Analysis of occlusions

The triad of occlusal functions

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What is a malocclusion? What could be a pathogenic occlusal relationship? It is not easy to answer these questions. Frequently in the literature there is a lot of confusion by mixing movement disorders, such as occlusal interference with static disorders, such as the loss of posterior occlusal support or deflected occlusions. It seems possible to obtain a better understanding of dental occlusion if a differentiation can be made between three very different items concerning the stability (how is the maximum intercuspation, MICP?), the position (where is the MICP?) and the movement (how to access the MICP?). The proposal is to call this approach the triad of occlusal functions: stabilizing, centering and guiding (or calage, centrage, guidage).

Occlusal function: “Stabilizing” or “Calage” (≠ unstable MICP):

Mandibular stability requires the long-term stability of each dental unit of the dental arches. The situation and the morphology of occlusal tables, the long axis inclination of each tooth, the three dimensional dental arches arrangement are responsible for the long-term stability of the teeth and also the stability of the mandibular position induced by maximum intercuspation (MICP). In case of treatment, occlusal stability in MICP is mandatory to ensure a new mandibular therapeutic position.

The disorders of stabilizing function could be defined for unstable MICP related to:

- insufficiency, loss or absence of posterior occlusal support

- insufficiency, loss or absence of anterior occlusal stop (loss of vertical dimension of occlusion resulting from a combination of the both (loss of anterior stops and posterior supports)).

Occlusal function: “Centering” or “Centrage” (≠ deflected MICP)

The MICP predicts the disco-condylar positions strongly exposed during clenching. Optimization of temporomandibular joint structures requires a stable disco-condylar position along the articular tubercle to absorb the muscular constraints without joint damage or muscular nociceptive reactions.

Centering means MICP is corresponding to Centric Relation Position (CRP). Mandibular decentering or “decentrage” means that the MICP does not correspond to the CRP (with an anterior sagittal tolerance of approximately 0.5 mm). Frequently, decentering is seen as a lateral deflection.

Occlusal function: “Guiding” – “Guidage” (≠ interference)

A therapeutic mandibular position established by a stable, non-deflected MICP is not sufficient for efficient occlusal function if the access to this position is prevented or limited by occlusal interferences.

Occlusal guiding is cinematic and effects how the occlusal guiding surfaces can facilitate easy mandibular access to MICP. This occlusal guiding function must conciliate borders (limitation of the movement) with functional open spaces (freedom of movement).

The dysfunctions of occlusal guiding are occlusal interferences which are occlusal contacts causing devia-

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tion or limitation of mandibular movement around the MICP:

- posterior occlusal interference (during protrusion or laterotrusion)
- anterior occlusal interference (overguidance during laterotrusion or protrusion)
- retrusive interference (on molars)

During occlusal analysis (clinically or on articulators) the triad of occlusal functions, i.e. stabilizing, centering

and guiding can be taken into account to systematically answer the three questions:

- How is the quality of MICP? Stabilizing or unstabilizing?
- Where is the situation of MICP compare to CRP? Centering or deflecting?
- How to access MICP? Well controlled or with interference?