

Construction faults associated with complete denture wearers' complains

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SUMMARY

Edentulism is considered a poor health outcome and may compromise the quality of life. Although the number of adult losing their natural teeth is diminishing, there are still large numbers of edentulous adults in the population.

A retrospective study was conducted with information derived from literature (from 1984 till 2004) about the patients who experienced ongoing difficulties with new complete dentures, to determine possible underlying causes.

Relationships were observed when denture construction or design faults were compared with patient complaints and the advised solution of the problem.

Conclusion. This study suggests that in most instances, complete denture patients present with complaints only when there is real design fault. Clinician must carefully evaluate the denture for faults in denture base extension and horizontal and vertical jaw relationships

Key words: edentulism, complete dentures, construction faults.

INTRODUCTION

In most Western industrialized countries, edentulism occurs in about one tenth to one fifth of the general population, in half of the population over age 65. This does represent a considerable change from the high prevalence of edentulism found only a few decades ago [1,2]. The loss of natural teeth is associated largely with low socio-economic status [3].

Loss of natural teeth and subsequent alveolar resorption has a significant impact on appearance and function. Complete denture fabrication techniques, while not universally standardized have resulted in a high degree of success [4,5]. Two thirds of the 118 respondents surveyed in the study reported that they were "very satisfied" with their maxillary denture as compared with 51% for mandibular dentures. Of the individuals who wore their dentures "all day", 5% were "very dissatisfied" with at least one of their dentures [6].

Many practitioners will experience a situation, when a patient with newly fabricated complete dentures continues the experience difficulty in adapting to them [7, 9]. This can lead to a long period of appointments that may not result in resolution of the problem [10,11]. Therefore it is often concluded that there is some patient factor, either age, gender, medical or psychological status that is hindering the success of treatment [1,12,13].

Treatment challenges for such patients have traditionally been described as a combination of function, comfort, and esthetics.[14]

Often there is not total agreement between the patient and the dentist as to the adequacy of their dentures [8,15,16]. This differing perception of patient needs makes management more difficult. The fact that a denture of poor quality may be well tolerated in one person, while a well-made one may be a failure in another has been a frequent source of confusion and frustration [9,13,17]. It has led many dentists away from taking proper care in the construction and provision of good quality dentures in the belief that the patient will adapt to almost anything, irrespective of the quality [10,16,18]. Therefore, this article is a review of selected literature on the sequel of treatment with conventional complete dentures with included recent literature found with Medline from 1984 to 2004.

Several authors cite the most frequent complaints with complete dentures are those pertaining to esthetics, retention and stability, comfort while eating, and the accumulation of food under the appliance [11,15,16,19].

The factor that most often appears to have an impact on either success or failure of complete dentures is esthetics [11,15,16,20]. Sometimes the appearance of their dentures prevents from wearing them. The way in which the patient believes he should look is not always in accordance with the clinician's perception of a pleasing appearance [9,11,15,16,20]. Attention has also been focused on patient's expectations of their dentures. Patients may have unrealistic high expectations of their dentures, often believing that the dentures will be comparable to their natural teeth [13,15,21,22]. It has been stated that these high expectations of dentures are more prevalent in older age groups [7,21,23].

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Practitioners have statistically significantly fewer adjustment appointments and a greater number of pleased patients when all esthetic decisions are made by the patient. This implies that when the esthetic result successful, the dentures are more successful over all. Everybody accept the importance of esthetics in denture success stating that, "Good appearance is so related psychologically to comfort that the two cannot be separated" [24, 25].

When a patient experiences difficulty with his dentures, the clinician must critically assess the factors that influence denture acceptance. These factors may explain why there is a difference between the perceptions of the dentist and the patient of where the difficulty lies [4,7,10,12,22].

Loss of natural teeth and subsequent alveolar resorption has a significant impact on appearance. It is possible to restore appearance with complete dentures [8,17,23]. Bone resorption in the maxilla occurs mostly on the buccal aspect and this leads to a decrease in lip support. Incisive papilla is a guide that the vestibular surface of incisor teeth are placed 8-10 mm anterior to the incisive foramen [8-12,15,21,23]. Anterior tooth position influences retention and stability of the denture, speech pattern [6,8,20].

The process of developing an aesthetic scheme for anterior denture teeth begins at the jaw registration stage. The wax rims should be adjusted to indicate the desired buccolingual positioning of the teeth and the level of the occlusal plane [10,11,18,21].

Both – the amount of tooth showing orientation of the occlusal plane and labiolingual inclination, have an influence on aesthetics. If the level of the occlusal plane is set too low, or if the anterior teeth are set on a flat plane, then the teeth will be too visible. If the orientation of the occlusal plane is not parallel to the interpupillary line, then the smile will look crooked [10,11,18,21].

The labiolingual position of the anterior teeth, in particular the neck of the teeth, is critical in terms of lip support [8,9,23]. If the labial flange of the denture is thickened this will cause bulking out beneath the nose. We can place the necks of the teeth close to the alveolar ridge and tilt the incisal edges of the teeth labially. This will improve the lip support [8,10,11].

Some review demonstrates the major concepts of natural or supernormal appearance. A 100-degree nasolabial angle and a 140-degree mentolabial angle should be the goal for the extraoral appearance. The incisal edges of the maxillary teeth should follow the lip line, and a reverse curve should be avoided. The dental midline should be both coincident with the facial midline and vertically straight. A gingival-to-lip distance of 4 mm or more may be considered unaesthetic.

These factors should be considered baseline esthetic guidelines in complete denture construction [26,27,28].

PHONETICS

The presence of complete dentures alters the degree of oral resonance. If the changes in the contact surfaces require a modification of tongue behaviour that is beyond the adaptive capability of an individual patient, a speech defect will persist.

It should be remembered that the tongue of the patient who is wearing complete dentures has a dual function- to take part in speech articulation and to control the dentures. If the dentures are loose, the demands of this latter function may be so great that there is a general deterioration in the quality of speech.

A dry mouth may result in looseness of dentures and will also affect speech due to the loss of surface lubrication of the oral mucosa [29,30,31].

A number of sounds are affected by tooth position, flange thickness and lip support. But sometimes it is difficult to decide whether phonetics will improve as the patient adapts to the new shape of the dentures [8,12, 21]

FREEWAY SPACE

Measuring the occluding face height and the resting face height should check the amount of freeway space. In addition to measuring the freeway space, the clinician should also assess this visually. If there is too much tooth showing, or if the patient is struggling to put their lips together, there may be insufficient freeway space. The patient should be asked to speak and if their speech sounds incorrect, this may indicate that there is insufficient freeway space. If there is too much freeway space, then the patient will look over closed and will show too little teeth [8,9,15].

If the retention of the denture is satisfactory, then alteration can be made without remaking the dentures. Removing and replacing the anterior teeth can achieve changes to the mould, shape or inclination of the teeth. If the level of the occlusal plane is incorrect, resulting in too much tooth showing or excessive amount of visible polished surface, then all teeth will have to be removed and a new jaw relationship recorded. Wax rims can be added to the denture bases and these should be trimmed to the desired level. When the complaint is that too little tooth is visible, wax can be added to the occlusal surfaces of the teeth until a satisfactory amount of wax is visible. A new centric relation record should be made and the technician should be instructed to remove and reset the teeth to this new position [8,9,18].

When the patient complains of looseness it must be checked – peripheral extensions, posterior palatal seal, adaptation of the bases, occlusion, shape of the polished surface and tooth position [9,11,12,17,18].

In the absence of pain and associated overextension of the periphery, looseness of dentures is in all probability a result of failure to obtain peripheral seal. A further etiological factor may be poor adaptation of the denture to the underlying tissues. This should be suspected if the patient complains that food accumulates beneath the denture. The extension of the denture should be checked, and areas of under extension modified with green stick compound. The post dam region of the maxillary denture should also be assessed, and green stick tracing compound added if the post dam is found to be deficient. Common areas for under extension in the mandibular denture are the distolingual pouch and the retro molar pad region [8,9,13,18,23].

Another possible cause of denture looseness is that the teeth have encroached upon the neutral zone. If the

dentures are unstable when eating and speaking, this is a likely cause. If this is suspected, then the clinician should trim the lingual aspect of the posterior teeth to increase tongue space and assess this after a few weeks [8, 10, 18].

The other feature to check is the width of the polished surface around the maxillary tuberosities. When the mouth is opened wide, the coronoid process of the mandible can encroach upon the neutral zone in this region. If the adjacent polished surface of the denture is bulky, then the denture can be displaced. If this is suspected, then the thickness of the polished surface should be reduced gradually until the patient can open the mouth without displacing of the denture [8,18].

If the impression and polished surfaces are satisfactory, then the problem may be related to the occlusion. Check the occlusion in centric relation and excursive movements. If there is locking of cusps when under taking excursive movements, then the denture can be displaced. These contacts should be identified and adjusted until balanced articulation is achieved [7,9,10,20].

At the present time, large numbers of adults have edentate maxillary arches opposed by partially dentate mandibular arches. Usually they have a complete maxilla denture but do not have a mandibular prosthesis. A common problem when such a combination presents is that of “flabby” tissue in the anterior maxilla. This may make the maxillary complete denture unstable, because the flabby tissue displaces during function [5, 9, 18].

The anterior part of the maxillae is the weakest part of the upper arch to resist stress and when the lower anterior teeth occlude anterior to the basal support, trauma is inevitable. The remaining mandibular anterior teeth seem to extrude along with the bony process, and excessive bone loss occurs in the posterior part of the ridge under the partial denture bases. These five changes may constitute a syndrome, as they are quite characteristic. These changes are (1) loss of bone from the anterior part of the maxillary ridge, (2) over growth of the tuberosities, (3) papillary hyperplasia in the palate, (4) extrusion of the lower anterior teeth, and (5) the loss of bone under the partial denture bases. It’s called “combination syndrome”. This situation represents 26 per cent of the denture patients [32].

A further difficulty may be that there are insufficient occlusal contacts to maintain a stable maxillary denture. When molar and premolar teeth are missing, occlusal forces are directed through the anterior aspect of the maxillary denture, resulting in a tipping force, which displaces the denture posteriorly. The clinical challenge is to decide how many occlusal contacts are required to overcome this situation, and this varies from patient to patient [9,18].

The following treatment options for the mandible should be considered:

- restoring missing teeth with a removable denture;
- extending the shortened dental arch using cantilevered bridge work;
- extending shortened dental arches with implant-retained crowns or bridges.

The advent of osseo integrated implants has improved the options for edentulous patients. The use of implants to stabilize prostheses reduces the need for the patient to develop the complex skills required to control conventional complete dentures. This can help improve oral function for the patient and it is possible to achieve greater patient satisfaction with the appearance of complete dentures which are retained on dental implants.

CONCLUSION

There are many ways that dentures can be improved, and dentists should be able to assess the quality of a denture in terms of aesthetics, support, retention, stability, occlusion, vertical dimension and extension of the denture bases.

There are still no reliable methods to predict the outcome of complete denture treatment and there are many problems related to treatment with complete dentures.

In addition to clinical and technical skills, insight into patient behavior and psychology and communication techniques are also necessary.

Complete dentures even the best may not provide optimal ability to speak, masticate and socialize. Inevitable ridge resorption over time, may further decrease oral function if dentures do not remain retentive and stable. Ill-fitting dentures can prevent enjoyment of food and affect overall nutrition. Edentulism can also have profound effects on psychological, emotional, oral and general health.

Complete denture patients experiencing difficulties with their dentures most frequently complained of looseness of their dentures, esthetics, difficulty while eating, and accumulation of food under the appliance.

The most frequently observed faults in denture construction related to retention and vertical and horizontal jaw relationships. There is significant relationship between inadequate retention and improper intermaxillary relationships and patients complaints of looseness and difficult eating.

Clinician must carefully evaluate the denture for faults in horizontal and vertical jaw relationships before concluding that the patient’s complaint is related to age, gender, or general medical condition.

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