

## Original Article

### Assessment of Various Factors for RPD failure in Adult Population

Reecha Gupta<sup>1</sup>, Bhavna Gupta<sup>2</sup>, Bharti Dua<sup>3</sup>, Mohit Gupta<sup>4</sup>

<sup>1</sup>Professor, Department of Prosthodontics and Dental materials, Indira Gandhi Government Dental College, Jammu, <sup>2</sup>Senior lecturer, Department of Public Health Dentistry, Swami Devi Dyal Hospital and Dental College, Barwala, Panchkula, Haryana, <sup>3</sup>Senior lecturer, Department of Prosthodontics, Inderprastha Dental College, Ghaziabad, U.P., <sup>4</sup>Orthodontist, Consultant, Jammu, India

#### ABSTRACT:

**Background:** Removable partial dentures should maintain the health of the remaining dentition and surrounding oral tissue. The present study was to determine risk factors for RPD failure in adult population. **Materials & Methods:** The present study was conducted in department of Prosthodontics. It comprised of 285 patients of both genders (males- 120, females- 165). Kennedy class I, II, III and IV was considered. The abutment tooth mobility was graded clinically by placing a tooth between two metal instrument handles and moving the tooth in as many directions as possible. Fracture of the abutment teeth was assessed clinically and radiographically. Fracture of rests, clasps, major connector and minor connectors was recorded. **Results:** Kennedy's class I was present in 75 cases, II in 65 cases, III in 80 cases and IV in 55 cases. The difference was significant (P- 0.01). Common cause of failure was abutment fracture (52), fracture of rests (40), fracture of clasps (34), fracture of major connector (75) and minor connector (84). The difference was significant (P< 0.05). **Conclusion:** Common causes of failures were abutment fracture, fracture of rests, fracture of clasps, fracture of major connector and minor connector.

**Key words:** Kennedy's, Major connector, Removable partial dentures.

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**Correspondence to:** Dr. Reecha Gupta, Professor, Department of Prosthodontics and Dental materials, Indira Gandhi Government Dental College, Jammu, India

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#### INTRODUCTION

Management of missing teeth is done with removable partial dentures, fixed partial denture and complete denture. Removable partial dentures should maintain the health of the remaining dentition and surrounding oral tissue. However, the factors determining the prognosis of removable partial dentures are still unclear. Studies have shown that partial dentures in the mouth increase the formation of biofilm and consequently an increase in the occurrence of caries and periodontal disease. Other research has produced more favorable results, with moderate degrees of injury or practically no periodontal changes. Therefore, the existing results are inconclusive and sometimes contradictory.<sup>1</sup>

The factors that may affect the choice of prosthesis used are the periodontal status, aesthetic requirements, cost,

anatomical constraints and patient's acceptability. RPDs outnumber conservative implant tooth replacements because of their accessibility to lower socioeconomic groups in whom the highest rates of tooth loss occur.<sup>2</sup> RPDs may be made with cast metal, acrylic resin with or without wrought metal component and acrylic resin with some cast units and those made with thermoplastic resin. The use of all-acrylic RPDs in the replacement of missing teeth varies with countries, with more frequent use in developing countries.<sup>3</sup> The prevalence of use of the all-acrylic RPD among adults is very high as all-acrylic RPD is more affordable and easier to fabricate. However, some disadvantages of using the all-acrylic resin dentures are increased risk of developing caries, gingivitis and periodontal disease relative to other RPD frameworks.<sup>4</sup> The present study was to determine risk factors for RPD failure in adult population.

**MATERIALS & METHODS**

The present study was conducted in department of Prosthodontics. It comprised of 285 patients of both genders (males- 120, females- 165). All were wearing RPD from the last 2 years. All were informed regarding the study and written consent was obtained. Ethical clearance was obtained prior to the study.

General information such as name, age, gender was recorded. Kennedy class I, II, III and IV was considered. The abutment tooth mobility was graded clinically by placing a tooth between two metal instrument handles and moving the tooth in as many directions as possible. Fracture of the abutment teeth was assessed clinically and radiographically. Fracture of rests, clasps, major connector and minor connectors was recorded.

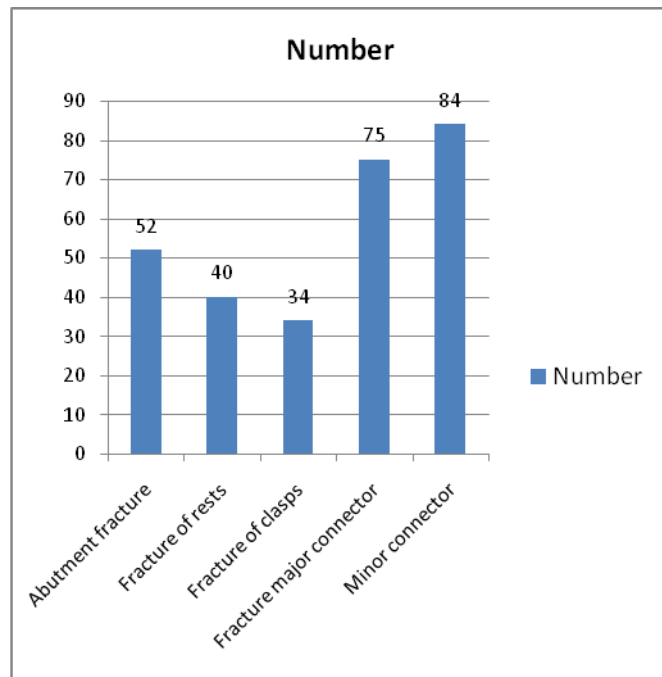
**RESULTS**

**Table I Distribution of patients based on Kennedy’s classification**

Kennedy’s class I	Kennedy’s II	Kennedy’s III	Kennedy’s IV	P value
75	65	80	55	0.01

Kennedy’s class I was present in 75 cases, II in 65 cases, III in 80 cases and IV in 55 cases. The difference was significant (P- 0.01).

**Graph I Causes of RPD failure**



Common cause of failure was abutment fracture (52), fracture of rests (40), fracture of clasps (34), fracture of major connector (75) and minor connector (84). The difference was significant (P< 0.05).

**DISCUSSION**

The forces applied to the abutment teeth and their effects are very important considerations when designing and constructing removable partial dentures. Adequate planning of a partial denture requires an understanding of the forces generated during mastication and their distribution to supporting structures. If definite principles are followed when planning and constructing the prosthesis, it functions so that the stresses it produces are safely within the range of tissue tolerance, thus enabling it to contribute to periodontal health.<sup>5</sup> Several long-term clinical studies have shown that correctly designed removable partial dentures do not have any detrimental effects on abutment teeth.

In present study, we evaluated failure causes in 285 patients wearing RPD. Kennedy’s class I was present in 75 cases, II in 65 cases, III in 80 cases and IV in 55 cases. This is similar to Bergman et al.<sup>6</sup>

We found that Common cause of failure was abutment fracture (52), fracture of rests (40), fracture of clasps (34), fracture of major connector (75) and minor connector (84). This is in agreement with Hummel et al.<sup>7</sup>

Shala KS et al<sup>8</sup> assessed patient’s satisfaction with removable partial dentures (RPDs), as retention, chewing ability, aesthetics during the observation period. A total of 63 patients with RPDs, participated in this study. The results showed that 73.6% of patients were wearing RPD for the first time and were finally satisfied. According to the denture support of RPDs, clasp-retained quadrangular RPDs were 100% effective, followed by triangular dental support 81% and linear dental support 47.7%. Comparison of RPDs with attachment with RPDs with clasps assessed through Fisher exact test, confirmed statistically significant difference, despite retention; however, chewing ability and aesthetics showed no statistically significant difference with X 2 test on patient’s satisfaction with RPD with or without attachment.

Zlatarić DK et al<sup>9</sup> studied patient' satisfaction with their partial dentures in relation to some socio-economic variables. Patient's satisfaction with denture retention, speech, aesthetics, comfort of wearing dentures, chewing ability was also studied in relation to different denture classification, construction, material, denture base shape (major connectors), denture support and the number of missing teeth. A total of 165 patients, 59 males and 105 females between 38 and 87 years took part in this study. A questionnaire, devised for a purpose of the study, was divided into three parts. In the first part, patients answered questions about age, gender, marital status, education, general health, socio-economic status, self-supporting life, period of tooth loss and number of previous denture experiences and in the second part, patients graded their

partial dentures, depending on the level of satisfaction, by using a scale from 1 to 5. In the third part a dentist determined Kennedy classification and their modifications, denture material and denture support, denture base shape and the number of missing teeth and graded a denture construction. Influence of these factors on patient's satisfaction was analyzed. A majority of the examined patients were satisfied with the partial prosthesis but a small amount of dissatisfaction existed. More than half of them scored all the examined parameters to the best score.

### CONCLUSION

Common causes of failures were abutment fracture, fracture of rests, fracture of clasps, fracture of major connector and minor connector.

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