

REVIEW ARTICLE

Occlusion and Full Mouth Rehabilitation: An Overview

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ABSTRACT

An understanding of the factors controlling the pattern or contours of occluding tooth surfaces is desirable in planning for the maintenance of oral health and function. This is equally important whether we are maintaining the natural dentition or are supplying prosthesis for the partially or fully edentulous patients. The aim of this article is to review briefly the importance of occlusion in full mouth rehabilitation.

Keywords: Centric relation, Condylar path, Jaw movement, Occlusion, Rehabilitation.

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INTRODUCTION

Full mouth rehabilitation possesses a significant challenge to dentistry, to get good functional and esthetic results we have to follow various prosthodontic principles. The goal of dentistry is to increase the lifespan of the functioning dentition, just as the goal of medicine is to increase the lifespan of functioning individual.^[1] Apprehensions involved in reconstruction for debilitated dentitions are heightened by widely divergent views concerning the appropriate procedure for successful treatment. Most philosophies and associated techniques for full mouth rehabilitation show similar characteristics based on an author-specific philosophy of occlusion.

OCCLUSAL CONCEPTS IN FULL MOUTH REHABILITATION

There are two important and basic steps, which must be recognized in any technique. These are: (1) A

preliminary equilibration of the occlusion and (2) the establishment of the incisal guidance. The basic principles of occlusion must be understood and observed, and definite objectives must be visualized and achieved wherever possible. The objectives of the preliminary occlusal equilibration are: (1) To correlate centric occlusion with the unstrained centric relation, (2) to obtain the maximum distribution of occlusal stress in centric relation, (3) to retain the vertical dimension of occlusion, (4) to equalize the steepness of similar tooth inclines to distribute eccentric occlusal stresses evenly, (5) to establish smooth guiding tooth inclines, (6) to reduce the steepness of inclines of guiding tooth surfaces so that occlusal stresses may be more favorably applied to the supporting tissues, (7) to retain the sharpness of cutting cusps, (8) to increase the number and size of food exists, and (9) to decrease the size of the occlusal contact surfaces. One of the most destructive forms of malocclusion is the premature (deflective occlusal) contacts of balancing or non-functioning tooth inclines. These contacts contribute not only to the premature loss of the teeth involved but also to temporomandibular joint (TMJ) injury. Contacts on balancing cusp inclines are objectionable only on natural teeth.^[2]

There has been a search for the ideal occlusal scheme in full mouth rehabilitation and understanding of the factors controlling the pattern or contours of occluding tooth surfaces is desirable in planning for the maintenance of oral health and function. This is equally important whether we are maintaining the natural dentition or are supplying a prosthesis for the partially or fully edentulous mouth;^[3] hence, this article overviews the various occlusal concepts given by different pioneers in field of prosthetics to help overcome various difficulties occurring during the restoration of health and function of stomatognathic system as a whole.

Today, a functional dental occlusion is required primarily for mastication by providing the "tools" within the masticatory system through which to apply muscle forces to incise and comminute foods. While the teeth can be used for other tasks such as prehension or as weapons, this is not the norm in modern human society. Bite forces are generated by the coactivation of predominantly the masseter, medial pterygoid, and temporalis muscles (the primary jaw closer muscles). Jaw movement has been studied extensively at the occlusal interface, with Ulf Posselt being one of the first to describe it

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accurately in three dimensions.^[4] The horizontal range of movement (i.e. occlusal paths) of the incisor and molar teeth is similar, but the vertical range is markedly different with the incisor teeth movement greater than that at the molar.^[5] The occlusal paths are, by definition, dictated by anterior determinants such as anterior dental overbite and other tooth contact relationships and the posterior determinants such as the condylar guidance of the TMJ.^[6] A functional dental occlusion is important for general health, and masticatory performance is closely correlated with the occlusal contact area, with larger contact areas in those subjects demonstrating better performance.^[7] The loss of teeth leads to reduced ability to comminute foods and has been associated with reduced intake of fruits and vegetables and lower systemic biochemical levels, nutrients and dietary fiber and increased gastritis, diabetes, and obesity.^[8]

DISCUSSION

It was believed that condylar path does not change during adulthood and that determination of anterior guidance is in the hands of the dentist. Anterior guidance was considered independent of the condylar path.^[9] The importance of anterior guidance on functional occlusion of natural teeth was recognized by Schuyler. He stated that anterior guidance had equal or greater influence on occlusal morphology than TMJ and that unfavorable incisal guidance may tend to produce abnormal functional movements of the condyles.^[10] He further suggested that incisal guidance without freedom of movement from a centric relation occlusion to a more anterior tooth. Hobo and Takayama^[11] in their study made observations similar to those of Schuyler^[10] that anterior guidance and condylar guidance were dependent, not independent factors. They did not include freedom in centric. In the twin-stage procedure, as the cusp angle was the main determinant of occlusion, the need to record condylar path was not necessary. Therefore, complicated instruments such as the pantograph and fully adjustable articulators are not required. This procedure is much simpler than the standard gnathological procedure, yet it follows gnathological principles. Wiskott and Belser^[12] combined anterior disclusion mechanics and anteroposterior freedom with the advantage of one occlusal contact per tooth. Instead of tripod contacts, the cusp-fossa relation was achieved which facilitated mastication. This design provided occlusal stability and esthetics and could be adapted to anterior guidance and group function. The occlusal concepts discussed for periodontally weak teeth can be applied in similar clinical situations.^[13,14]

CONCLUSION

For proper diagnosis, treatment planning and execution of full mouth rehabilitation, a thorough understanding of operative and restorative procedures is required. All functioning factors including teeth, muscles of mastication, TMJ, and periodontal structures are interrelated, so each of them should be given enough attention to establish functional harmony. At the same time, the esthetic requirements of the patient should be fulfilled within physiological limits. The occlusal rehabilitation procedure requires proper dentist-patient relationship because it is a long-term procedure that needs patient's cooperation. The object of complete mouth rehabilitation must be the reconstruction, restoration, and maintenance of the entire oral mechanism.

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