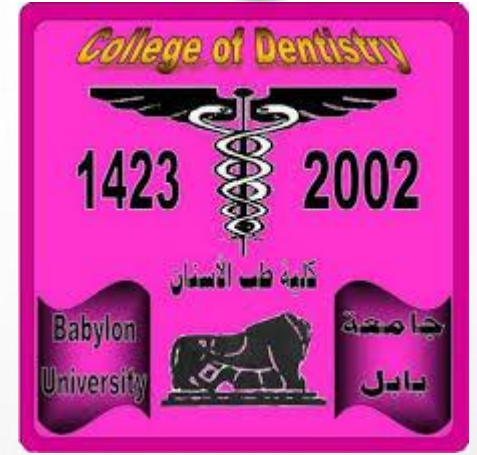




# BLEACHING AND MICROABRASION



الأستاذ المساعد الدكتور

امير حمدي العميدي

دكتوراه اختصاص طب الاسنان التجميلي و الترميمي

<http://www.elearn.uobabylon.edu.iq/> htt

<http://staff.uobabylon.edu.iq/site.aspx?id=876>

# BLEACHING AND MICROABRASION

Bleaching techniques aim to whiten discolored teeth. Bleaching works by **oxidation of organic matter without dissolving the enamel matrix and changing colored parts to a colorless state**. It is not particularly effective for tetracycline-stained teeth.



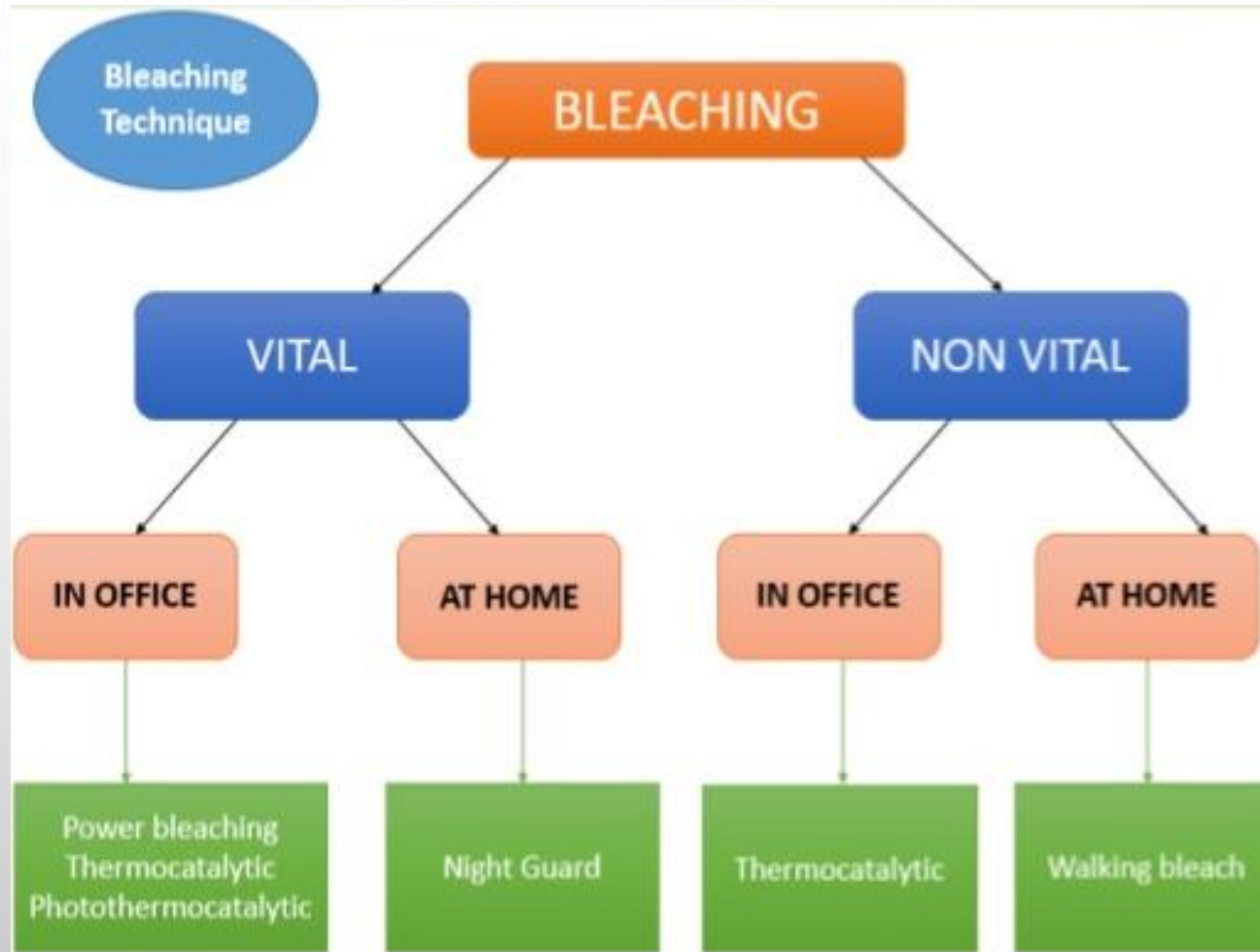


ENAMEL HYPOPLASIA

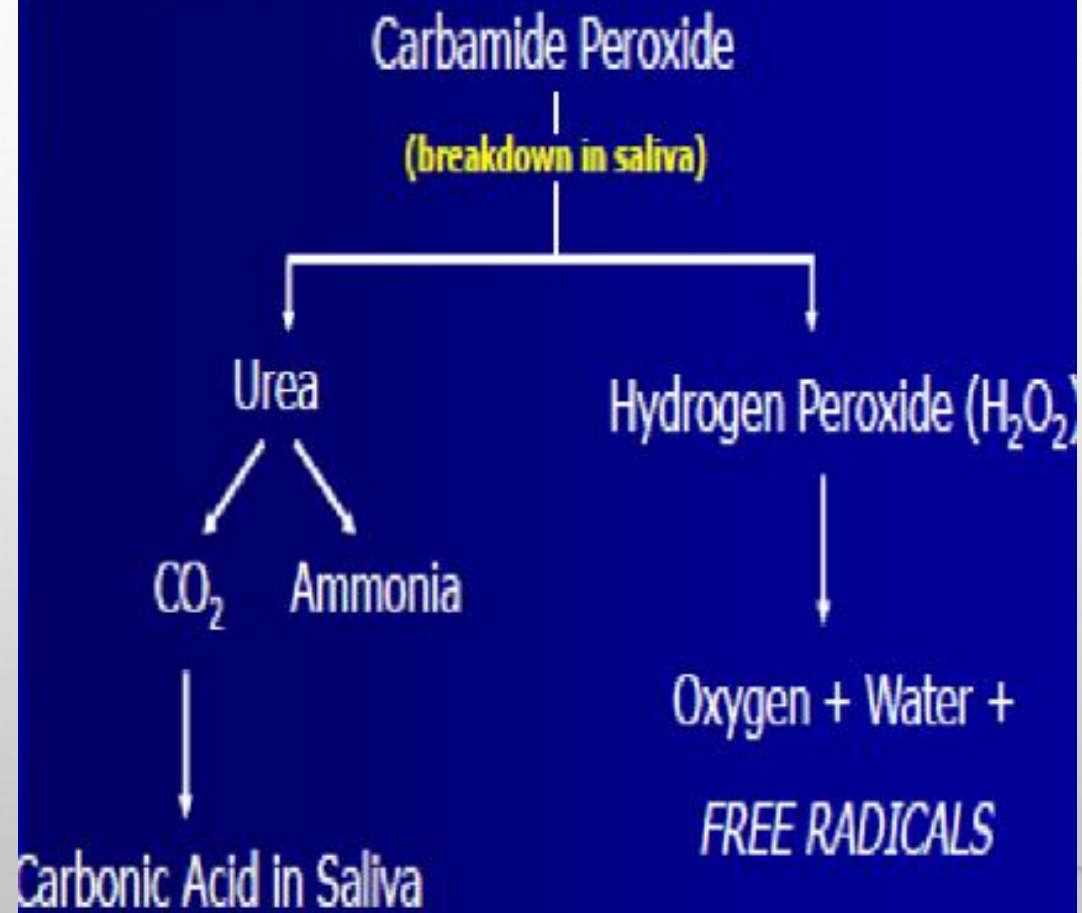


## Contraindication for teeth whitening:

- Hypo plastic enamel.
- Deep micro cracks.
- Sensitive teeth.
- Extensive restored teeth.
- Allergic to bleaching products.



## ■ Mechanism





## TECHNIQUES VITAL BLEACHING

**Professionally:** Applied Teeth are etched with phosphoric acid then heated; **35% hydrogen peroxide** applied; repeated two or three times. As an alternative activated gels are applied, which change color when bleaching complete (usually 3–4 minutes).

**Nightguard vital bleaching:** Dentist-prescribed home bleaching involves an impression, and a nightguard is made with spacers over teeth to be bleached. Patient applies gel of **10% carbamide peroxide** to nightguard and wears this overnight for 2–5 weeks.





**Home bleaching kits:** Retailled directly to patients Not controlled by dentist. Often **three-step process: 15 seconds acid rinse; then apply 6% hydrogen peroxide gel; then tooth whitening pigment.** Whitening toothpastes Compositions vary, some with weak solution of carbamide peroxide. Some are very abrasive. Clinical efficacy varies.

### **SAFETY OF BLEACHING**

Bleaching is generally considered safe. Home bleaching requires careful monitoring, especially if acids are used for pretreatment as erosion may result. In some countries nightguard vital bleaching is banned as carbamide peroxide is classified as a cosmetic and does not have a drug product license.

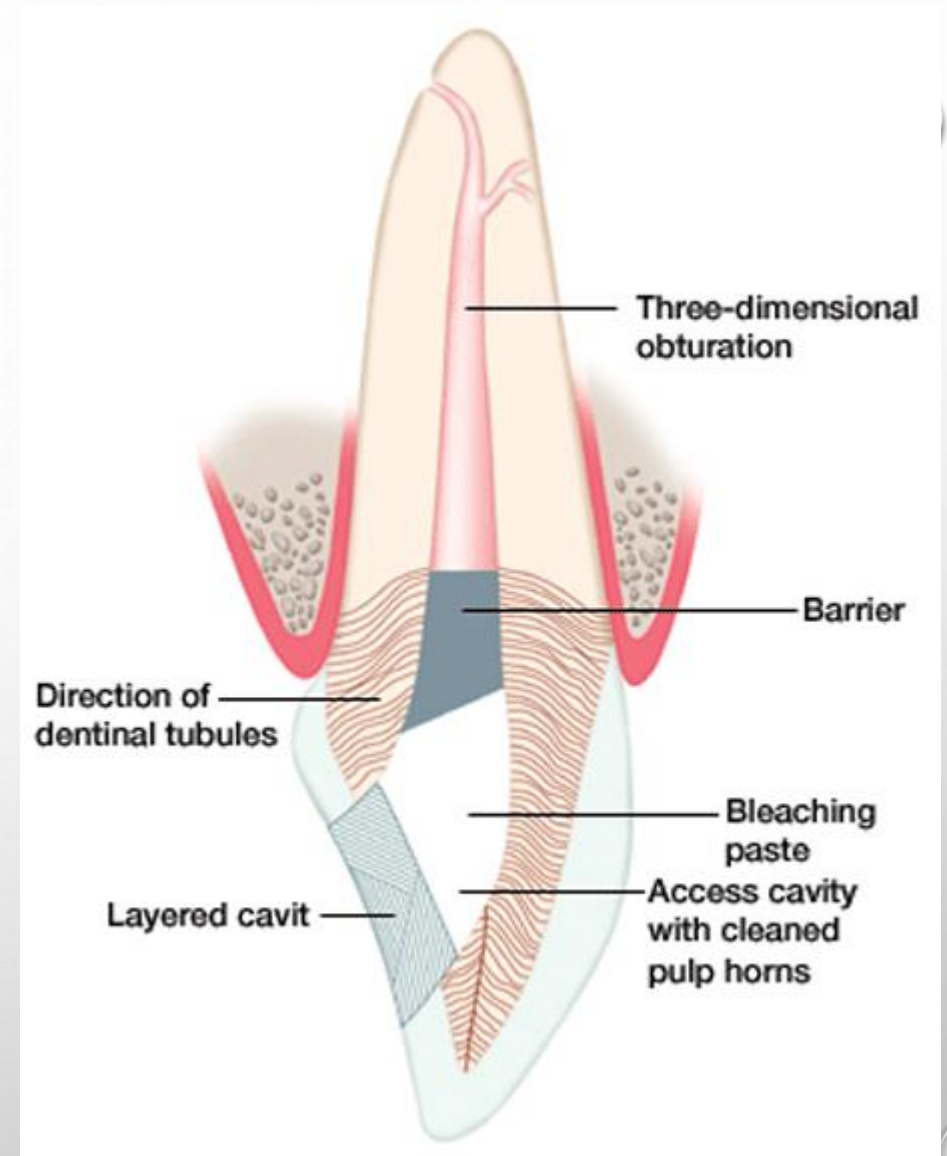
## NON-VITAL BLEACHING

### Used for discolored non-vital teeth:

Requires sufficient coronal dentine for restoration of crown.  
If not, consider crowns or veneers.

### Technique involves:

- 1- Replacement of defective restorations.
- 2- Removal of gutta-percha to below the amelocemental junction.
- 3- Bleaching using heated 35% hydrogen peroxide applied internally to the pulp chamber.
- 4- **‘Walking bleach’ between appointments with sodium perborate sealed inside the pulp chamber.**
- 5- Usually requires 2–3 visits.





## MICROABRASION

Used for improving appearance of mottled enamel (usually due to fluorosis). Works best when mottled enamel is superficial and when white or light brown rather than dark brown mottling present. Simplest technique involves:

1. Acid etch enamel.
2. Polish with a rubber cup or prophy brush using a slurry of pumice and glycerine.
3. Apply topical fluoride, repeat several times.
4. May require 2–3 visits, occasional postoperative sensitivity.
5. Other more complex proprietary methods exist.

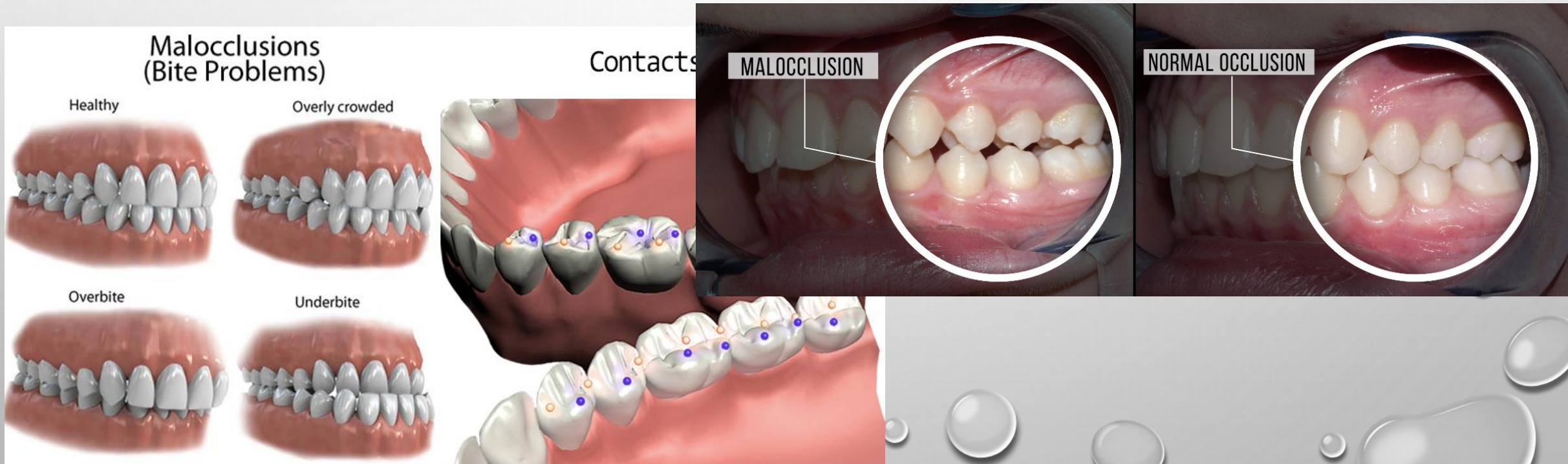


# OCCLUSION

**Occlusion** is the relationship of cusps or masticating surfaces of maxillary and mandibular teeth.

**Retruded contact position:** Position of the mandible when the condyles are in their most retruded position in the glenoid fossa and there is occlusal contact of the teeth.

**Intercuspal position:** The position of maximum intercuspation of the teeth.





**Stable occlusion:** An occlusion in which overeruption, tilting and drifting of teeth cannot cause new occlusal interferences. (Sometimes a degree of occlusal instability is acceptable.)

**Occlusal harmony:** The absence of occlusal interferences, which allows mandibular movement in all excursions (with the teeth together), and does not result in discomfort, strain or harm to the teeth or masticatory apparatus.

How key teeth move across each other is important. In fixed prosthodontics a functional rather than a morphological (Angles class) approach to occlusion is required.

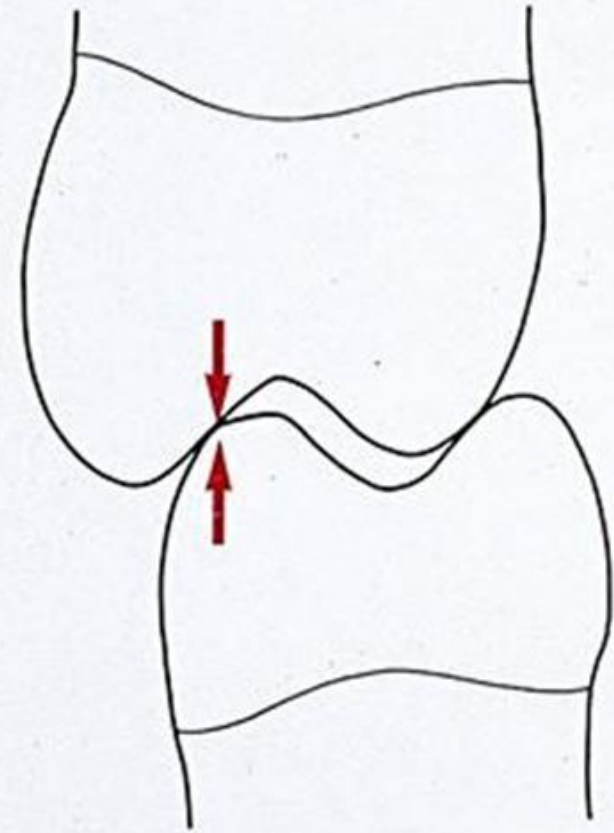
### Intercuspal Position – ICP

► The static position of maximum intercuspation.

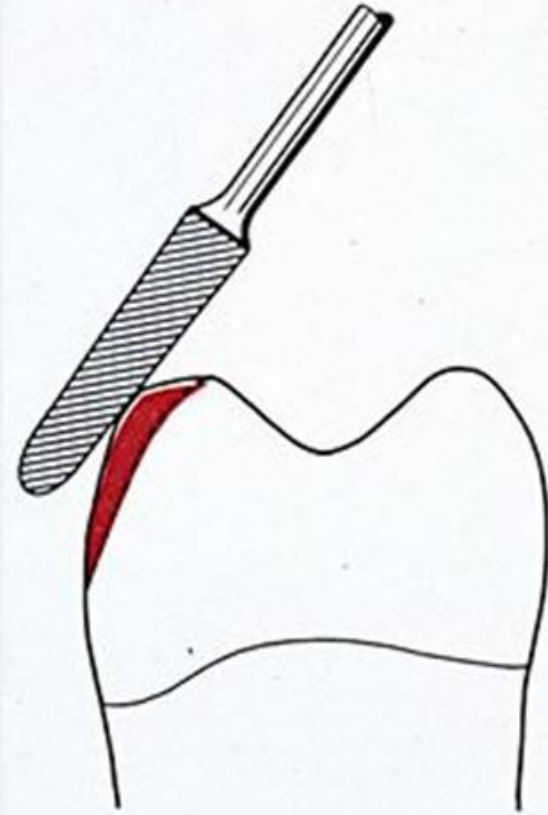




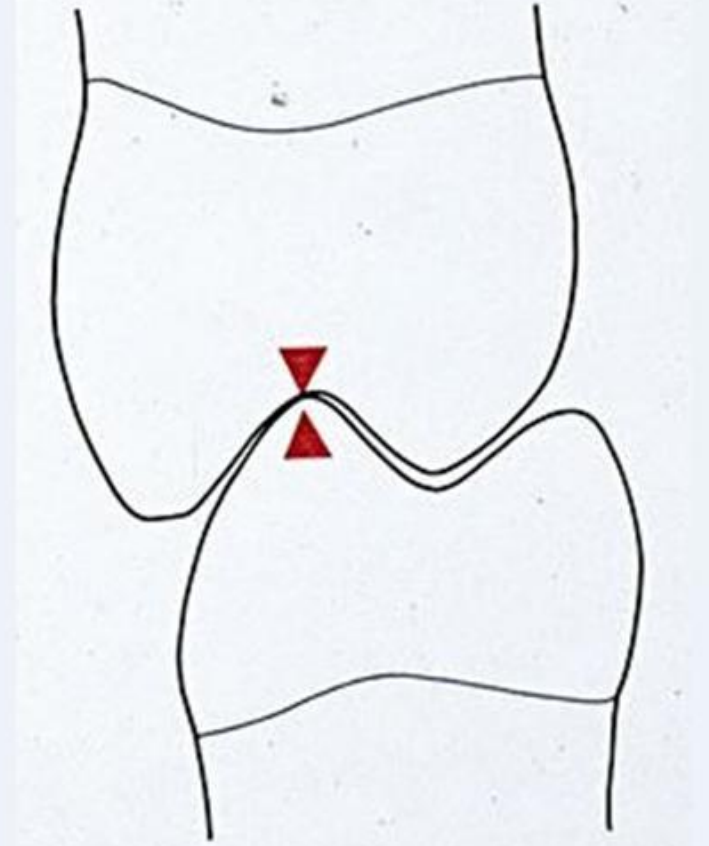
A



B



C



A: Harmful occlusal trauma  
from contact point on the outer  
cusp of a tooth

B: Selected smoothing of  
tooth contact

C: Proper contact in the  
"valley" of the tooth

# BORDER MOVEMENTS OF THE MANDIBLE

**Bennett movement:** Condyle on working side moves laterally.

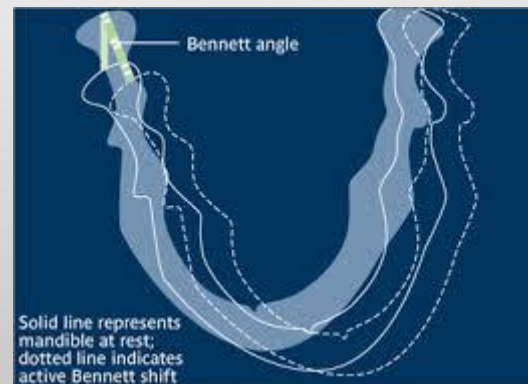
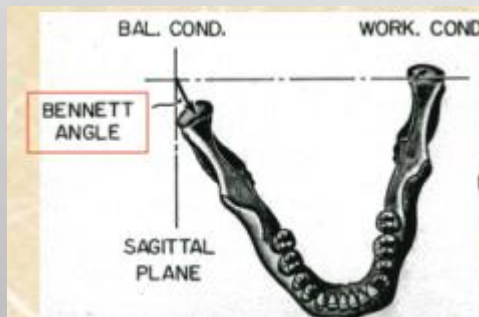
**Bennett angle:** Condyle on non-working side moves forwards and mesially.

**Working side** describes the side towards which the mandible deviates in lateral excursive movements.

**Non-working side** describes the side away from which the mandible deviates in lateral excursive movements.

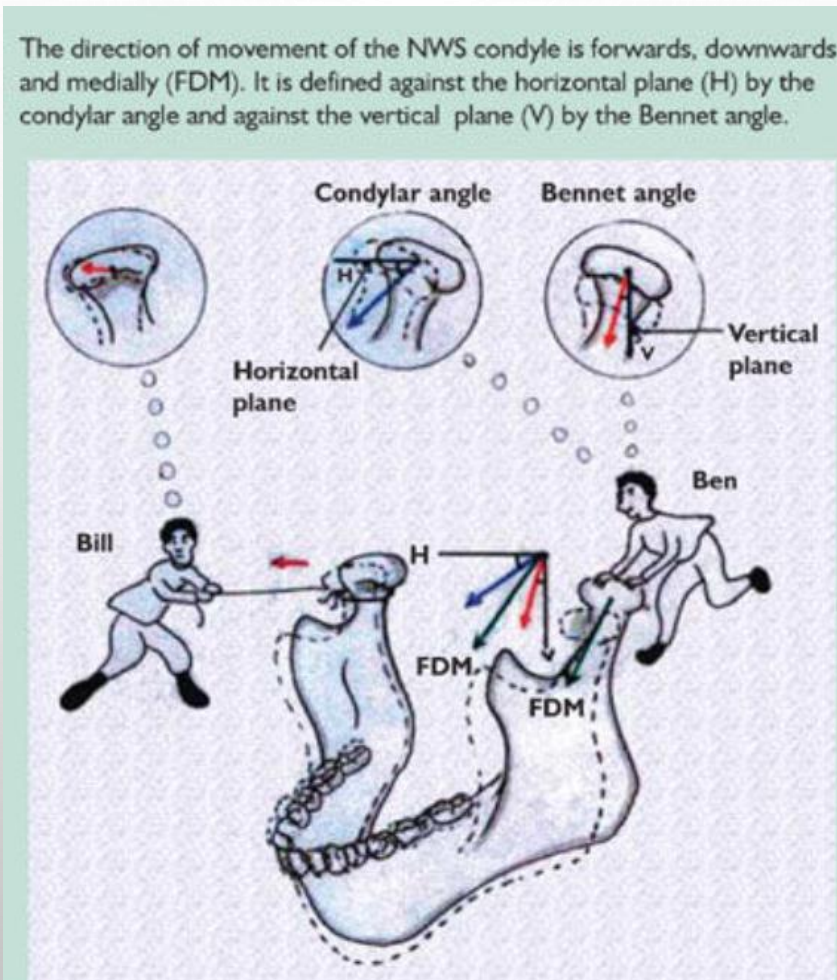
Occlusal interferences may encroach on or expand border movements.

Can occur, e.g. by tooth extraction or overcontouring of a restoration.



## RETRUDED CONTACT POSITION (RCP)

- In 10–20% of population **Retruded Contact Position (RCP)** = intercuspal position (ICP).
- In 80–90% of population  $RCP \leq 2 \text{ mm}$  posterior to ICP.
- Restorations are usually built in RCP as this is the most reproducible position.



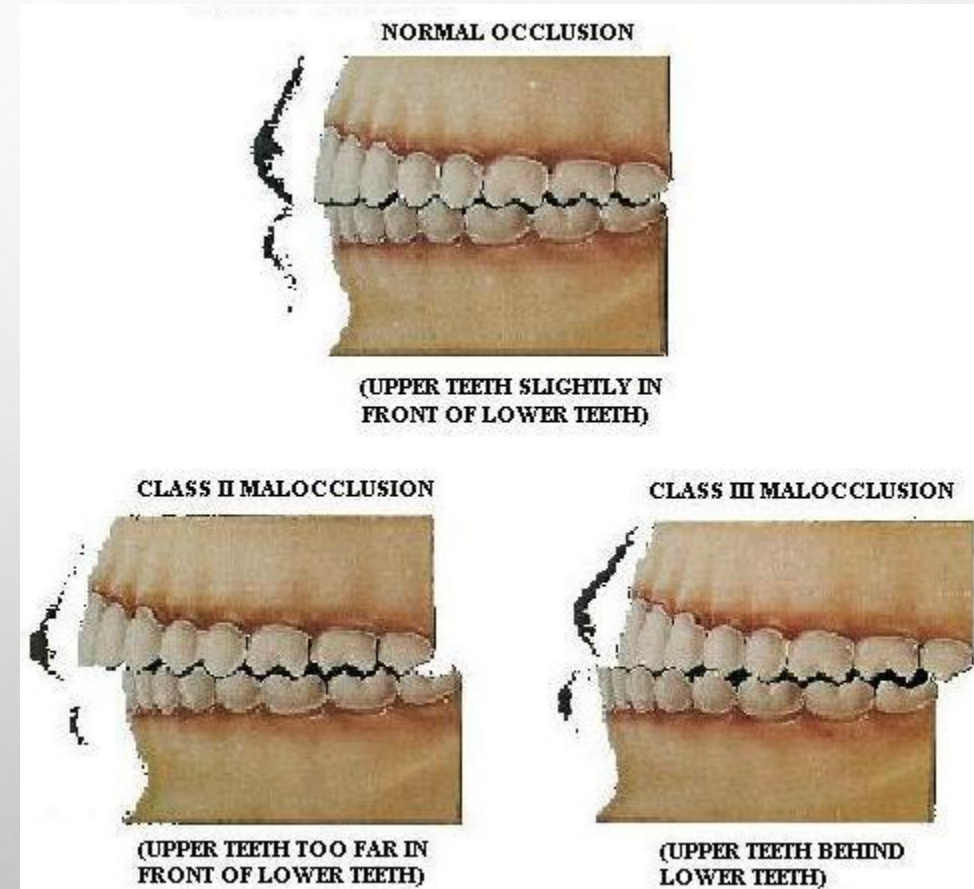


## MANDIBULAR MOVEMENTS:

Mandibular movements are defined as protrusive, retrusive and lateral (left and right).

## PROTRUSIVE MOVEMENT:

Usually incisor teeth guide protrusion except in anterior open bite or Class III incisor relationships. Incisor relationship determines length and angle of protrusion, e.g. Class II division 2 occlusion with deep overbite results in nearly vertical protrusion. When building restorations, usually want to reproduce incisor relationship. In other circumstances, e.g. very worn teeth, restorations change incisor relationship and therefore protrusion.



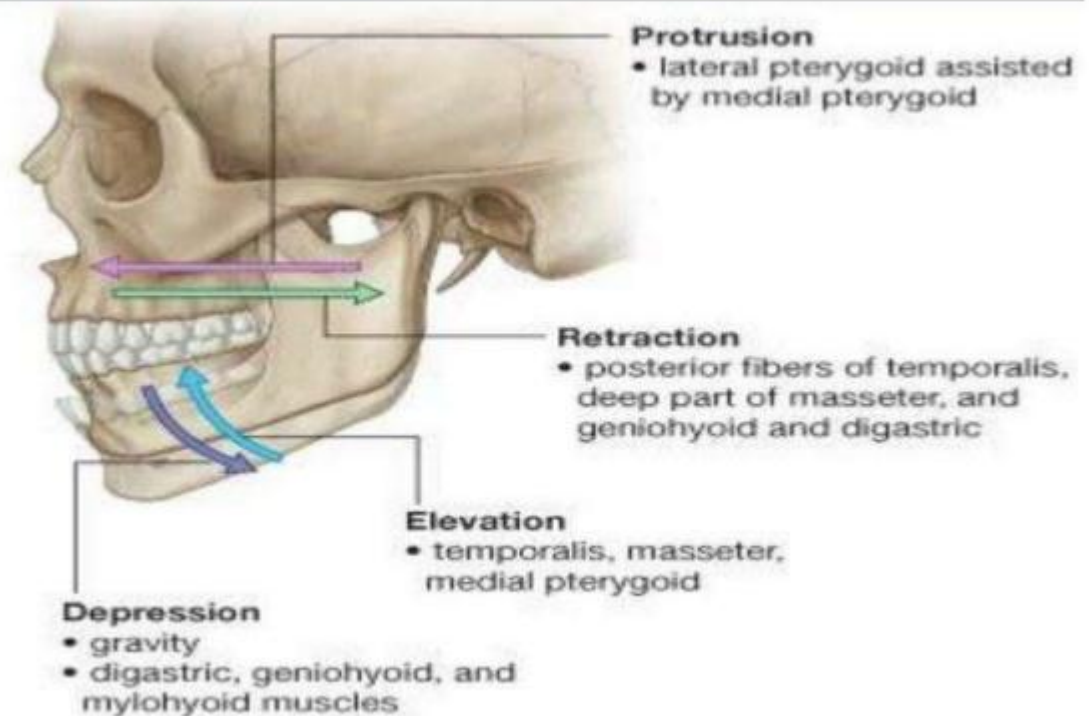
### RETRUSIVE MOVEMENT:

Retrusion is the slide from **Intercuspal Position (ICP)** to **Retruded Contact Position (RCP)**. Any disturbances of an even slide may require adjustment.

### LATERAL MOVEMENT:

Ideally canine guided occlusion with no contact on non-working side. In some cases 'group function' (pairs of bicuspid teeth) may guide the working side.

## MOVEMENTS



# OCCLUSAL INTERFERENCES

An occlusal interference results from contact between teeth in one of the excursions so that the smooth movement of the mandible is interrupted or unfavorable guidance (e.g. nonworking contact) occurs.

Interferences are difficult to detect as periodontal proprioceptors condition the mandible to move so that interference is avoided.





# EXAMINATION OF THE OCCLUSION

Examination of the occlusion should be a routine procedure in fixed prosthodontics. However, certain aids help in full occlusal assessment (which is often reserved for complex occlusions, tooth wear cases or when contemplating occlusal rehabilitation).

## Aids to occlusal examination

- Articulating paper
- occlusal indicator wax (0.5 mm thick)
- plastic strips (Mylar 40  $\mu\text{m}$  thick)
- study casts
- diagnostic wax-up
- facebow mounting.

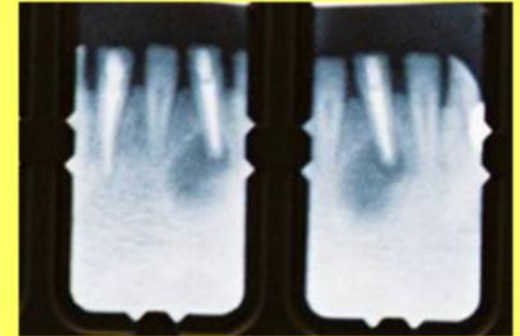


# EXAMINATION OF THE OCCLUSION

## Features to be noted in occlusal examination

- Degree of occlusal stability
- type of lateral guidance
- patient complaints (especially **myofascial pain dysfunction syndrome [MPDS]**, chronic dental pain, mobile teeth)
- degree of difficulty in making mandibular movements • presence of occlusal interferences
- overerupted and tilted teeth
- does RCP = ICP?
- smoothness and slide from RCP to ICP
- presence of nonworking contacts
- tooth wear/faceting
- tooth mobility in excursive movements.

- Unstable occlusion
- Tooth in traumatic occlusion
- PA abscess
- Acute pulpitis
- Cracked tooth syndrome



## OCCLUSAL AIMS IN CROWN AND BRIDGE

To leave a stable occlusion with no additional occlusal interferences. Use of an articulator that is **semi-adjustable** and allows the maxillary cast to be related to an approximation of the terminal hinge axis is essential in advanced crown and bridgework. This type of articulator has variable condylar guidance in at least a straight line and permits adjustment to incisal guidance.

Terminal hinge axis describes an axis passing through the lower part of the condyles, about which the condyles rotate when they are in their uppermost, centered position in the glenoid fossae.





