

Re-establishing pretraumatic occlusion



Version 2 (December 12, 2018)

Faculty can replace the clinical images in the presentation with equivalent images

What is occlusion? In a dental context it means the contact between the teeth or more technically the relationship between the maxillary and mandibular teeth when they approach each other, which occurs during chewing and at rest.

Learning objectives

- Describe different methods of maxillomandibular fixation (MMF)
- Discuss its advantages and disadvantages

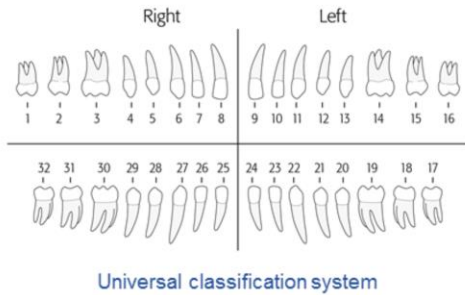
Why?

- Restoration of the occlusion:
 - Intraoperative or postoperative MMF?



- The ultimate goal is to restore the teeth to their preinjury state.
- Require intraoperative restoration of occlusion before ORIF—temporary MMF.
- May require postoperative period of MMF.

Dental terminology: numbering systems



Federation Dentaire Internationale (FDI) system



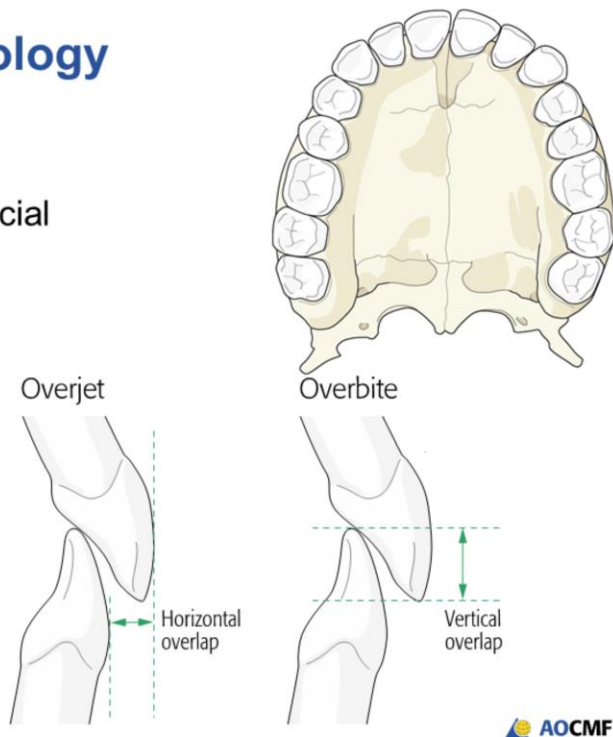
Faculty note: Can consider deleting or hiding this slide if the audience all have dental qualifications

Faculty can also replace the classification system to meet local systems

Dental terminology

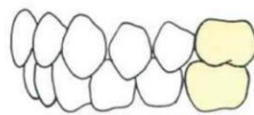
Tooth surfaces:

- Buccal—labial—facial
- Mesial (anterior)
- Distal (posterior)
- Occlusal—incisal
- Lingual—palatal

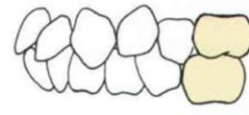


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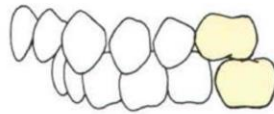
Malocclusion



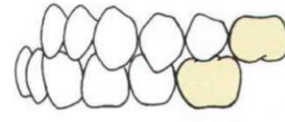
Normal occlusion



Class I malocclusion



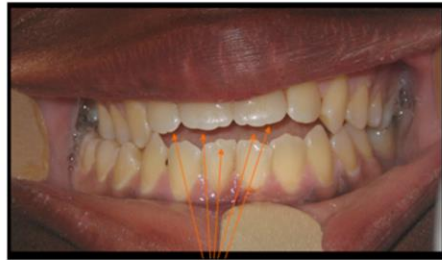
Class II malocclusion



Class III malocclusion



Occlusion in crossbite



AOB with mammelons



Malocclusion:

- Class I malocclusion, see relationship of first molars
- Class II malocclusion
- Class III malocclusion

Also remember crossbite—usually top teeth are positioned outside bottom teeth

AOB = anterior open bite

Aids to establish occlusion

- Study models
- Dental splints



Study models help to see how the teeth could fit together—look at wear facets on teeth, etc.

Methods of MMF

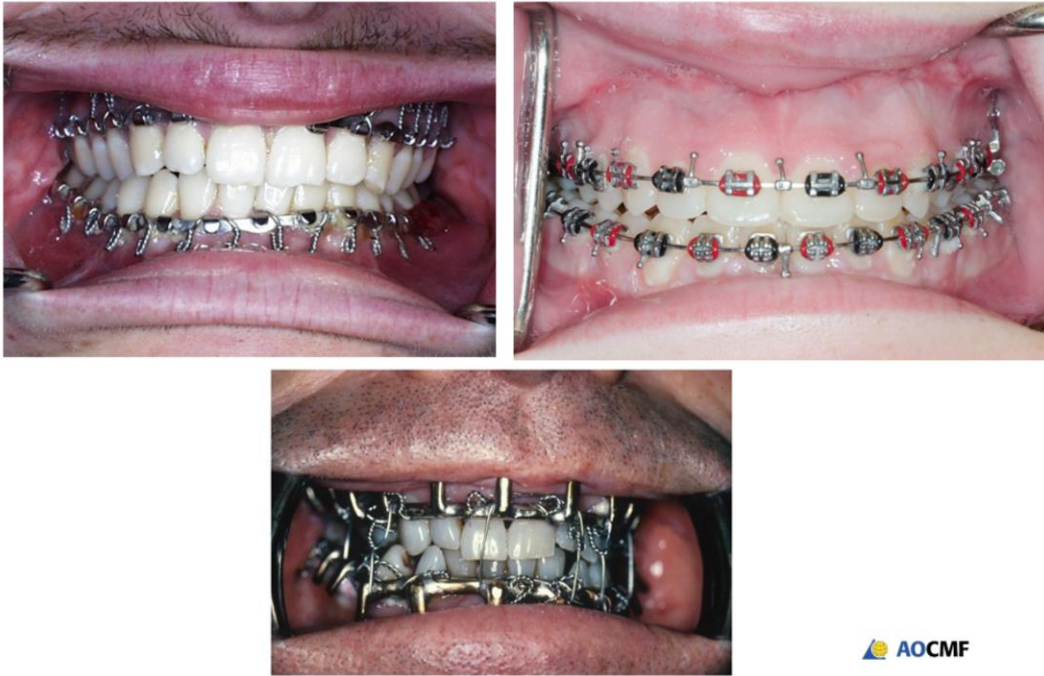
Attached to/between teeth:

- Arch bars:
 - Many different types
- MMF can be achieved with wires or elastics



Arch bars fix the jaws together. Note the split arch bar to make sure that the arch bar does not prevent proper fracture reduction anteriorly.

Arch bars



- Different types of arch bars
- Erich arch bars, orthodontic arch bars, custom-made wrought arch bars, etc.

Methods of MMF

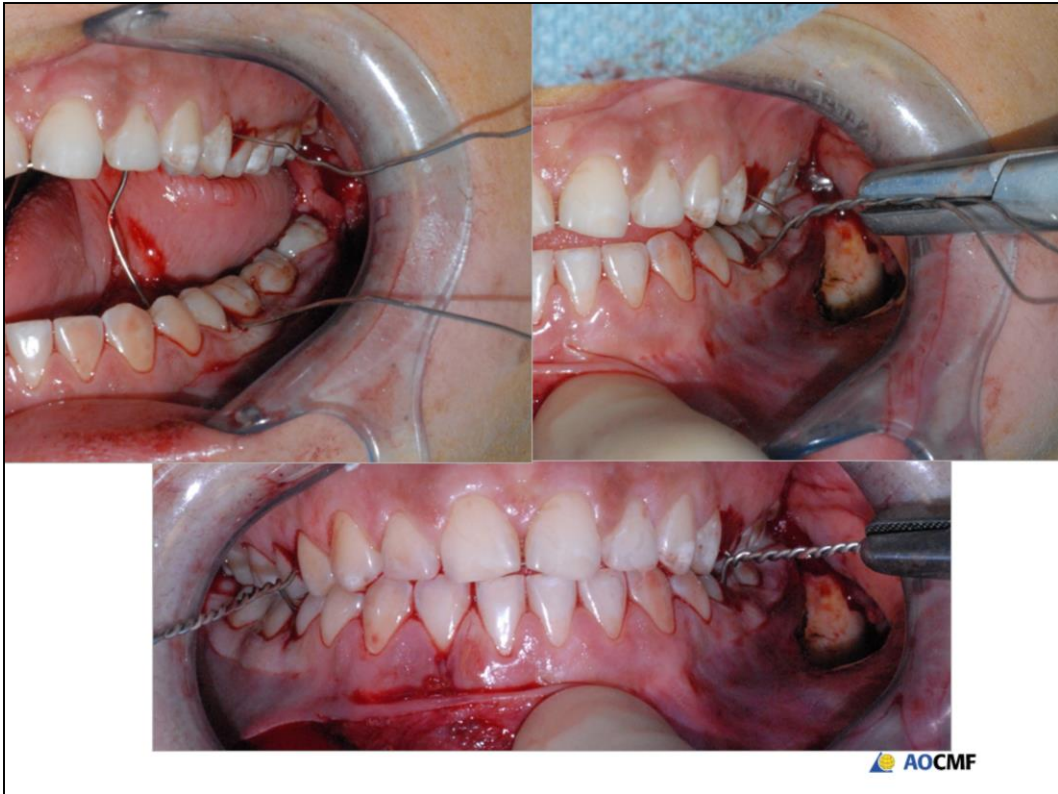
Direct dental wiring:

- Ivy loops/eyelet wires
- Ernst ligatures
- Embrasure wires



 AOCMF

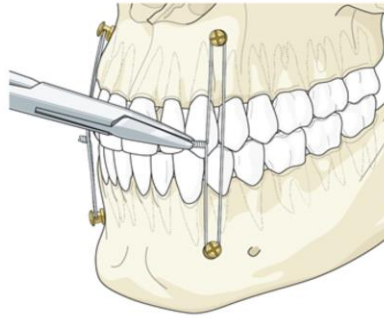
Ivy loops/eyelet wires popular in some areas for intraoperative MMF.



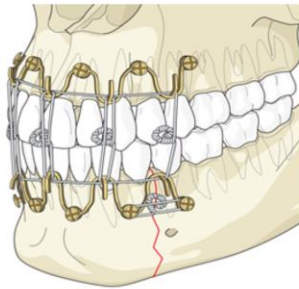
- Embrasure wires very quick
- Could also use Ernst ligatures

Methods of MMF

- Attached to bone:
 - IMF screws

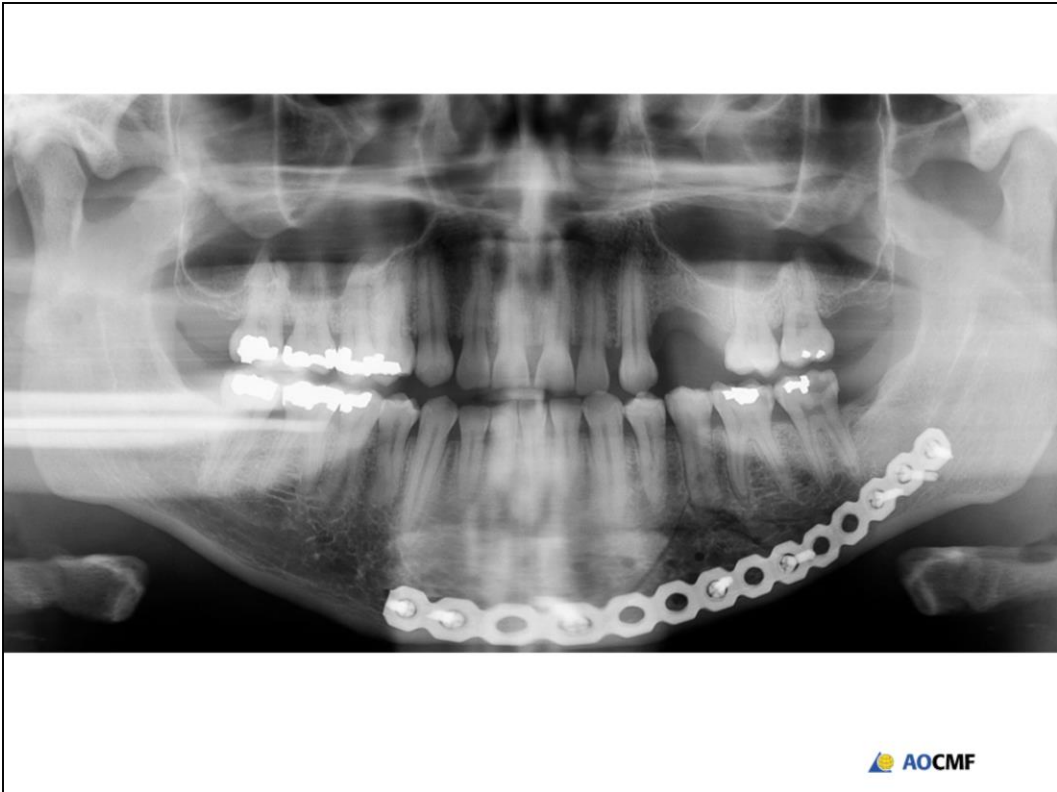


- Hybrid





- IMF screws not without significant hazard—avoid putting them into tooth roots or nerves.
- Mechanical forces may also distract the fracture rather than reduce it.
- Not useful for postoperative elastic traction



You need intraoperative IMF, but not necessarily postoperative IMF in most situations.

Advantages

- Restore correct occlusion
- Aids reduction of fracture (closed or open)
- Can allow traction/training postoperatively
- Cheap?
- Can be applied with patient under local anesthesia



Costs debatable but can be applied with patient under local anesthesia and reduce operating room time?

Disadvantages

- Time consuming
- Operator dependent
- Risk of “needlestick” injury
- Airway compromise (postoperative)
- Dental problems
- May complicate fracture reduction
- Patient dislike (if used postoperatively)

Take-home messages

Maxillomandibular fixation:

- Aim: to re-establish pretraumatic occlusion
- May be used intraoperatively (or postoperatively)
- Many techniques have been described:
 - Arch bars
 - Eyelets
 - Screws
- All have advantages and disadvantages