



FULL MOUTH REHABILITATION – CONCEPTS

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Abstract

Occlusion restoration in patients with badly worn dentition is difficult because each instance is different. Rebuilding, restoring, and maintaining the whole health of the oral mechanism must be the goal of full mouth rehabilitation. Many ideas and philosophies have developed over time to achieve complete dentition restoration and rehabilitation while meeting all relevant requirements. This article provides a summary of the different occlusal theories and concepts in full mouth rehabilitation, assisting the clinician in choosing the best occlusal plan for a given patient.

Keywords: full mouth rehabilitation, occlusal concept or philosophies

INTRODUCTION

Full mouth rehabilitation aims to preserve the health of the complete stomatognathic system in addition to rebuilding and restoring the damaged dentition(1). Occlusal rehabilitation restores dental arch function with restorations like inlays, crowns, bridges, and partial dentures(2). A condition of biological and functional efficiency should be restored via full mouth rehabilitation, in which the temporomandibular joint (TMJ) mechanisms, masticatory muscles, and teeth and their periodontal structures all work in unison(3). Appropriate treatment planning requires a thorough evaluation of the patient's diet, eating patterns, and/or gastrointestinal problems in addition to the current state of occlusion(4). In order to simplify the difficulties associated with treatment planning and rehabilitation for patients in need of full mouth reconstruction, the article provides an overview of the numerous occlusal principles(1)

INDICATIONS OF FULL MOUTH REHABILITATION

- The replacement of several lost, worn, decaying, or damaged teeth
- To replace the crown and bridge framework that was poorly planned and implemented.
- Restore impaired occlusal function
- Preserve longevity of remaining teeth
- Maintain healthy periodontium
- Improve objectionable esthetics
- Eliminate pain and discomfort of teeth and surrounding structures.
- Fracture or avulsion of multiple teeth due to accidents
- Skeletal or dental discrepancies affecting occlusion, speech, and TMJ health



- Patients seeking comprehensive smile makeover due to generalized discoloration, poor alignment, or dissatisfaction with prior dental work.
- Although caution is urged, treatment of temporomandibular problems is also recommended.(2)

CLASSIFICATION

Although several classifications have been put forth to group patients in need of full mouth rehabilitation, Turner and Missirlian's categorization is the one that is most frequently used(5).

- Category 1: Loss of the vertical dimension of occlusion (VDO) due to excessive wear
- Category 2: Excessive wear with adequate space but no loss of VDO
- Category 3: Excessive wear with little space but no VDO loss

BIOLOGICAL CONSIDERATION DURING FULL MOUTH REHABILITATION

Together with the above criteria, some biological considerations are required to achieve the different full mouth rehabilitation goals. Consider using a different approach that centres a new occlusal scheme around a stable condylar position, known as a "centric relation"(6). At the tooth and condylar levels, the differences between the centric relation and the greatest intercuspation position should be examined as vertical, horizontal, and lateral components. The mandible's physiological rest position should be used as a guide to calculate the occlusal vertical dimension, and the existing highway space should be noted(7). Achieving optimal periodontal health is another goal of the same, thus it is important to evaluate how the occlusal pattern affects the periodontal structures.

FUNCTIONAL ASPECTS OF FULL MOUTH REHABILITATION (8)

Three established and recognized foundations form the basis of the science of whole mouth rehabilitation.

- The presence of the mandible's physiological rest position, which is constant.
- Identifying a vertical dimension
- Accepting an occlusion that is dynamic and functionally focused

OCCLUSAL SCHEMES

Three systems can be used to categorize the optimal occlusion for eccentric motions based on the state of the tooth contact: articulation that is balanced, group function, and mutually protected. While mutually protected occlusion and group function are used for natural teeth, the balanced occlusion idea is used for individuals wearing complete dentures(1).

OCCLUSAL CONCEPTS AND PHILOSOPHIES FOLLOWED IN FULL MOUTH REHABILITATION

In addition to rebuilding the occlusal surfaces of teeth, the best occlusal scheme to be used during full mouth rehabilitation has been sought after in order to provide the best possible muscle and joint function.

Gnathological Concept(McCollum, Stuart, Stallard)

The gnathologic society, which McCollum established in 1926, was the forerunner of the modern idea of comprehensive dentistry. In 1955, McCollum and Stuart released their seminal

"Research Report," which introduced the Gnathological Concept(9). As a result of their observations, an arcon completely adjustable articulator, maxillomandibular relationships, transverse hinge axis, and mandibular movements were developed. They defined the condylar path as a constant entity in adults and held that anterior guidance was separate from the condylar path(10). The lower incisors, canines, and buccal cusps stamp into the upper fossae, while the upper lingual cusps stamp into the lower fossae, according to Stuart and Stallard(11).

Limitations:

- The requirement for accurate gnathologic restorations is complicated by point-centric and cusp-to-fossa tripodization.
- A completely adjustable articulator is required.
- Cost, the inability to improve occlusal vertical dimension, and mandibular position alterations that were difficult to adjust to a new maximum intercuspal relation were the drawbacks of cast metal transitional restorations(12).

Freedom in centric Concept (Schuyler)

According to this theory, "opposing cusps contact on a flat area in the central fossae, allowing for a degree of freedom (0.5– 1 mm) in eccentric movements unaffected by tooth inclines." Cusp-to-surface mechanics are its foundation(13). In natural dentition, balancing contacts should be avoided as they are harmful. The initial stage of occlusal rehabilitation should be incisal guidance since it is a more important factor than condylar guidance in the selection of posterior guiding tooth inclines. The restoration must include anteroposterior freedom of movement(14).

Limitations

- Gnathologists claim that attempting to obtain freedom in centric by varying the maximum intercuspation contacts in two distinct places on an articulator may lead to imprecise results in both positions.
- Chewing efficiency is influenced by the cusp-to-surface relationship rather than the cusp-to-fossa relation(15).

Simplified occlusal design (Wiskott and Belser)

According to Wiskott and Belser suggested a simplified occlusal scheme that calls for one occlusal contact per tooth—typically a cusp-fossa relation rather than a tripod contact—all interproximal contacts to be tight and appropriate because they stabilize the tooth mesio-distally, anterior disclusion mechanics to be used to prevent posteriors from experiencing any interference with lateral excursive movements, and antero-posterior freedom of movement, which is accomplished by having concave internal slopes on the cusps

of posterior teeth(16). Because of the cusp fossa relationship, this method permits chewing and preserves vertical dimension. It can be applied to both minor and major restorations, and it lowers the total amount of occlusal contacts. This design meets aesthetic requirements while guaranteeing occlusal stability. The system can be modified to accommodate different levels of group function and the majority of anterior guidances. The occlusal correction process is easy(16).

Pankey, Mann and Schuyler Philosophy (1960)

The spherical theory of occlusion, Meyer and Brenner's "wax chew in" technique, and D'Amico's discussion of the significance of cuspid teeth served as the foundation for their philosophy (1). The PMS philosophy, which modified canine disclusion, called for only anterior teeth to make contact during protrusive excursion and simultaneous contacts between the canine and posterior teeth during working excursion (group function)(17).

In order to meet both functional and aesthetic objectives, the incisal guiding in the PMS technique was developed intraorally using acrylic resin. Mandibular posterior teeth are repaired in accordance with the anterior guidance so as not to interfere with the condylar guidance, and the optimal occlusal plane is chosen as determined by the Monson curve. Following the completion of mandibular restorations, maxillary posterior occlusal surfaces are developed using the functionally produced route approach(18). With "long centric" incisal direction and group function in working excursion, the definitive restorations are equilibrated into a centric relation position with mandibular buccal cusps onto a flattened fossae-marginal ridge contact. By using FGP records, all occlusal interferences can be removed, and the restoration's occlusal surfaces can be given a functional form(19).

Limitations:

- Fossae marginal ridge contact at the cusp
- Errors may arise when wax functionally generated path approaches are used.
- A non-arcon articulator, which might not accept interocclusal records created at increased occlusal vertical dimension, was the basis for the development and advocacy of the PM concept.

Hobo's twin table philosophy

Dr. Sumiya Hobo presented another concept that is used in dentate patients' rehabilitation. In order to produce a predetermined, harmonic disclusion with the condylar path, he presented the Twin table concept, which developed anterior guidance. The method makes use of two distinct, specially made incisal guide tables. The term "incisal table without disclusion" refers to the initial incisal table(20). The systems with detachable anterior and posterior portions are prepared in order to fabricate it. During eccentric movements, this table aids in achieving regular contacts in the posterior restorations. When the articulator can replicate border movements by positioning 3 mm plastic separators behind the condylar elements, the other incisal table is created. The term "incisal

guidance with disclusion" refers to this(21). Restorations for posterior teeth are made using the first incisal guide table. To accomplish incisal guidance with posterior disclusion, the second incisal table is utilised(22).

Hobo's twin stage philosophy

In their study, Hobo and Takayama came to the conclusion that cusp angle should be regarded as the most accurate indicator of occlusion since it is four times more trustworthy than the condylar and incisal paths, which exhibit deviation. A standard value for cusp angle was established, which may offset the wear of natural dentition from caries, abrasion, and restorative procedures, even though it is independent of condylar and incisal paths.

Divided into two stages:

Stage 1: Posterior teeth are restored using specific articulator settings (Condition I).

Stage 2: Anterior guidance is developed to harmonize with posterior disclusion (Condition II).

The standard amount of disclusion might be established by using the standard cusp angle. To replicate the typical degree of disclusion, various articulator adjustment values were identified for every occlusal scheme.(23)

Youdelis scheme

The Youdelis Concept, introduced by Dr. Abraham Youdelis in 1971, is an occlusal philosophy designed specifically for patients with advanced periodontitis. This approach aims to achieve functional stability and distribute occlusal forces in a manner that minimizes further damage to the remaining dentition

Key Principles of the Youdelis Concept:

1. Tripodization of Occlusion

Aims to achieve three-point contact in centric relation (CR) to stabilize the mandibular position. Ensures maximum stability and prevents tipping of the mandible during function.

2. Cuspid Guidance or Group Function

Youdelis supported group function occlusion in patients with wear, mobility, or periodontal issues. Posterior disclusion is not always mandatory as in mutually protected occlusion. Ensures posterior teeth can share lateral forces when anterior guidance is inadequate.

3. Stress Distribution

Focus on even distribution of occlusal forces to prevent overloading of any single tooth, especially in periodontally compromised patients. Emphasis on broad, flat centric contacts and minimal lateral interferences.

4. Use in Periodontal and Prosthodontic Cases

Ideal for periodontally involved dentitions, especially where some mobility is present. Often used when combining fixed and removable prostheses in the same arch.

5. Anterior Guidance Modified by Clinical Situation

Recognizes that ideal anterior guidance is not always possible, especially in patients with wear or missing teeth. Guidance is customized based on existing structures and functional capacity.(24)

Nyman and Lindhe Scheme

The Nyman and Lindhe scheme is a treatment concept developed in the 1970s by Sture Nyman and Jan Lindhe for the prosthetic management of patients with advanced periodontal disease. It is a biologically oriented approach that emphasizes preservation of periodontally compromised teeth through meticulous periodontal therapy and strategic prosthetic support.

Key Principles of the Nyman and Lindhe Scheme

1. Preservation Over Extraction

Focuses on retaining periodontally compromised teeth, rather than extracting and replacing them. Teeth with reduced bone support can still function effectively if inflammation is controlled and occlusal forces are well-distributed.

2. Rigid Splinting

Fixed prostheses (bridges) are used to splint mobile teeth together, providing shared support and stability. Reduces individual tooth mobility and distributes occlusal loads more evenly.

3. Supportive Periodontal Therapy (SPT)

Long-term success depends on regular maintenance, typically every 3–6 months. Emphasizes plaque control, monitoring of periodontal status, and prosthesis integrity.

4. Occlusal Adjustment and Simplified Occlusion

Elimination of traumatic occlusal contacts. Simplified occlusion, often with flat occlusal surfaces, to reduce lateral forces.

5. Strategic Abutment Selection

Remaining teeth selected as abutments based on clinical attachment levels, mobility, and crown-root ratio. Pontic span kept as short as possible to minimize mechanical stress.⁽²⁵⁾

CONCLUSION

There are universal therapeutic principles, all functional aspects are interconnected, and every attempt should be made to create an occlusal interface that allows the TMJs, masticatory muscles, and tooth periodontium to work in unison. Accurate diagnosis of the underlying cause of the disordered state, intraoral alterations, and other detrimental impacts on jaw interactions are necessary for this. During rehabilitation operations, the patient should have the best possible occlusion based on their demands. Since there are many different occlusal forms and schemes, there is no one guideline that applies to every patient in terms of chewing efficiency.

Occlusal rehabilitation is a drastic process that should be performed in line with the dentist's treatment plan, which is determined by his clinical expertise and understanding of various philosophies. The reconstruction, restoration, and preservation of the overall health of the oral mechanism require a thorough investigation and a realistic strategy.

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