

Evaluating The Different Factors Influencing The Denture Fracture & Denture Repair: A Questionnaire Study

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Abstract:

The midline fracture in a denture is often a result of flexural fatigue. Impact failure usually occurs out of the mouth as a result of sudden blow to the denture or accidental dropping while cleaning, coughing or sneezing. For this reason, the transverse strength and impact strength are selected as most relevant to evaluate the strength of repaired denture base resins. A clinician's first choice of approach in an event of broken denture would be repair of the existing denture, rather than opting for a new prosthesis, as the patient would be habituated with function and comfort an old prosthesis delivers.

Background:

A complete denture should suffice the requirements of Comfort, Retention, Function & Aesthetics. Sometimes lack of retention, discomfort & fracture of the denture base resulting in frustration and disappointment for the patient and the dentist.

The current study is to understand the multifactorial cause denture fracture and numerous ways to repair it .

Materials and Methods: In this retrospective study, 53 patients selected are regular denture wearers. The data was collected from the Dentists. All of them were questioned about the particulars of the fractured denture base.

Results: Of the 53 cases, 55% fractured cases was seen in female patients. Compared to the 52.8% of maxillary denture fracture. 28.3% patients were wearing the denture for more than 5 years. Midline fracture was seen for 56.6 % of the total cases. The repair procedure done by dentists reported to be 67.9%. 84.95 used cold cure for the repair procedure. Out of which 35.8 % were chemically treated. The repair joint was interlocking key joint for 50.9% of the cases followed by bevel and straight. 88.7 % patients were happy with their repair procedure.

Conclusion: patients are willing for denture repair rather than New Prosthesis. Due Importance must be given to understand the cause of fracture so as to avoid it. And More studies should be carried out for Different Repair Procedures .

Key Word: Denture, Midline Fracture, Repair

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I. Introduction

Replacing the lost natural tooth by artificial prosthesis is an age-old tradition. The prosthetic material ranged from wood, animal bone, ivory, metals till today's newest materials introduced for dental use^{1,2}. Virtuous by the favourable properties, poly methyl methacrylate is one of the safest, ideal and most commonly used.^{3,4}

A complete denture should suffice the requirements of Comfort, Retention, Function & Aesthetics. Sometimes lack of retention, discomfort & fracture of the denture base resulting in frustration and disappointment for the patient and the dentist.⁵

The polymethyl methacrylate denture fractures mainly because of the deformation of the base or the altered stress distribution. Maxillary denture are found to fracture more than mandibular.²

Clinical factors related to single denture failure include:

1. Improperly contoured mandibular occlusal plane

2. High frenum attachments,
3. Occlusal scheme,
4. Occlusal forces,
5. The denture foundation
6. Denture base thickness.⁶

The current study is to understand the multifactorial cause denture fracture and numerous ways to repair it

II. Material And Methods

This Questionnaire study was carried out through Dentists. A total 53 adult subjects (both male and females) of aged ≥ 18 , years were for in this study.

Study Design: Cross sectional study

Study Location: C.S.M.S.S Dental College

Study Duration: December 2022 to March 2023.

Procedure methodology

The study was performed in the Department of Prosthodontics of the institute in the year 2023. The study aimed to evaluate the different parameters of fracture of complete dentures. The data was collected from the Dentists.

Total 53 dentists were finally selected. All of them were questioned about the particulars of the fractured denture base. The parameters were Gender, fractured denture arch, duration of denture, cause of fracture, type of fracture, refracture cases, patients willingness for new, repair procedure, material for repair, alteration of fractured surface chemically & physically, and the satisfaction of the repair.

III. Result

Of the 53 cases, 55% fractured cases was seen in female patients. Compared to the 52.8% of maxillary denture fracture, the mandibular accounted for 47.2%. 28.3% patients were wearing the denture for more than 5 years while the rest 71.7% used it for a range with upper limit of 5 years. the occurrence of fracture is contributed to fall of denture for 67.9%, while chewing 15.1%, trauma 7.5 % and the rest 9.4% was other causes.

Midline fracture was seen for 56.6 % of the total cases, where as border and tooth fracture at 22.6% & 20.8%. the fracture was not found to be at the same place twice in 54.7%. 75.5% patients were willing for the repair instead of fabrication of new denture.

The repair procedure done by dentists, lab, Quack and patient reported to be 67.9%, 24.5% 5.7% & 1.9% respectively. 84.95 used cold cure for the repair procedure. Out of which 35.8 % were chemically treated. The repair joint was interlocking key joint for 50.9% of the cases followed by bevel and straight. 88.7 % patients were happy with their repair procedure.

IV. Discussion

Treatment of fractured dental prosthesis has been common problem. predictable resorption of upper jaw Flexure effects in the denture midline is caused by predictable resorption of upper jaw ^{6,7}. The mid line denture fracture is most common in single complete denture ⁸. Sharry has stated that denture fractures could be due to inadvertently fall of dentures ⁹. Boucher has stated that molar teeth can create different misaligned leverage forces that could lead to the inadvertent denture fracture.¹⁰

Stanford J.W. et al found that self-curing resins were weaker and less stiff than the heat curing resins in transverse bending³. Harrison W.M. and Stansbury B.E. rounded joint is superior to the rabbeted joint and the butt joint. ¹¹

Nallamilli Mamatha et al concluded that the control group exhibited highest strength followed by 45o bevel joint design specimens repaired with dimethyl chloride surface pretreatment and e glass fibre reinforced self-cure repair mater. ¹² The knowledge and advancement of treatment of fractured denture base depends on the understanding the causes predisposing them.

V. Conclusion

Fractured Denture was seen more in female patients. Compared to the 52.8% of maxillary denture fracture, the mandibular accounted for 47.2%. 71.7% of the patients used the denture for less than of 5 years before it fractured. Midline fracture was commonest. 3/4th of the patients were willing for the repair. The repair

procedure done by dentists were more successful. The repair joint was interlocking key joint. 88.7 % patients were affirming repair procedure.

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