Complications of Complete Dentures Made in the Mashhad Dental School

Nafiseh Asadzadeh Aghdaee, Fatemeh Rostamkhani, Mohammad Ahmadi

Introduction: The major problems in patients treated with complete dentures are pathologic lesions caused by prosthetic dentures, retention, and stability, looseness of the prosthesis, prosthesis intolerance, chewing problems, speaking and esthetic problems, and food accumulation under the dentures. The purpose of this study was to assess different problems of denture prosthesis in some patients referred to the Mashhad Dental School in 2005.

Materials & Methods: In this descriptive cross sectional study, 80 patients were selected. A questionnaire including questions about patients' past medical history, complaints and symptoms leading to dissatisfaction with complete denture prosthesis was given to each patient. The statistical tests used to investigate differences between groups were the Chi-square and Fisher's exact test.

Results: The highest percentage of pain caused by dentures was detected during eating. Food accumulation under the denture was the most common complaint. The highest percentage of partial tissue contact was found in the mandible base, which might have been due to shortness of the denture's borders. Statistical analysis showed that there was no significant difference in the complaints' occurrence either between males and females or patients' medical conditions. There was a significant relationship between errors relating to maxillary overextension of denture bases and a patient's mucosa ulceration (P=0.035); and between errors relating to retention and the patient's complain to loose dentures in the mandible (P<0.001).

Conclusion: Considering the limitation of this study, it can be concluded that the most common complaints of patients were related to food accumulation under the denture bases, the instability of the denture, esthetic problems and incorrect height of the occlusal plane.

Key words: Complication, complete denture, problems.
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Dental prosthetics are an important part of dentistry because patients lose their teeth for different reasons and want to replace them by prostheses. A dentist should be aware of the factors that lead to treatment failure.

Often there is not a total agreement between the patient and the dentist in assessing the adequacy of dentures, and this differing perception of patients' needs makes management more difficult. The fact that a denture with poor quality may be well tolerated in one patient, while a well-made one may be a failure in another one, has been a frequent source of confusion and frustration.

Several authors cite the most frequent complaints with complete dentures are those pertaining to retention and stability, esthetics, comfort while eating, and the accumulation of food under the prosthesis.

Medical history is an essential part of the investigation since many elderly patients are undergoing medication and the drugs used may greatly affect the oral environment. Hence, soft tissues are more susceptible to trauma, and also changes in the salivary flow may occur. Medication required for systemic or local disease can adversely affect oral tissues and the quantity and quality of the produced saliva.

Debilitating diseases in older patients have an effect on the tolerance to wearing of complete dentures in many edentulous individuals. Therefore, an accurate medical history is important.

It has been reported that with advancing age, both men and women experience difficulty in learning to adapt to and managing removable prostheses. Attention has also been focused on patients' expectations of their dentures. It has been stated that these high expectations of dentures are more prevalent in older age groups.

The purpose of this study was to examine 80 complete denture patients experiencing difficulties with their prostheses and determine: (a) the most frequent complaints; (b) the age and gender distribution of these patients; (c) the number of patients afflicted with chronic and debilitating medical conditions; and (d) the most frequent denture faults and how these may relate to patient's complaints.
Materials & Methods

The study included only those who have been wearing dentures for at least one year. A total of 80 complete denture wearers, 48 female and 32 male, with the age range of 43-74 years were examined at the Department of Removable Prosthodontics in the Mashhad Dental School. Information regarding the patients' general medical condition, psychologic health, or other ailments was also derived from the records in the patient's hospital files. For purpose of comparison, patients whose medical records revealed that they experienced a chronic or debilitating condition were classified as having chronic illness. These conditions included respiratory disease, advanced coronary conditions, endocrine disorders, partial or hemi paralysis or diagnosed emotional or psychologic disorders (anxiety or depression).

At the time of examination, patients' comments regarding the adequacy of their dentures were recorded. The various complaints presented by patients were divided into five groups. Those patients who stated that they experienced pain and discomfort on inserting or removing the dentures or pain at rest or while in function were grouped under "Pain". Patients experiencing difficulties in incising and masticating their food or instability were grouped under "Eating". Complaints about loose dentures or dropping dentures or complaints attributed to insufficient retention were grouped under "Looseness". Finally, patients whose complaints related to food accumulation around or under the prosthesis and those who complained from lisping, whistling, or distorted phonetics were grouped under "Food" and "Speech", respectively.

The condition of the patient's denture bearing tissues was assessed at the initial appointment. The examination screened for ulceration, presence of infection, or any other abnormalities such as hyperplasia. Accordingly, patients were grouped as "Ulceration". Finally, an examination of the dentures was conducted to determine the adequate extension of the denture base and occlusal scheme design. The most frequently observed inadequacies of the present dentures were then grouped under "Retention", "Jaw Relationship", and "Tooth Position".

Retention errors incorporated with base design (underextension or overextension of denture bases in the maxilla and/or mandible), poor tissue contact (observed in mandibular bases only or both mandibular and maxillary bases), and inadequacies in the posterior palatal seal. The heading "Jaw Relationships" (grouped together) consists of errors in anteroposterior relationships (anterior and posterior premature tooth contact) and occlusal vertical dimension (excessive or inadequate). Tooth position errors included arrangement and setting of either the anterior or posterior teeth. These were errors in the buccolingual and anteroposterior positioning of the teeth, and vertical errors in tooth position involving the occlusal plane height.

The statistical tests used to investigate differences between groups were the Chi-square and Fisher's exact test.

Results

All of the patients examined at the Prosthodontic Department had at least one complaint. It was observed that 30 patients (37.5%) complained from problems related to pain and discomfort; 62 patients (77.5%) stated that they had difficulty in eating; 63 patients (78.8%) claimed that their dentures were loose; and 64 numbers (80%) complained about food accumulating around or under their prosthesis. A total of 18 patients (22.5%) said they had difficulties with their speech while wearing their dentures. No relationship was observed between patients' gender and the type of complaint and denture acceptance (P = 0.67).

Moreover, 55% of patients suffered from a condition categorized as a chronic illness. A majority of patients (28.8%) had advanced cardiac or circulatory disorders. There were no relationships between patients' age and the type of denture complaints. The incidence and type of errors taking place in denture construction are shown in Table 1.

<table>
<thead>
<tr>
<th>Type of Fault</th>
<th>Number</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor Retention</td>
<td>63</td>
<td>78.8%</td>
</tr>
<tr>
<td>(a) Base design</td>
<td></td>
<td>78%</td>
</tr>
<tr>
<td>- Overextension of denture bases</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>- Underextension of denture bases</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>(b) Poor tissue contact made</td>
<td></td>
<td>76.3%</td>
</tr>
<tr>
<td>- Lower denture base only</td>
<td>61</td>
<td></td>
</tr>
<tr>
<td>- Upper denture base only</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>(c) Inadequate post dam</td>
<td>23</td>
<td>28.8%</td>
</tr>
<tr>
<td>Incorrect Jaw Relationships</td>
<td>69</td>
<td>86.6%</td>
</tr>
<tr>
<td>(a) Anteroposterior relationships</td>
<td></td>
<td>86%</td>
</tr>
<tr>
<td>- Posterior premature tooth contact</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>- Anterior premature tooth contact</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>(b) Incorrect occlusal vertical dimension</td>
<td>50</td>
<td>72.5%</td>
</tr>
<tr>
<td>- Too small</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Too large</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Error in Tooth Position</td>
<td>63</td>
<td>78.8%</td>
</tr>
</tbody>
</table>

The Chi-square test was applied to determine the relationship between each of the observed errors in each separate group. It was a significant relationship: between errors relating to retention and the patient's complaint of loose dentures in the mandible (P<0.001), errors relating to maxillary overextension of denture base and the patient's mucosa ulceration (P=0.035), and between errors relating to underextension and accumulation of food under dentures (P=0.002). Diagram 1 shows the percentages of correct and incorrect occlusal vertical dimensions in patients.
Discussion

The patients in this study were drawn from a population of people referred to the Mashhad Dental School. The most common complaints of wearers of complete dentures were pain and generalized discomfort (59%), difficulty in eating (77.5%), and looseness (78.5%). This supports the findings of Brunello's research.\(^1\) Statistical analysis in this study failed to identify any relationship between patient's age or gender and the number or type of complaints regarding their complete dentures. This is in contrary with the idea that older patients are more likely to experience difficulties with their dentures and complain more frequently. This finding corroborates Brunello's research.\(^1\) The failure to observe a significant relationship between gender and number or type of complaints would tend to challenge the study of Powter and Cleaton-Jones,\(^8\) and Winkler.\(^6\) However, the results of our study supports the findings of Berg,\(^9\) who observed no significant relationships between patient's age or gender and denture acceptance.

A significant relationship between the condition of the mucosa of the denture bearing areas and pain and discomfort was anticipated. It is assumed those patients who were medically compromised or being treated with medications that produce oral side effects with intraoral manifestations will experience more difficulties with their dentures. The results of our study, which were similar to Brunello's\(^1\) study, didn't reveal relationships between patients' medical conditions and the type or number of denture complaints. Identically, no significant relationship was observed between the number of patients experiencing chronic pain and the type and number of complaints.

As expected, significant relationships were observed between the presence of denture construction errors relating to retention and patient complaints of loose dentures, as well as construction errors relating to jaw relationships and complaints of difficulty in eating. These results corroborate with those of Smith and Hughes,\(^10\) who observed similar errors in denture base extension and generally poor retention, universally. Jegnathan and Payne\(^11\) reviewed the literature and noted that underextension of denture bases and vertical and horizontal jaw relationships were the most frequently observed errors.

Conclusion

According to this study, complete denture wearers who experienced difficulties with their dentures most frequently complained of pain and discomfort, difficulty with eating, and looseness of their dentures. There were no significant relationships between patient's age, gender, or general medical condition and the type or number of complaints. The most frequently observed errors in denture construction related to retention and vertical and horizontal jaw relationships.

This study would suggest that the clinician should evaluate the denture carefully for errors in denture base extension and horizontal jaw relationship before concluding that the patient's complaints are related to age, gender, or general medical condition.

References