

LINGUALIZED OCCLUSION -AN OPTIMAL OCCLUSAL SCHEME IN SEVERE RESIDUAL RIDGE RESORPTION IN EDENTULOUS PATIENTS

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Abstract

Occlusion has a considerable influence on the outcome of every Prosthodontic treatment as occlusal prematurities have destructive and destabilizing influences on dentures. Unless denture bases are adequately and evenly stabilized, it is virtually impossible to properly equilibrate the occlusion. In order to overcome this problem the relative simplicity involved in development, lingualized occlusal scheme has gained favor among practitioners as adjustment required to compensate for minor changes in vertical and centric relation are readily accomplished for dentures. Thus, this article describes the principles and practical implementation of an arrangement in lingualized occlusion, as an optimal occlusal scheme in severe residual ridge resorption of edentulous patients.

Key words- Occlusion, lingualized occlusion, complete dentures

Introduction

The ideal artificial tooth arrangement that maximizes denture stability, comfort, esthetics, and function has occupied the dental literature for many years. Of all occlusal schemes that have been presented to the Prosthodontist in cases of severe ridge resorption of edentulous patients, that of lingualized occlusion has emerged as one of the more popular. [1] The lingualized occlusion concept is an example of a bilaterally balanced occlusion concept. The premolars and molars are arranged and modified so that only the lingual cusps of the upper posterior teeth make contact with the central fossae of the lower posterior teeth. [2] Exceptions are the first premolars which are arranged in a more conventional

way. This is due to the first mandibular premolar as it performs more of the scissor function of a cuspid. The second mandibular premolar buccal cusps and of molars do not make contact with their antagonists. [3]

Principle of the lingualized occlusion

On the basis of the fact that the movements of the mandible are dictated by the temporomandibular joint during function, with a balanced occlusion concept a good stability in the dentures can be obtained. [4] This is achieved by arranging the teeth in such a way that on both the working (active) side and the balancing (passive) side there are simultaneous bilateral balancing contacts. Bite forces are thereby distributed over the largest possible area of the edentulous jaw. [5]

On the basis of a normal class I jaw relationship, this means that with a conventional anatomical occlusion concept, during lateral movement both the buccal and lingual cusps of the upper and lower denture come into contact on the working (active) side, which means a large number of contacts during eccentric jaw movements.

In comparison with this conventional anatomical concept, the number of occlusal contacts is reduced considerably with the lingualized occlusion concept, it's only in centric relation that the lingual cusps of the posterior teeth in the upper denture make contact in the central fossae of the lower posteriors and buccal cusps are not in contact. [6] There is therefore only one "centric stop" between upper and lower antagonistic pair of posterior teeth. [7-9]

An aesthetically pleasing result can be achieved with the help of anatomically formed upper posterior teeth in lingualized occlusion., Although any type of anatomically formed posteriors molars can be made suitable for the lingualized occlusion concept by means of grinding, special teeth have been developed for this occlusion concept over the years. [10-11]

In the nineteen fifties, important modification occurred in the lingualized occlusion concept. In order to obtain better chewing efficiency, the contact relation of the first premolar was changed in the sense that the cusp of the first lower premolar comes in contact with the mesial fossa of the first upper maxillary premolar. [12] The result of this is that particularly during functioning, the cuspid and the first premolar guarantee a good scissors effect which improves chewing efficiency.

The lingualized occlusion concept needs no special class or anterior teeth arrangement. It is always possible that the mandibular cuspids are arranged in a special way and a specific position, before the other anterior teeth and premolars are arranged. [13-15] During lateral movement in the

lingualized occlusion concept, contact only occurs on the working (active) side between the lingual cusps of the upper and lower posteriors with the exception of the first premolar; on the balancing side there is contact between the lingual cusps of the upper denture and the lingual inner curve of the buccal cusps of the lower denture, such as is normal with the conventional occlusion concept. [16]

In order to guarantee a balanced occlusion, a compensation curve arrangement is done during the set-up of the mandibular posterior teeth. Ascending part of the mandible does not have any posterior teeth placed, in order to prevent protrusive dislocation of the lower denture. As this in most cases results in a reduction of the number of teeth by leaving out the second premolar or molar, depending on the space available. The maxillary lingual cusps and the mandibular posteriors have protrusive balanced contacts which may only occur in between, i.e. even during functioning the anterior teeth are clear and not under pressure. [17]

If anterior interference occurs when either they move or grind the lower offending anterior teeth slightly or in case when there by increasing the compensating curve leading to increase in the distal incline on the lower molars. In this way, a balanced occlusion "in all directions" is created from the centric stops of approximately 3 mm freedom of centric. [18-20] In order to ensure that the supporting upper lingual cusps move completely freely in the lower central fossae, the fossae of the lower posterior teeth must be broadened, mainly by of selective grinding. The buccal cusps are just not in contact. For this purpose the buccal cusps in maxillary arch are ground when in contact to create buccal clearance. In this way the harmonizing of the working and balancing cusp contacts is simplified, since only the upper lingual cusp contacts the lower. [21]

Indications of lingualized occlusion

It is indicated in cases where patient demands high priority on esthetics but oral conditions does not allow placement of anatomic teeth such as: Severe alveolar resorption, Class II jaw relationship and displaceable supporting tissues. It is indicated also in cases where a complete denture opposes a removable partial denture and in cases patients with parafunctional habits. [22-25]

Advantages of lingualized occlusion

The advantages of the lingualized occlusion concept are as follows: the advantages of both the anatomical teeth (i.e. aesthetic and chewing capacity) and the non-anatomical teeth (i.e. less horizontal forces) are maintained, particularly in patients with severe alveolar bone resorption. Vertical forces are directed more centrally on the mandibular alveolar ridge, which gives more stability to the lower denture. [26]

The upper posteriors can be positioned more buccal of the ridge because the lingual cusps are active and should be situated at the top of the maxillary ridge. In many cases, this prevents an arrangement in cross bite and improves the aesthetic aspect of the dentures. Balanced occlusion with a freedom of centric is easy to achieve within an area of 2 to 3 mm around the centric stops. [27]

Benefits of lingualized occlusion

To summarize, Prosthodontics always have been concerned with the maintenance of alveolar bone. Many ideas concerning occlusion and its role in preservation of the residual alveolar ridge have been proposed. It is now widely accepted that cusped teeth, if properly arranged, provide an efficient and aesthetically pleasing posterior set-up for many patients. The presence of cusps, however, does introduce potentially destructive forces. [28]

In general it can be said that there are no contra-indications for the applications of the lingualized occlusion concept. This concept is indicated for patients who place high aesthetic requirements on their dentures and

with whom normally an occlusion concept is indicated to minimize the horizontal component of force during mastication and parafunctional movements as a result of strong alveolar bone resorption, with flabby and knife edge ridges or abnormal jaw relation and a large inter ridge space. The use of the lingualized occlusion concept brings great comfort for this patient as a result of the modified posteriors in the lower jaw, where as aesthetics are not a problem due to the use of anatomical posterior teeth in the upper jaw. This is due to the following: As a result of advanced alveolar bone resorption, a discrepancy arises between the more narrow sizes of the upper arch in comparison with that of the lower jaw. Since the lingual supporting cusps are active and must be situated at the highest point of the alveolar crest, the upper posterior teeth can be set fairly close to the buccal side of the mandibular ridge. This has the following results-The forces on the mandibular alveolar ridge are situated more centrally at the top, which increases the stability of the lower denture; a cross bite can be avoided in almost all cases; the facial muscles are well supported by the maxillary molars, which increases the aesthetic value even more. [29-32]

Conclusion

An ideal complete denture occlusal scheme search continues but the chances that one will be found is low, because the characteristics that make up such a scheme are not all complementary. Thus, within the review of this article although not ideal, lingualized occlusion is a important concept because many advantages of anatomic and nonanatomic occlusions are retained, satisfactory occlusion is easily obtained, balanced occlusion can also be accomplished easily.

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