A STUDY TO ASSESS POST INSERTION COMPLAINTS ASSOCIATED WITH REMOVABLE PROSTHESIS IN AN INDIAN POPULATION

Dr. Saumyendra V Singh¹ Dr. Mohit Vidyarthi² Dr. Deeksha Arya³
Dr. Niraj Mishra⁴ Dr. Lakshya Yadav⁵ Dr. Ronak Bhatt⁶

¹ Professor(Jr. Gr.), Department of Prosthodontics, Faculty of Dental Sciences, King George’s Medical University, Lucknow, India ² BDS, Clinician, Lucknow, India ³, ⁴, ⁵ Associate Professor, Department of Prosthodontics, Faculty of Dental Sciences, King George’s Medical University, Lucknow, India ⁶ MDS Student, Department of Prosthodontics, Faculty of Dental Sciences, King George’s Medical University, Lucknow, India.

Address for Correspondence: Dr. Deeksha Arya, A-401, Indraprastha Estate, Near IT College Faizabad Road, Lucknow, India.

E-mail: deeksha.arya@gmail.com

ABSTRACT

Background: Post insertion problems may be transient or serious enough to result in the patient being unable to tolerate removable prosthesis with economic and psychological consequences.

Aims: To assess post insertion complaints for complete dentures (CD) and removable partial denture (RPD) at different time intervals.

Materials and Methods: Three hundred and fifty four patients receiving removable prosthesis were selected for the study. The patients visited 3 times after delivery of the prosthesis, 1st Post insertion (PI) appointment at 1 day, 2nd after 2 days and 3rd after 7 days respectively. At each appointment, complaints were recorded on a validated close ended questionnaire. Conventional treatment of the complaints was rendered. Difference in post insertion complaints between CD and RPD, if any were also studied.

The data were analyzed and evaluated statistically using SPSS software with mean, chi square and p value (α< .05) tests.

Results: Most common complaint in CD patients at 1st PI appointment was difficulty in chewing(81%), and teeth not closing with equal pressure on both sides at the 2nd & 3rd PI appointment (89.9 % and 92.4 % respectively).

For RPD patients, most common complaint at 1st PI appointment was difficulty in chewing (51.3%) and teeth closing with unequal pressure (51.3%) each. At 2nd and 3rd PI appointments, teeth closing with unequal pressure on both sides as most common complaint (74.4 and 76.9% respectively).

Conclusion: For both RPD and CD subjects the most common complaint was difficulty in chewing. Regular post insertion appointments need to be scheduled to habituate the patient to a removable prosthesis. Special care needs to be taken by the dentist in removing occlusal errors and proper instructions for chewing habituation need to be given.

KEYWORDS: Post Insertion Complaints, Complete Dentures, Removable Partial Dentures.
INTRODUCTION - Placement of a removable denture is not the final step in treatment of partially dentate/edentulous patients and patients need to visit the dentist long after that. Traumatic mucosal ulcerations have been reported to be among common complaints of patients after placement of removable prosthesis. Various factors responsible for such injuries include denture base defects, overextension of flanges, improper adaptation of internal surface of denture to underlying tissues, denture porosities, tissue undercuts and presence of premature occlusal contact. Such defects are usually due to clinical or laboratory errors during various stages of denture fabrication, such as border molding, impression making and inadequate or insufficient finishing/polishing of the denture. Brunello and Mandikos discussed most common post insertion complaints with removable prosthesis and found no significant association with patient age, sex or medical status. However, significant relationship was observed between denture design faults and patient complaints. Drago did not report any significant difference in number of adjustment visits required for patients whose dentures were fabricated with different impression techniques or border molding methods. He also reported that appropriate attention to clinical and laboratory phases plays a major role in decreasing PI problems for patients.

As noted in the above-mentioned studies, most PI complaints were due to a fault in one or more phases of denture construction. It was hypothesized that if the prevalence and nature of post insertion complaints for removable partial dentures (RPD) and Complete Dentures (CD) could be identified, simple strategies and solutions could be developed during denture fabrication or in interaction with patients, to circumvent such problems.

This study therefore firstly assessed patients post insertion complaints for CD and RPD at different time intervals after delivering the prosthesis. It was also evaluated if variations in post insertion complaints existed between complete dentures and removable partial dentures wearers.

MATERIAL AND METHODS

Completely/ partially edentulous patients receiving complete denture treatment and removable partial denture treatment at Department of Prosthodontics, were eligible for this one year longitudinal study. All patients who received removable prosthesis and were willing to participate after informed consent were included, except those suffering from any known pre-existing disease. Single complete denture patients were excluded from the study. Three hundred and ninety subjects were recruited and 354 patients (237- complete denture (CD) and 120- removable denture(RPD)) could be followed up. The study was based on an objective questionnaire based on previous literature. The name, age, gender, nicotine habits, psychological status and educational status of the patients were recorded. Institutional Ethics Committee approval was taken.

Groups were formed on the basis of type of prosthesis, PI duration, gender, age, nicotine status and psychological makeup. Complete dentures and removable partial dentures were fabricated for all patients by using same method and materials, advocated by Zarb and Bolender. All steps were carried out by the team of investigators to ensure uniformity of procedure. The patients complaints and possible causes were
recorded at the 1st, 2nd and 3rd PI appointments scheduled 1, 3 and 7 days after prosthesis delivery. Conventional addressal of these problems was done. Prevalence of complaints and comparison of CD vs RPD complaints were recorded. Location of removable partial dentures was also recorded as Maxillary/Mandibular/Both and Anterior/Posterior/Both (Anterior edentulous region was considered till canines).

“P” values were calculated using SPSS software with Chi-square test and McNemar tests to see correlation, if any, between complaint and PI duration, as well as to record demographic data obtained from the study. Statistical significance was defined at P< 0.05.

RESULTS

Characteristics of the patients

Three hundred and fifty four patients participated in the study, out of which 47.1% were in age group of 45-60 years, followed by more than 60 years age group (38.7%). Sixty five percent of patients were males. 54% of the patients were educated upto high school and 19.3% were illiterate. Nicotine habits were observed in 24.4% of the patients. Sixty six percent of patients required complete dentures. More patients required mandibular as compared to maxillary partial dentures. Isolated Posterior edentulism was more common (85%) compared to anterior edentulism.

More subjects aged >60 years required CDs whereas majority of the patients requiring removable partial denture belonged to age group < 45 years (p<.05). CD requirement was higher in males and RPD requirement higher among female patient (NS).

About half of the patients (48.7%) required RPD prostheses spanning anterior and posterior regions of the arch, and the same number needed RPD prosthesis on both maxillary and mandibular arches. (Tables 1&2)

Findings of Tables 3&4 are mentioned below as per PI duration & prosthesis type

- **1st PI appointment**
  - **CD group**
    - Difficulty in chewing food was most common (81%, p<0.05).
    - Teeth not closing with equal pressure on both sides second most common (77.2%, p<0.05).
    - Difficulty in speech was the 3rd most common (65.8%) complaint (p<0.05).
    - Cheek or tongue biting was least common (7.6%).
  - **RPD group**
    - Difficulty in chewing food and teeth not closing properly were equally common complaints (51.3%).
    - Poor aesthetics was the 3rd most common complaint (48.7%).
    - Gagging was reported to be the least common complaint (12.8%).

- **2nd PI appointment**
  - **CD group**
    - Teeth not closing with equal pressure on both sides was most common (89.9%) complaint.
    - Difficulty in chewing food was 2nd (78.5%, p<0.05).
    - Cheek or tongue biting in the patients remained the least common problem (1.3%, p>0.005).
  - **RPD group**
    - Teeth not closing properly was most common (74.4%).


- There was a reduction in the prevalence of complaint of improper aesthetics from 48.7% to 28.2%.
- Gagging was again the least common complaint (2.6%).

- 3rd PI appointment complaints
  
  **CD group**
  - Teeth not closing with equal pressure on both right sides remained the most common complaint (92.4%, p < .05).
  - Difficulty in chewing food was again the 2nd common complaint (30.4%).
  - Cheek or tongue biting at this appointment was not recorded (0.0%)

  **RPD group**
  - Complaint of natural teeth not closing properly (76.9%) was most common.
  - Increase in complaint of difficulty in swallowing was recorded (20.5% to 25.6%).
  - Patients not happy with aesthetics had reduced prevalence compared to previous appointment (23.1%).
  - Gagging had a 0.0% prevalence.

**DISCUSSION**

Tooth loss could occur as a result of caries, periodontal diseases, trauma, tooth impaction, orthodontic reasons, hypoplasia, over eruption, supernumerary teeth, neoplastic and cystic lesions. Many studies have consistently shown the role of specific diseases like dental caries and periodontal diseases as a major cause of tooth loss.

The results of this study indicate that prevalence of edentulism increases with age. Carr et al, found mean age of edentulous patients to be 58.37 years whereas this study had a mean edentulous subject age of 52.5 years.

Previous studies have also shown significant gender difference in edentulism with more males being edentulous than females. This has been attributed to males not paying much attention to oral care. Ellund and Burt also had similar findings.

The association between edentulism and educational status may be a result of improved dental health awareness, increased utilization of oral health facilities, proper oral hygiene habits acquired during learning process and peer group influence. This is in agreement with findings of Brodeur et al, where the proportion of completely edentulous adults decreased with improved income and educational status.

The relationship between smoking and periodontal diseases has been studied extensively over the past many years in both cross-sectional and longitudinal studies, providing strong epidemiologic evidence of a positive association. In a 10-year longitudinal radiographic study of alveolar bone loss, smoking was a significant predictor of future bone loss in subjects who had at least 20 teeth at the beginning of the study.

Frequency of mandibular edentulism has been found to be higher in a study carried out by Curtis et al, at the University of California, School of Dentistry. The older age groups in this study required more of complete dentures than the younger age groups while the younger age groups required more of removable partial dentures. This is in agreement with the study done by Marcus et al.

Patients usually need special attention from their dentist during the first few days after insertion of their removable prosthesis. In the present study,
approximately 100% of patients required adjustments in the first 24 hours after insertion, 85% in the second appointment and 88% in the third appointment. This is also indicated that patient care did not end by insertion of complete dentures.\textsuperscript{2,3} The most common complaints of denture wearers were difficulty in eating, problems in occlusion (77.2%) and difficulty in speech (65.8%). These findings agree with Brunello’s research.\textsuperscript{3} Statistical analysis in this study failed to identify any relationship between patients age or gender and type of PI complaint. This is contrary to the idea that older and female patients are more likely to experience more difficulties with their dentures. This again corroborates with Brunello's and Berg’s research,\textsuperscript{35} though challenging the studies of Powter, Cleaton-Jones,\textsuperscript{34} and Winkler.\textsuperscript{33} Smith and Hughes\textsuperscript{36} observed errors in denture base extension and poor retention in removable prosthesis universally. Jegenathan and Payne\textsuperscript{37} reviewed the literature and noted that under extension of denture bases and wrong jaw relationship records were the most frequently observed errors. This study suggested the importance of clinical remounting in preventing occlusal interferences which could lead to complaints of teeth not closing with equal pressure as well as inability to chew food for both RPD and CD group. Landa\textsuperscript{38} suggested that all complete dentures, should be adjusted on the articulator occlusally after curing to avoid uncompensable and irreversible damage supporting tissues.

Several other studies mentioned the importance of clinical remount procedure in decreasing occlusal errors. Schlosser\textsuperscript{39}, Schuyler\textsuperscript{40}, Landa\textsuperscript{38} and Firtell et al\textsuperscript{41} have suggested this method for elimination of uneven contacts. Except for Firtell et al\textsuperscript{41} other researchers have also emphasized this procedure without any research based study. Holt\textsuperscript{42}, in a clinical trial showed positive effects of using pressure indicator paste and clinical remounting procedure.

**CONCLUSION**

The most common complaints in all post insertion appointments were difficulty in chewing and unequal pressure on both sides of denture while eating. Regular and continued Occlusal surveillance of removable prosthesis must be emphasized in every dental college/clinic/faculty.

<table>
<thead>
<tr>
<th>Table 1: Demographic characteristics of study sample</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group CD</strong></td>
</tr>
<tr>
<td>(n=237; %=66.4)</td>
</tr>
</tbody>
</table>
| **No. of patients**                           | **No.**                              | **%**
| **Age in years**                              | **No.**                              | **%**
| <45                                           | 51                                   | 18 | 35.3 | 33 | 64.7 | <.05 |
| 45-60                                         | 165                                  | 105 | 63.6 | 60 | 36.4 |
| >60                                           | 138                                  | 114 | 82.6 | 24 | 17.4 |
| **Gender**                                    | **No.**                              | **%**
| Male                                          | 231                                  | 165 | 71.4 | 66 | 28.6 | 0.15 |
| Female                                        | 123                                  | 72  | 58.5 | 51 | 41.5 |
### Table 2: RPD prosthesis by location of edentulous region (Anterior/Posterior and Maxillary/Mandibular or both)

<table>
<thead>
<tr>
<th>Location</th>
<th>Group CD (n=237; %)</th>
<th>Group RPD (n=117; %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maxillary</td>
<td>21 17.9</td>
<td>12 10.3</td>
</tr>
<tr>
<td>Mandibular</td>
<td>39 33.3</td>
<td>12 10.3</td>
</tr>
<tr>
<td>Both</td>
<td>57 48.7</td>
<td>24 20.4</td>
</tr>
<tr>
<td>Anterior</td>
<td>18 15.4</td>
<td>6 5.1</td>
</tr>
<tr>
<td>Posterior</td>
<td>42 35.9</td>
<td>6 5.1</td>
</tr>
<tr>
<td>Both</td>
<td>57 48.7</td>
<td>24 20.4</td>
</tr>
</tbody>
</table>

### Table 3: Complaints at 1st, 2nd and 3rd PI appointment of CD/RPD patients

<table>
<thead>
<tr>
<th>Complaints</th>
<th>1st PI</th>
<th>2nd PI</th>
<th>3rd PI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Group CD (n=237)</td>
<td>Group RPD (n=117)</td>
<td>Group CD (n=237)</td>
</tr>
<tr>
<td>Soft Tissue/Mucosal Ulceration</td>
<td>117 49.4</td>
<td>48 41.4</td>
<td>57 24.1</td>
</tr>
<tr>
<td>Soreness at crest of ridge</td>
<td>84 48.1</td>
<td>27 23.1</td>
<td>39 16.5</td>
</tr>
<tr>
<td>Looseness of denture</td>
<td>108 45.6</td>
<td>27 23.1</td>
<td>66 27.8</td>
</tr>
<tr>
<td>Difficulty in Speech</td>
<td>156 65.8</td>
<td>48 41.0</td>
<td>90 38.0</td>
</tr>
<tr>
<td>Cheek or tongue Biting</td>
<td>18 7.6</td>
<td>45 38.5</td>
<td>3 1.3</td>
</tr>
<tr>
<td>Gagging</td>
<td>63 26.6</td>
<td>15 12.8</td>
<td>12 5.1</td>
</tr>
</tbody>
</table>
Table 4: P Values for Table 3

<table>
<thead>
<tr>
<th>Complaints</th>
<th>CD vs RPD</th>
<th>1st PI vs 2nd PI vs 3rd PI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1st PI</td>
<td>2nd PI</td>
</tr>
<tr>
<td>Soft tissue/mucosal ulceration</td>
<td>&lt;.05</td>
<td>&lt;.05</td>
</tr>
<tr>
<td>Soreness at crest of ridge</td>
<td>&lt;.05</td>
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<td>Looseness of denture</td>
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</tr>
<tr>
<td>Cheek or tongue biting</td>
<td>&lt;.05</td>
<td>&lt;.05</td>
</tr>
<tr>
<td>Gagging</td>
<td>&lt;.05</td>
<td>&lt;.05</td>
</tr>
<tr>
<td>Teeth don’t close equally on left &amp; right sides</td>
<td>&lt;.05</td>
<td>&lt;.05</td>
</tr>
<tr>
<td>Not happy with aesthetics</td>
<td>0.09</td>
<td>0.12</td>
</tr>
<tr>
<td>Difficulty in swallowing</td>
<td>0.11</td>
<td>&lt;.05</td>
</tr>
<tr>
<td>Can’t chew my food</td>
<td>&lt;.05</td>
<td>&lt;.05</td>
</tr>
</tbody>
</table>

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