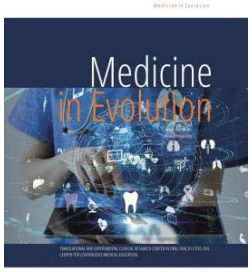
Marginal closure of ceramic-based restorations feldspatic fixed on unprepared teeth



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Abstract

Introduction: In recent years, the demand for treatments designed to improve dental aesthetics has increased. Objectives: The aim of this study was to fix adhesive on fixed prosthetic restorations made of feldspathic ceramics directly on the enamel surface of the unprepared tooth. Materials and Methods: The study was performed on a number of 10 extracted teeth. They were divided into 2 groups according to the fixing technique used. Results: The results obtained on the group in which the marginal closure was not finished was significantly more deficient from an aesthetic and functional point of view. Discussions: To improve the aesthetics of the anterior teeth through all-ceramic veneers, two types of materials are indicated for translucency and their potential to be used in small thicknesses. Conclusion: When using minimally invasive techniques without tooth preparation, it is mandatory that the marginal closure be finished with rotary tools. Recommendations for original studies

Keywords: minimally invasive, no prep, feldspar pottery, marginal closure

INTRODUCTION

In recent years, the demand for treatments designed to improve dental aesthetics has increased. In this context, both patients and dentists prefer to preserve the dental structures as much as possible. Thanks to technological advances, especially in adhesive dentistry, new materials, and minimally invasive techniques such as "no-prep" veneers have made this a reality.

Figure 1. Non-prep veneers

Aim and objectives

The aim of this study is to demonstrate that in the case of adhesive bonding of a feldspathic ceramic veneer to an unprepared tooth, it is mandatory that the marginal closure be finished with rotary instructions.

MATERIAL AND METHODS

Advances in dentistry and dental materials have helped dentists sacrifice much less tooth structure, materials are increasingly resistant for minimal thickness, dental aesthetics and biocompatibility help the teeth be kept vital much longer.

The study was conducted on 10 extracted teeth. They were divided into 2 groups according to the fixation technique used.

Figure 2. Extracted teeth group 1

Figure 3. Extracted teeth group 2

On one group the restorations made of feldspathic ceramics were fixed without finishing the marginal closure.

Figure 4. Unfinished veneer fixed on the tooth

Figure 5. Unfinished veneer fixed on the tooth

On the other batch, feldspathic ceramic restorations were fixed, and after fixing, the marginal closure was finished using rotary tools.

Figure 6. The veneer is finished and fixed on the tooth

Figure 7. The veneer is finished and fixed

Analysis of the marginal closure areas between the veneer and the tooth was done by optical microscopy and the results of the two groups were compared.

Figure 8. Unfinished marginal closure under the microscope

Figure 9. Finished marginal closure

The impression was made with a silicone with addition reaction in 2 consistencies - increased and fluid consistency.

Figure 10. Imprinting

The refractory pattern was destroyed when we created the facet Casting the extradur model-ghips.

Figure 11. Extra hard gypsum

Fixing the feldspathic veneer to the tooth structure is done in the following steps:

1. Conditioning the tooth- etch the tooth with orthophosphoric acid for 45s-1min, wash and dry.

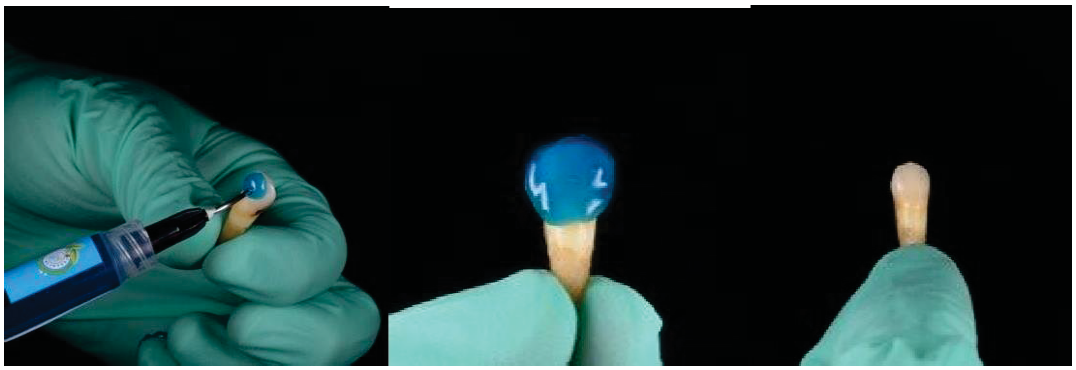

Figure 12. Application of acid Figure 13. I left it for 45s-1min Figure 14. Washed and dried

Figure 15. Orthophosphoric Acid 37% -Cerkamed

Apply bonding and remove excess by blowing with air, then light cure for 20s.

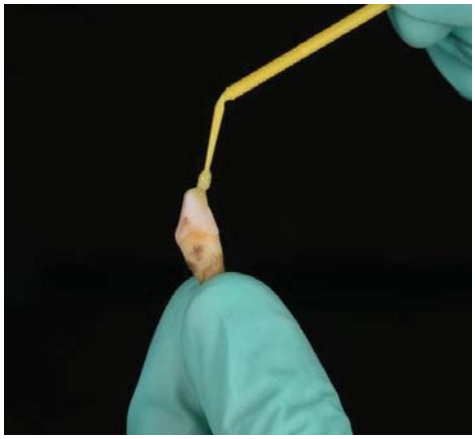

Figure 16. Application of bonding

Figure 17. Photopolymerization of the tooth

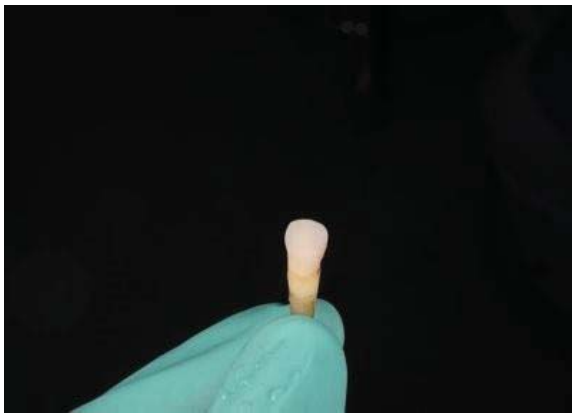

Figure 18. The tooth prepared for the following procedures

Figure 19. Bonding, Vivapen Ivoclar

2. Conditioning the feldspathic ceramic veneer- we take the veneer from the duplicate model with an Optrastik (Ivoclar), use hydrofluoric acid first for 1min after which we use orthophosphoric acid to remove salts from the acid etching and for degreasing at the same time.

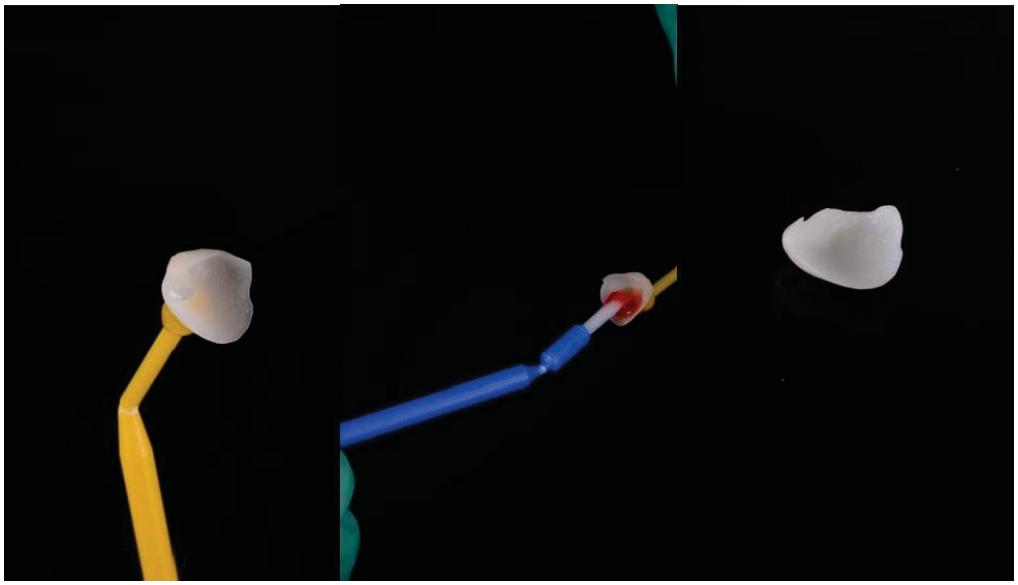

Figure 20. Veneer on an Oprastik

Figure 21. Application of hydrofluoric acid

Figure 22. Cleaning

Figure 23. Optrastik Ivoclar

Figure 24. IPS Ceramic Etching gel Ivoclar

Wash and dry, then apply primer (silane), dry and apply primer again.

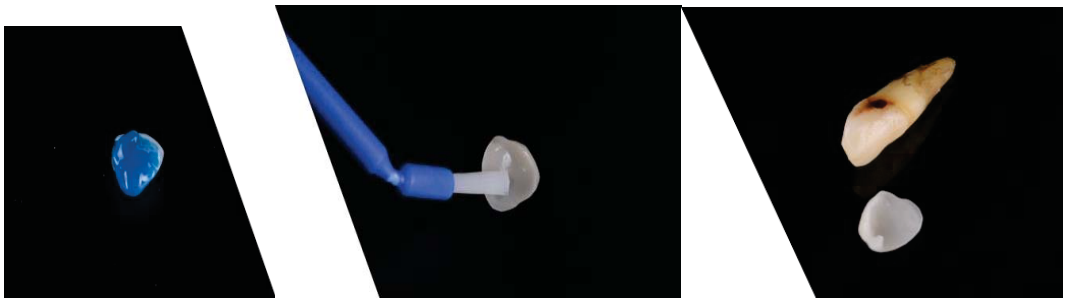

Figure 25. Degreasing the fase

Figure 26. Primer application

Figure 27. The prepared veneer

Figure 28. Universal ceramic primer

After these steps we apply Variolink cement on the veneer for fixation, clean the excess and light cure it.

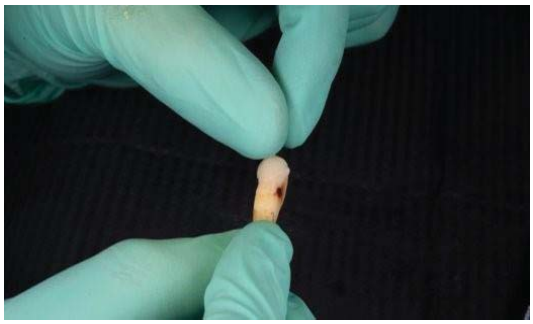

Figure 29. Fixing the veneer on the tooth

Figure 30. Fixing the veneer on the tooth

Figure 31. Cleaning of excess cement

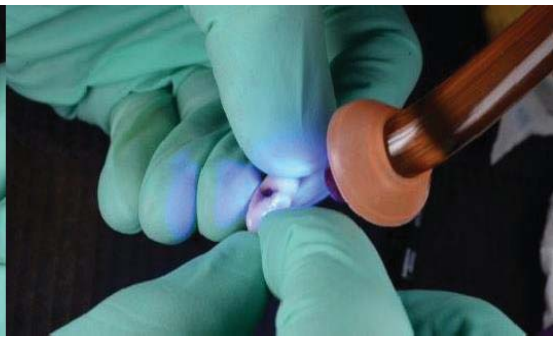

Figure 32. Photopolymerization

Figure 33. Variolink Esthetic LC Ivoclar

We finish with an Arkansas stone and a gum.

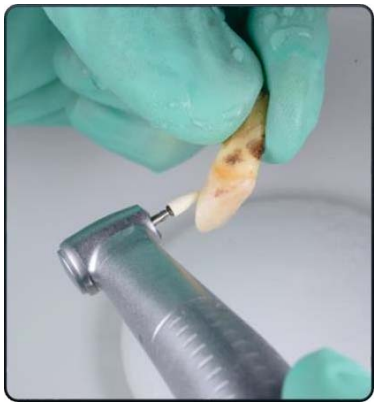

Figure 34. Finishing the veneer with arkansas Stone

Figure 35. Finishing the veneer with gum

We have demonstrated that in all clinical cases that we can fix the veneer on the non-prep teeth is ideal to be able to keep the teeth vital and intact for as long as possible, until we reach other interventions in the future such as crowns or advanced prosthetic work.

Figure 36. Grinded teeth for crowns

Figure 37. Dental crowns

RESULTS

The results obtained on the lot where the marginal closure was not finished was significantly more deficient from an aesthetic and functional point of view, observing a step of overconturation. The results for the group in which the marginal closure was finished were similar to the situation in which the tooth was intact. No transition was observed at the level of the marginal closure between the veneer and the tooth, resulting at the level of the closure only in a conglomerate of ceramic, enamel and luting cement.

DISCUSSIONS

To improve the aesthetics of front teeth with all-ceramic veneers, two types of materials are indicated for their translucency and potential to be used in small layers: sintered feldspathic ceramics and pressed ceramics that can be used and milled using computer-aided CAD/CAM techniques.

Practitioners must choose the material on the requirements of the tooth to be restored, such as the indication and the need for tooth preparation to improve aesthetics and functionality. Feldspathic veneers have undergone a significant evolution. Nowadays, their use has expanded beyond a simple covering for anterior teeth to include the covering of coronal tooth structures. Feldspathic veneers are created by layering with powder-based (silicon dioxide) and liquid materials. The mechanical properties of feldspathic ceramics are low, with flexural strength typically 60 to 70 MPa. However due to adhesive bonding to the glaze the success rate is increased. Due to the low strength of feldspathic ceramics the finishing protocol was easy at the marginal closure of the facets.

CONCLUSIONS

When using minimally invasive techniques without tooth preparation it is mandatory that the marginal closure is finished with rotary instruments. An important aspect to note is the ease of finishing feldspathic facets.

Figure 38. Veneers

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