Importance of Vertical Dimension in Facial Esthetics

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ABSTRACT

The objective is to discuss the importance in the determination of the vertical dimension of occlusion in prosthodontic treatment.

Case I: A 43 year old Caucasian female presented with chief complaints of both poor function and esthetics. The medical history revealed a history of cirrhosis, Hepatitis B and depression. In 2011, she presented edentulous with some lower impacted teeth. Three sets of complete dentures were fabricated and delivered. These dentures caused her various problems including speech, phonetics, esthetics and ear pain. Due to lack of posterior interocclusal space, vertical dimension was increased so much that the resulting dentures were unsatisfying esthetically and wearing them resulted in auricular discomfort.

Case II: A 75 year old Caucasian male presented with chief complaints of a broken denture, joint discomfort and esthetic concerns. The medical history revealed a history of angina pectoris, hypertension and depression. He continuously complained about his joint pain and had numerous episodes of a broken prosthesis since 2013. Repairs were done several times but they did not eliminate his problem. In 2013, he was diagnosed with a loss of vertical dimension. When his vertical was reestablished at its proper position, his joint discomfort was resolved and his esthetics greatly improved.

Conclusion: Determination of the proper vertical dimension of occlusion is a crucial factor in the overall success of a restorative case. For correct diagnosis and treatment, the restorative dentist should use past dental history, facial profile, past photographs, provisional prosthesis and mounted diagnostic casts.

BACKGROUND

Nearly 80 years ago, Niswonger first introduced the concept of interocclusal clearance or freeway space. In 1934, he suggested using the tactile muscular sense of the patient’s lips to determine the amount of freeway space; however, some dentists found this was difficult to record in a consistent manner.

Twenty years later, Silverman and Pound recommended the use of the closet speaking space. They looked for the distance between upper and lower anterior teeth to be around 0.5 to 1.0 mm when sibilant sounds were pronounced. In 1965, the open rest position was introduced by Douglas6. Here, we want the position of lower first premolar to be located at the corner of the mouth. Another technique, utilizes the labial “M” sound since “M” can be said without the use of teeth. Still others have suggested the use of “biting force” or facial appearance in the determination of proper vertical dimension.

Other techniques have been suggested such as cephalometric and neuromuscular; however, they are rarely clinically utilized due to their complexity and unreliability.

No single technique has been proven to be the best for achieving a suitable vertical dimension. Often times, the use of several techniques in combination proves to work at the best. Patient acceptance varies on a case by case basis.

Case Report I

Comparison of Various Vertical Dimensions

Case Report II

Preoperative Photographs

Comparison of Various Vertical Dimensions

CONCLUSION

• A few warning signs of an improper vertical dimension of occlusion include: repeated broken prosthesis, auricular pain, soreness/fatigue of masticatory muscles or angular chelitis.

• Often times dentist must utilize a combination of techniques when determining a suitable vertical dimension of occlusion.

• The presence of some anatomical limitation such as short upper lips or muscular hypo or hyper activity may complicate the determination of vertical dimension.

• Many times, one or more provisional prosthesis must be used before determination of a suitable vertical dimension of occlusion.

REFERENCES


ACKNOWLEDGMENT

I would like to thank Dr. Levon and Dr. Margiotti for always providing genuine and useful suggestion while including compassionate encouragement both in the clinic and lab.