

ORIGINAL RESEARCH

Comparative Evaluation Of Flexural Strength Of Different Provisional Fixed Restorative Resins

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ABSTRACT:

Background: Fixed Prosthodontic treatment involves the replacement and restoration of teeth by artificial substitutes. The present study was conducted to assess flexural strength of different provisional fixed restorative resins. **Materials & Methods:** The present study was conducted on 74 patients of both genders. Three materials such as Revotek LC, Tempspan and Integrity were used in the study. Specimens were fabricated and flexural strength was measured. **Results:** Materials used were light cure resins such as Revotek LC, dual cure resins such as Tempspan and self cure resins such as Integrity. The mean flexural strength of Revotek LC was 28.2 N, Tempspan was 43.6 N and Integrity was 46.4 N. The difference was significant ($P < 0.05$). **Conclusion:** It was found that flexural strength of Revotek LC was higher followed by Tempspan and Integrity.

Key words: Revotek, Resins, Tempspan

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INTRODUCTION

Fixed Prosthodontic treatment involves the replacement and restoration of teeth by artificial substitutes that are not readily removable from the mouth. Its focus is to restore functions, esthetics and comfort.¹ The term provisional, interim or transitional have been routinely used interchangeably in the literature. Provisional restoration should be akin to a definitive restoration in all aspects, except for the material from which they are fabricated. There is a vast array of materials available in the market to fabricate fixed provisional restorations. Clinicians should select a product based on factors that include ease of manipulation, cost effectiveness, esthetics, strength, and marginal accuracy.² The importance of providing interim treatment with provisional restorations becomes critical in cases of full mouth reconstruction, in which multiple teeth are prepared. In these situations, provisional restorations will typically be used for relatively long periods of time (6–12 weeks) to monitor patient comfort and satisfaction and to allow for any necessary adjustments.³ It can transform an unhealthy, unattractive dentition with poor function into a comfortable, healthy occlusion capable of years of further service and greatly enhanced esthetics.

Treatment can range from the fairly straightforward restoration of a single tooth or replacement of one or more missing teeth with a fixed dental prosthesis.⁴ The present study was conducted to assess flexural strength of different provisional fixed restorative resins.

MATERIALS & METHODS

The present study was conducted in the department of Prosthodontics. It comprised of 74 patients of both genders. All were informed regarding the study and written consent was obtained. Ethical approval from institutional ethical committee was obtained prior hand.

Data such as name, age, gender etc. was recorded. Three materials such as Revotek LC, Tempspan and Integrity were used in the study. Brass mould was fabricated according to ANSI standardization, and specimen size was 25x2x2 mm. Sample size was 45 (15 for each). Specimens were fabricated and were stored in artificial saliva and flexural strength was measured. Results were tabulated and subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Materials used in the study

S. no	Materials	Type of resins
1	Revotek LC	Light cure
2	Tempspan	Dual cure
3	Integrity	Self cure

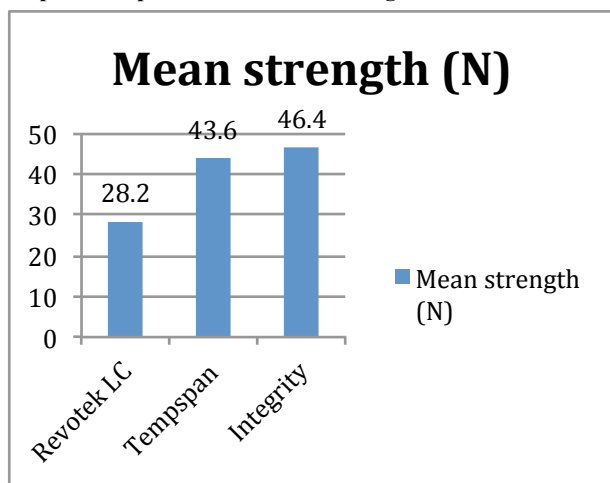
Table I shows that materials used were light cure resins such as Revotek LC, dual cure resins such as Tempspan and self cure resins such as Integrity.

Table II Comparison of flexural strength

Materials	Mean strength (N)	P value
Revotek LC	28.2	0.01
Tempspan	43.6	
Integrity	46.4	

Table II, graph I shows that mean flexural strength of Revotek LC was 28.2 N, Tempspan was 43.6 N and Integrity was 46.4 N. The difference was significant ($P < 0.05$).

Graph I Comparison of flexural strength



DISCUSSION

The interim treatment focuses on protecting pulpal and periodontal health, promoting guided tissue healing in order to achieve an acceptable emergence profile, evaluating hygiene procedures, preventing migration of the abutments, providing adequate occlusal scheme, and evaluating maxilla-mandibular relationships. Provisional material selection should be based on how their mechanical, physical, and handling properties fulfill specific requirements for any clinical case.⁵ Other factors to be considered are biocompatibility and complications from intraoral use, such as chemical injury from the presence of monomer

residue and thermal injury from an exothermic polymerization reaction. The present study was conducted to assess flexural strength of different provisional fixed restorative resins.

In this study, materials used were light cure resins such as Revotek LC, dual cure resins such as Tempspan and self cure resins such as Integrity. We found that mean flexural strength of Revotek LC was 28.2 N, Tempspan was 43.6 N and Integrity was 46.4 N. The difference was significant ($P < 0.05$).

Haselton et al⁶ conducted a study to assess whether setting mechanism of fixed provisional restorative resins has an effect on the physical and mechanical properties and to compare and contrast the flexural strength and hardness of three different fixed provisional restorative resins such as Revotek LC, Tempspan and Integrity. The mean flexural strength and hardness of three materials was compared using ANOVA test and pair-Wise comparison was done using Tukey's honesty significant (HSD) test. There was statistically significant difference found between all three provisional restorative materials for Hardness and Flexural strength.

Poonacha et al⁷ compared the flexural strength and elastic modulus of three provisional materials. They concluded that the flexural strength of methacrylate resin reduced significantly; while bis-acrylic composite resins showed a significant increase in its flexural strength after being stored in artificial saliva for 24 hours.

Nejatidanesh F et al⁸ evaluated the flexural strength of 7 interim materials, and they found that bis-acryl provisional restorative materials exhibited higher flexural strength than the methacrylate resins. They suggested that the use of fibers is an effective method of increasing flexural strength of provisional restoration resin.

Bhargav et al⁹ stated that provisional prosthesis are the restorations that provide interim protection, mastication, esthetics and positional stability while the definitive restorations are being fabricated. Flexural strength is an important mechanical property that determines the long term prognosis of provisional restoration. Although provisional prosthesis are used for short period of time, flexural strength of provisional material cannot be neglected. This study was an attempt to determine flexural strength of commercially available autopolymerising material (DPI) and heat cure material (DPI) at the time interval of 24 hours of fabrication and after 7 days of fabrication. The sample size was 15 samples of each material. Sample was subjected for 3 point flexural test. It was found that flexural strength study of heat cure resin was significantly higher when compared to autopolymerising resin.

CONCLUSION

It was found that flexural strength of Revotek LC was higher followed by Tempspan and Integrity.

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