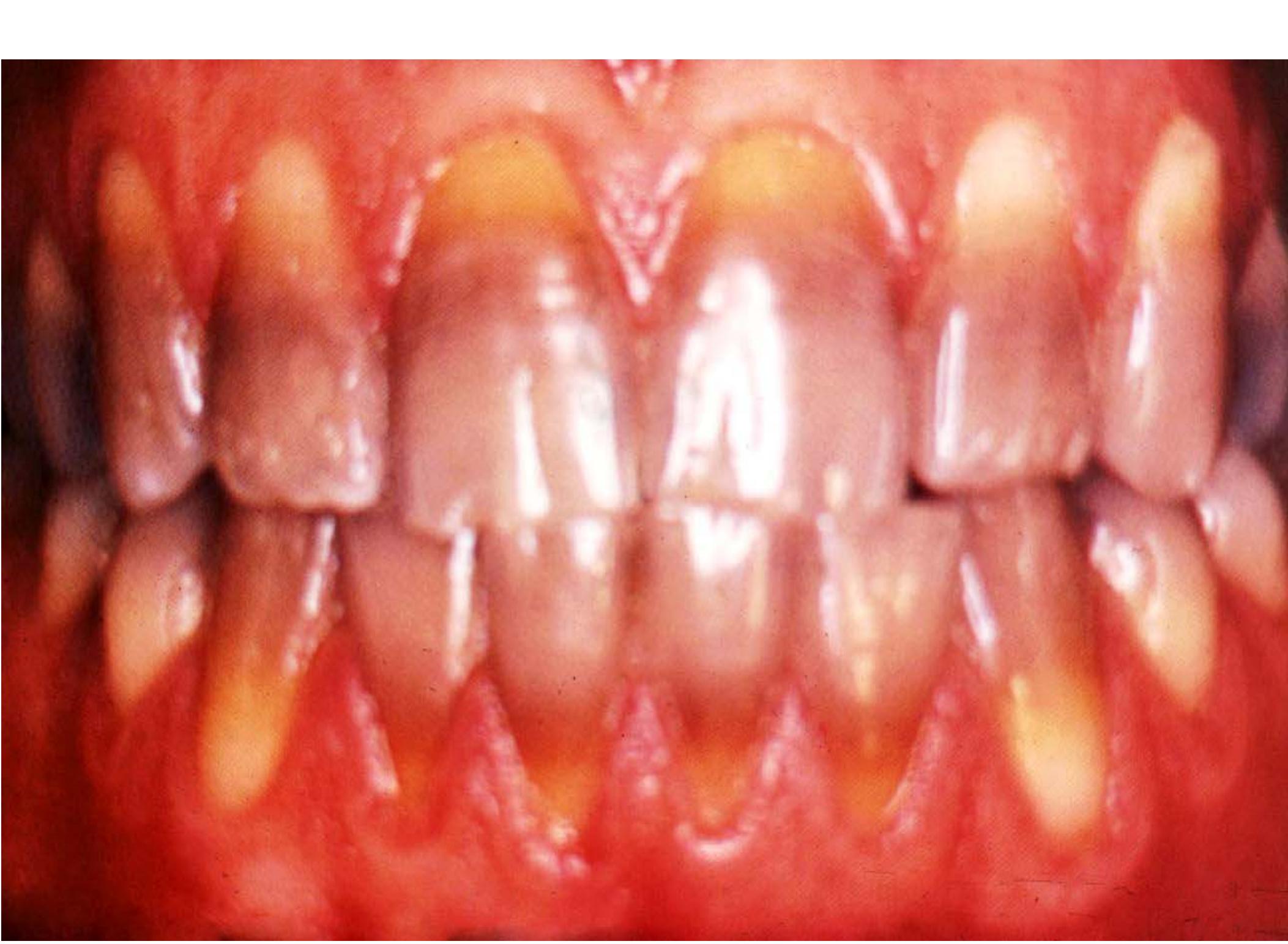
Tetracycline stain









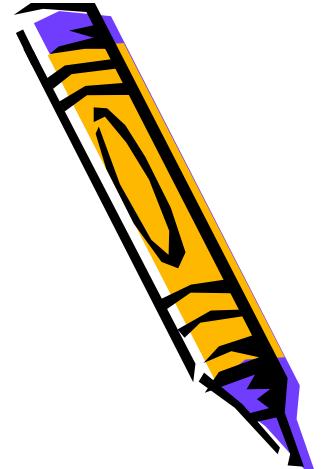
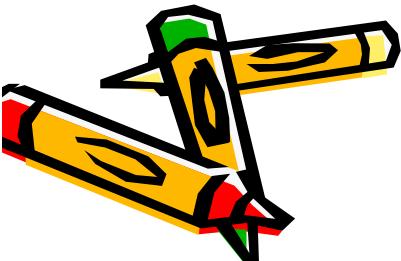


Relationship between operative dentistry and other dental specialties

When an operative procedure is performed, •
there are general guidelines when operative
treatment should occur relative to other form
of care like:

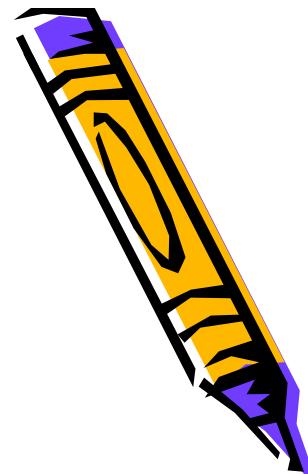
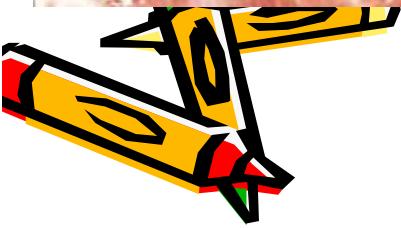
Pedodontics •
Endodontics •
Periodontics •

Orthodontics •
Oral surgeries •
Prosthodontics •



Relationship between operative dentistry and other dental specialties

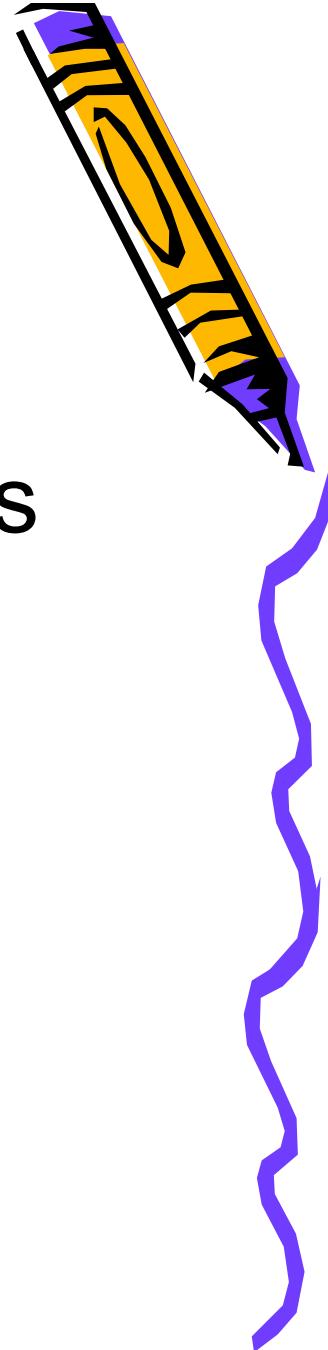
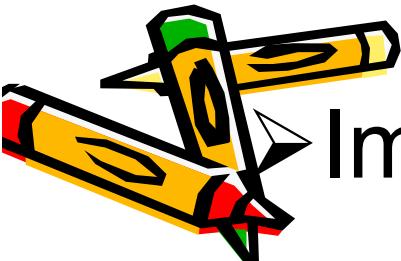
Pedodontics: restorative treatment involved.



Endodontics: root canal treatment.

Pulpal / periapical area must be evaluated before operative therapy is initiated.

- Large restoration
- Cast restoration
- Improper root canal treatment

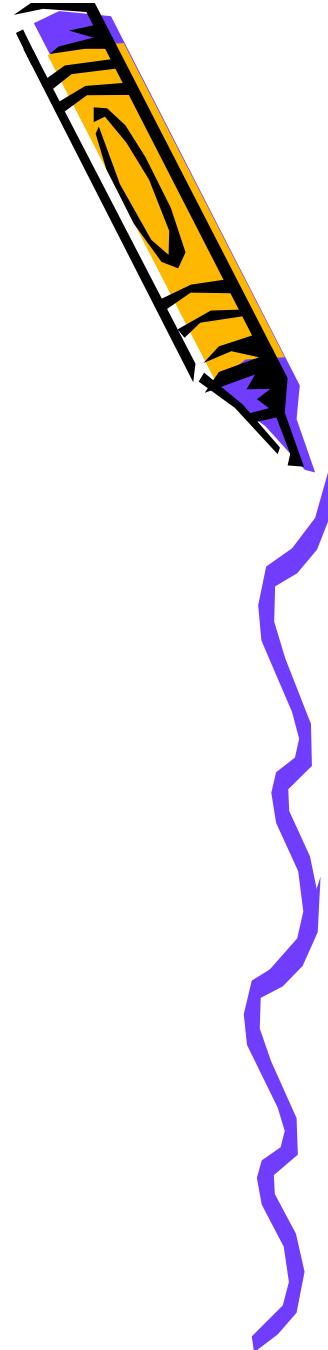
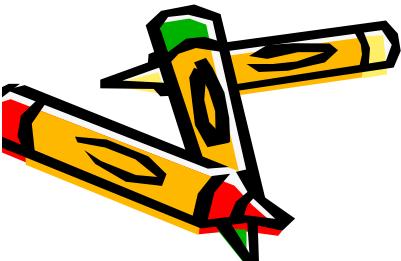




Periodontics: gingival treatment.

Generally periodontal tx. should precede operative care to create a more **desirable environment** for performing operative treatment.

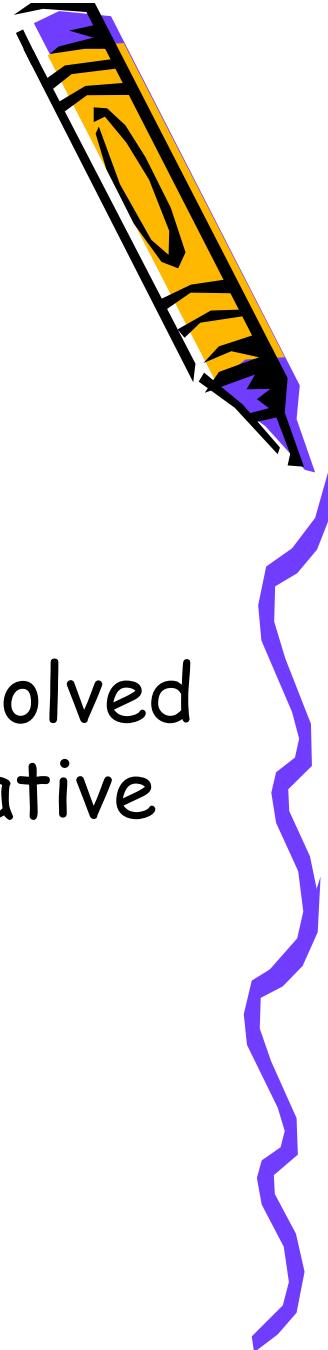
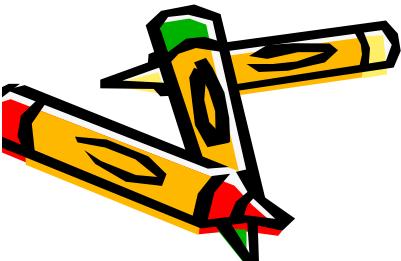
Deep caries lesion often requires caries control or root canal treatment **prior** to periodontal treatment.

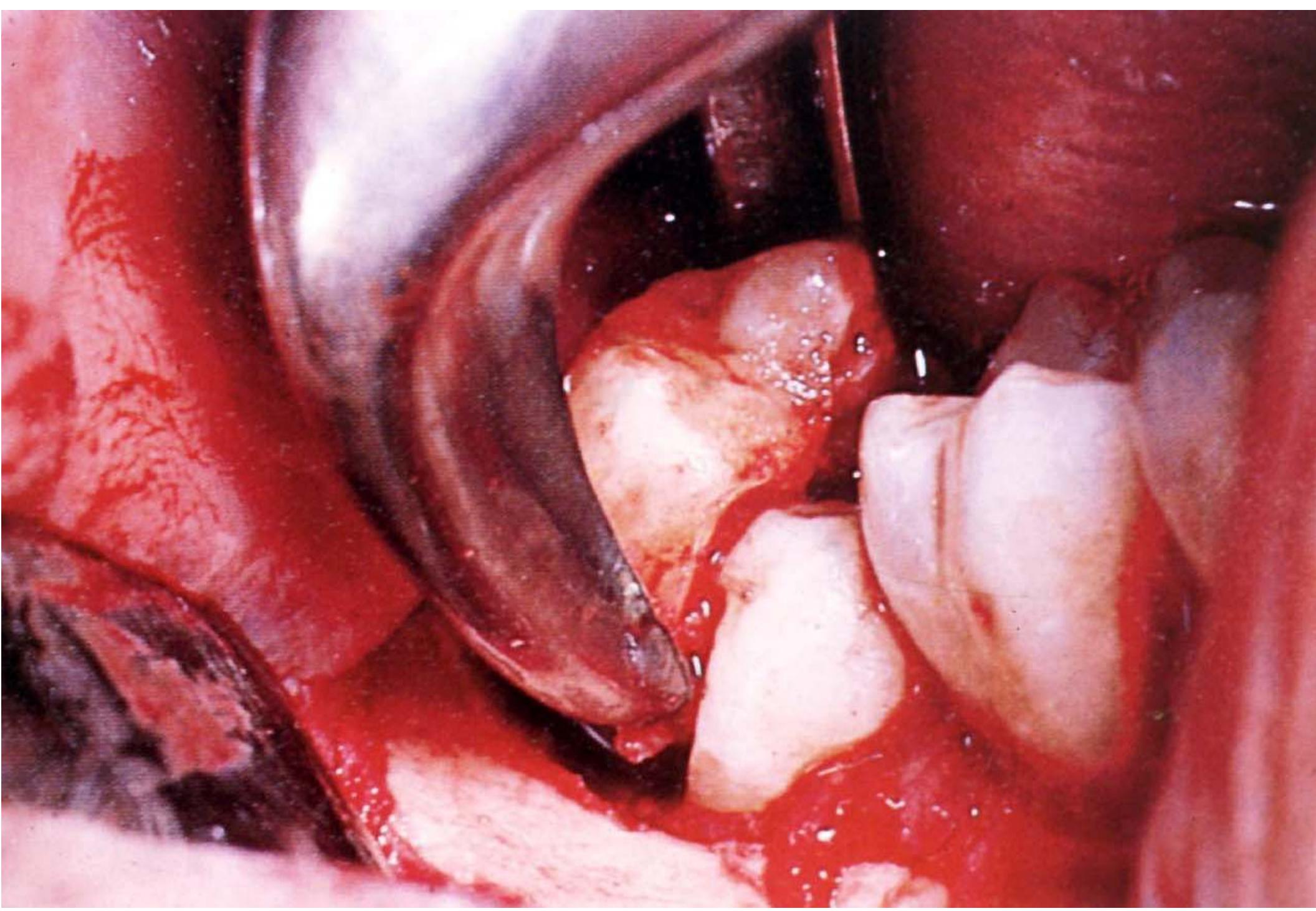


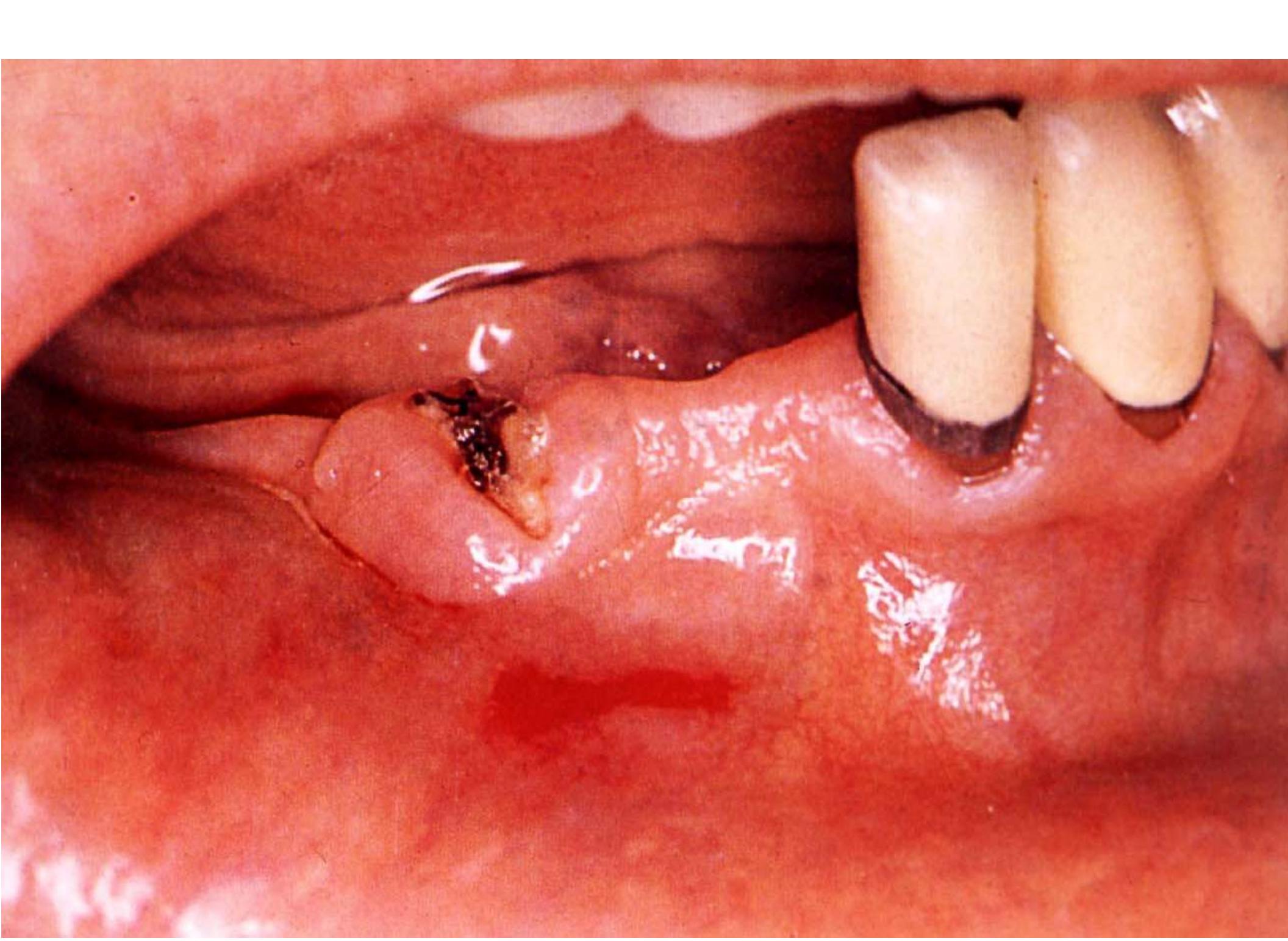


Relationship between operative dentistry and other dental specialties

- *Oral surgery*
 - Impacted, unerupted, and hopelessly involved teeth should be removed **prior** to operative treatment.



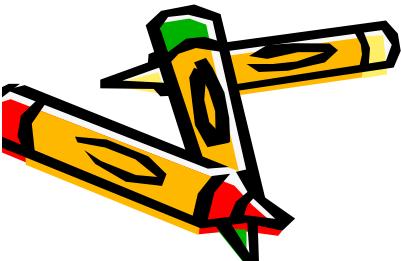




□ ***Orthodontics***

Include extrusion or realignment of teeth to provide spacing, stress distribution, function and esthetics.

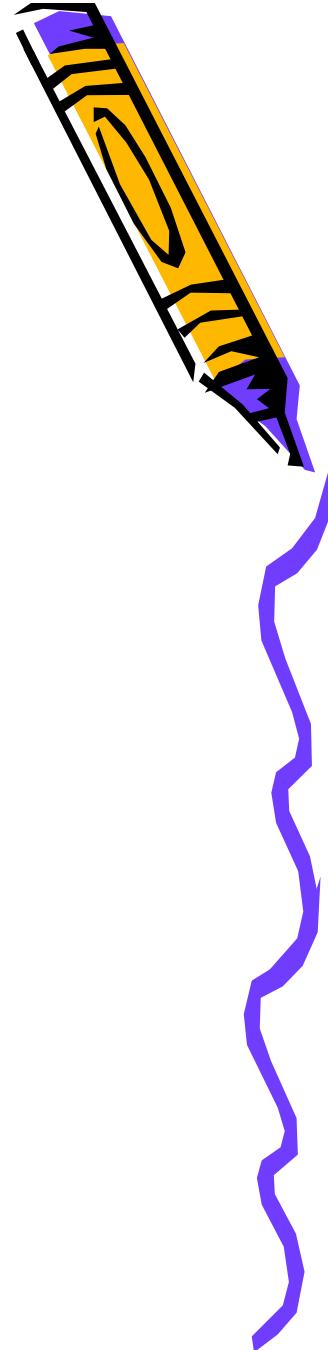
All teeth must be free of caries by operative treatment before ortho treatment is completed



Relationship between operative dentistry and other dental specialties

□ *Occlusions*

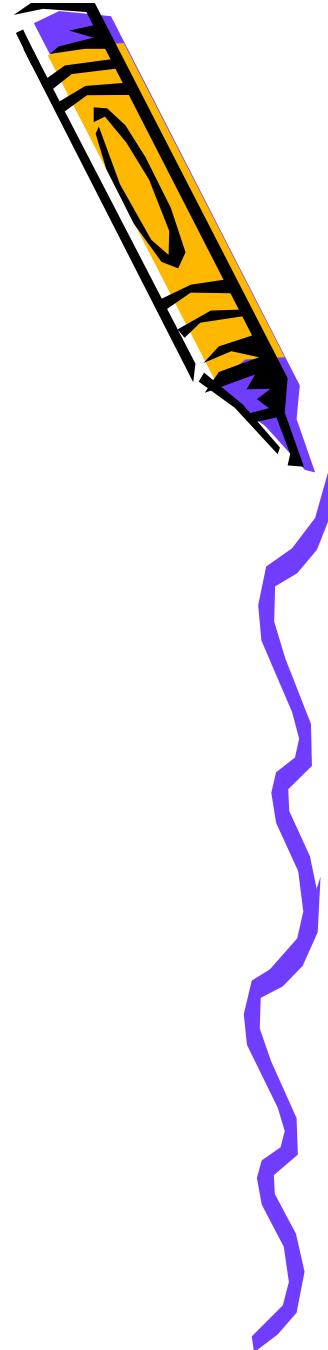
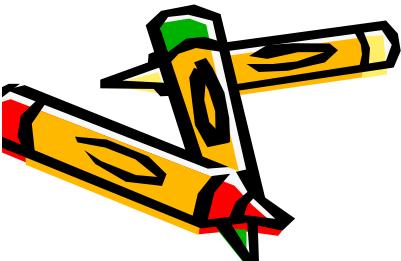
- ❖ Occlusions should be evaluated
- ❖ occlusal adjustment should occur **before** the definitive restoration treatment occur.





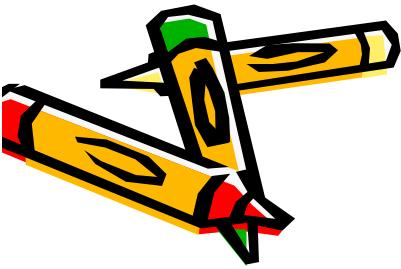
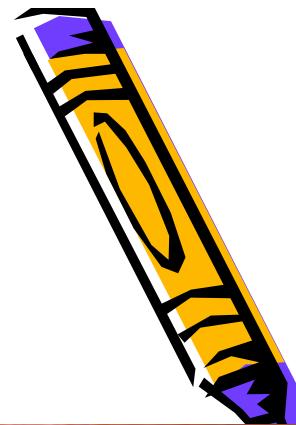
Fixed and removable prosthodontics

- ❖ A restoration must be placed as a foundation to provide improved retention for a full crown.
- ❖ Cavity preparation and appropriate restorative materials must correlate with design of the contemplated removable prosthesis











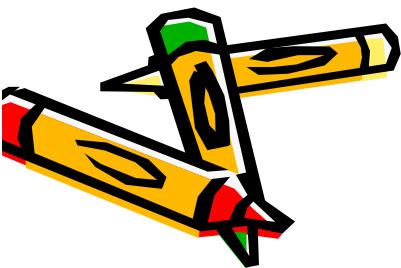
Factors Influencing Dental Practice

- Because of the dynamic status of dental practice, many developments and advancements will occur in the future.
- Advances in *technology, science and materials* will have a significant impact on the future of and demand for dental practice.
- Demographics ⇒ population ↑ and will change

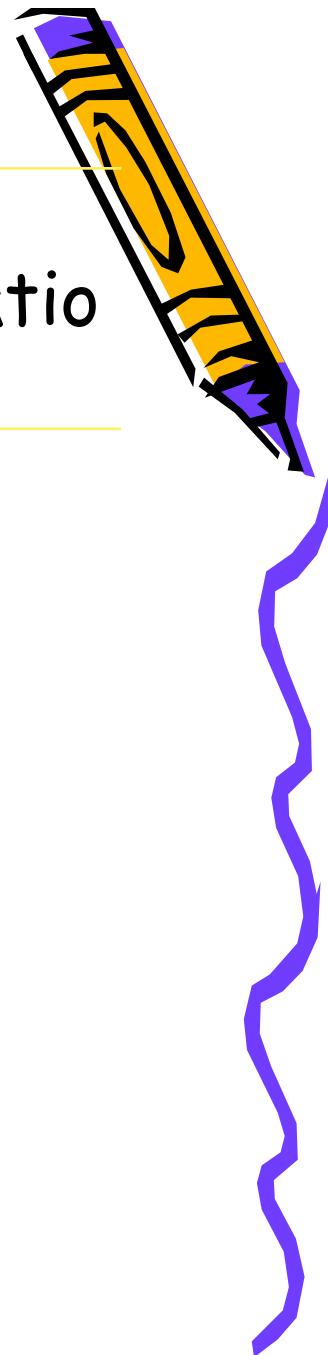
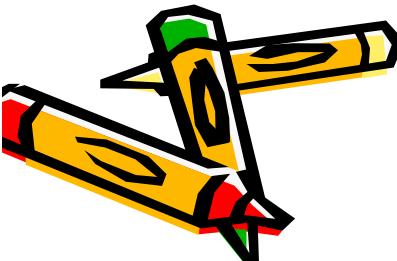
Economic factors

Dental health

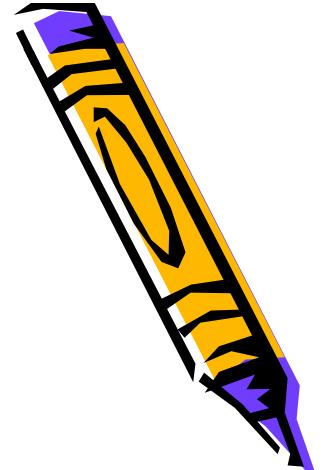
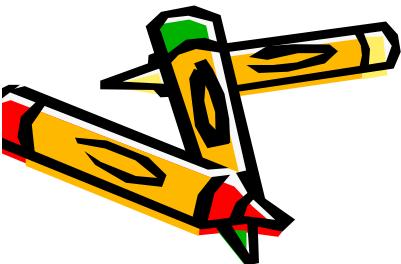
Dental manpower



Country	Dentist	Population Ratio
UK	1	3,000
SWEDEN	1	800
SAUDI ARABIA	1	8,000



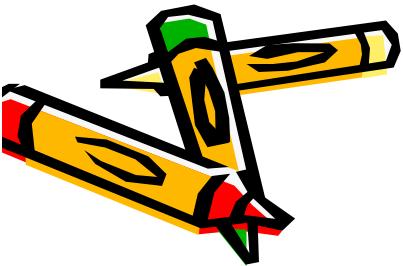
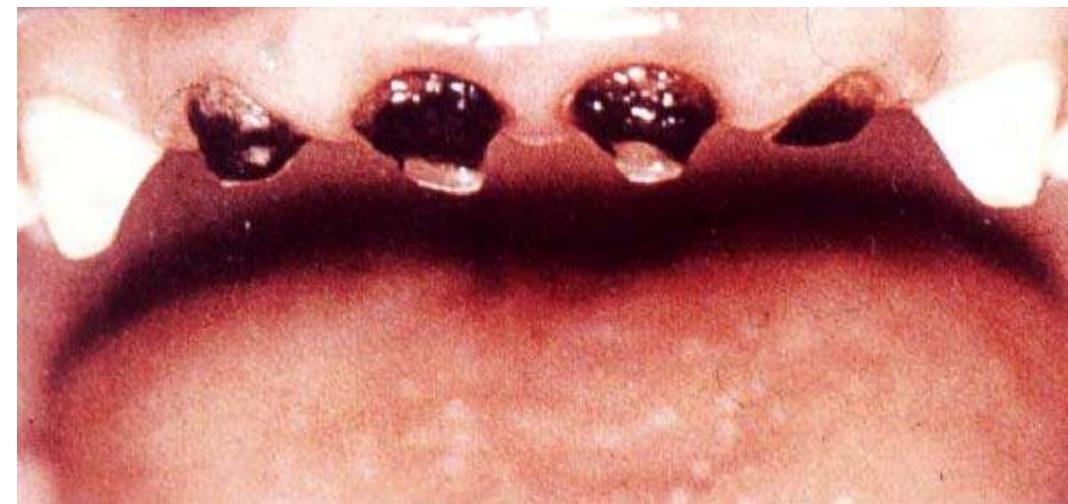
- Dentist must continue to broaden its **knowledge** on biologic basis.
- Practitioners must continually familiarize themselves with the **advances** being made.
 - Increased research activity and continued practitioner adaptability will result in **improved oral health of population** throughout the world.





THANK YOU





Relationship between operative dentistry and other dental specialties

Occlusions

Occlusions should be evaluated; any occlusal adjustment should – occur *before* the definitive restoration treatment occur.

Fixed and removable prosthodontics

A restoration must be placed as a foundation to provide improved – retention for a full crown.

Cavity preparation and appropriate restorative materials must – correlate with design of the contemplated removable prosthesis.

