

PROCEDURA IZRADE METALO-KERAMIČKE KRUNICE SA METALNOM LINGVALNOM I OKLUZALNOM POVRŠINOM

THE PROCEDURE OF MAKING A CROWN THAT COMBINES AN ALL-PORCELAIN FACIAL VENEER WITH METAL LINGUAL AND OCLUDING SURFACE

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Kratak sadržaj

Ovaj članak opisuje proceduru izrade krunice koja podrazumeva kombinaciju metala sa lingvalne i okluzalne površine sa vestibularnom porculanskom fasetom. Restauracija sadrži estetske i fizičke osobine cele keramičke krune, ali rizik abrazivnog oštećenja zuba antagonista kod ove vrste restauracije značajno je redukovan.

Ključne reči: keramička kruna, porculanska faseta

Abstract

This article describes a procedure for making a crown that combines an all-porcelain facial veneer with metal lingual and occluding surface. The procedure combines both the conventional lost wax technique and the use of a refractory cast for firing porcelain. The crown retains the advantages of the traditional all-porcelain crown restoration but reduces the risk of damage to the opposing teeth associated with an all-ceramic occluding surface.

Key words: all-ceramic crown, facial porcelain veneer

Uvod

Savremena rekonstruktivna stomatologija promovise keramičke i kompozitne materijale, koji uz adhezivna veziva obezbeđuju vrhunske estetske vrednosti implantiranim nadoknadama u ustima pacijenta. Učiniti dentalnu kompoziciju koju rekonstruišemo lepom, podariti joj izgublenu prirodnost i uklopiti je u složeno okruženje, krajnje je odgovoran zadatak.¹

U pokušaju da se sačuva zubno tkivo interesovanja su se usmerila na smolom vezane porcelanske krune, kao alternativa metal-keramičkim restauracijama.² Ovakva restauracija zahteva minimalnu preparaciju zuba pri čemu oni zadržavaju prihvatljive fizičke karakteristike. Nažalost, kompletna metal-keramička

Introduction

Modern reconstructive dentistry promotes ceramic and composite materials, which, alongside with adhesive substances, provide supreme aesthetic values by means of implanted restorations in the patient's mouth. To gain a high aesthetic value of dental composition which is being reconstructed, to regain its natural appearance and fit it into a complex environment, represents an extremely responsible task.¹

In an attempt to conserve tooth tissue, interest has grown in resin-bonded all-porcelain crowns as an alternative to porcelain fused to metal restoration.² These restorations require minimal tooth preparation while retaining acceptable physical characteristics.³ Unfortu-

kruna, i to njena okluzalna površina, ima potencijal da uzrokuje abrazivno oštećenje zuba antagonista.³ Ovo može biti posebno značajno kod pacijenata na čijim zubima se zapaža značajna abrazija gleđi, gde zubi antagonisti imaju velike površine ogoljenog dentina koji je osetljiv, pogotovu ako pacijent ima bruksomanu aktivnost.⁴

Cilj

Ovaj članak ima za cilj da opiše metodu koja podrazumeva kombinaciju metala sa lingvalne i okluzalne površine sa vestibularnom porculanskom fasetom. Restauracija sadrži estetske i fizičke osobine cele keramičke krune, ali rizik abrazivnog oštećenja zuba antagonista, koje je bilo prisutno, kod ove vrste restauracije značajno je redukovano. Iako je opisana procedura izrade frontalnih krunica, postupak je jednako primenljiv i za izradu restauracije u postkaninom regionu.

Procedura

1. Ispreparirati zube prvobitno prema standardnom dizajnu za cele keramičke krune, a zatim napraviti plitak žleb na predviđenom priponu labijalnog porcelana i lingvalnog dela metala (slika 1 i 2). Ova modifikacija olakšava retenciju metalnog odlivka, a važna je i kod pečenja labijalnog porcelana, jer razlika u termalnoj ekspanziji između keramike i metalnog odlivka može da dovede do izvesnog nesklada.



Slika 1. Izgled gornjih prednjih zuba pre preparacije
Figure 1. Maxillary anterior teeth before preparation

nately, a ceramic occluding surface has the potential to cause abrasive damage to the opposing dentition. This may be significant in patients whose teeth already show considerable wear because the opposing teeth have large areas of exposed dentin that are susceptible, especially if the patient have bruxomany activity.⁴

Purpose

This article describes a method to combine a metal lingual and occluding surface with a vestibular porcelain veneer. The restoration retains aesthetic and physical properties all-porcelain crowns, but the risk of abrasive damage to the opposing teeth associated with a ceramic occlusal surface is reduced. Although the fabrication of anterior crowns is described, the procedure is equally applicable to posterior restorations.

Procedure

1. Prepare the teeth with a standard design for all-ceramic crowns, and then place a shallow groove at the proposed junction of the labial porcelain and lingual meatl (Figure 1 and 2). This modification facilitates the alingment and retention of the metal casting and which is particularly important when the labila porcelain is fired because the differentes in thermal expansion between ceramics and the metal casting could cause discrepances.



Slika 2. Zubi nakon preparacije
Figure 2. Teeth after preparation

2. Uzeti otisak preparisanih zuba adicisionim silikonima i izliti radni model od gipsa.

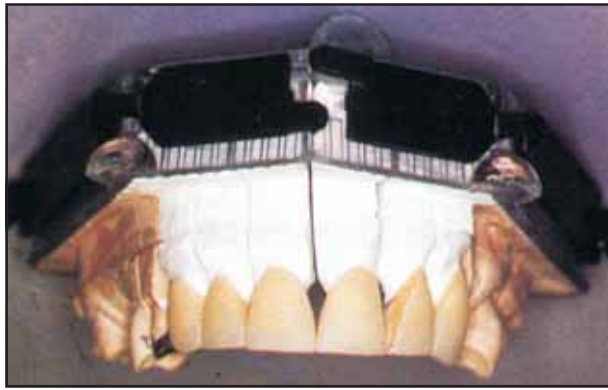
3. Dublirati radni model i napraviti vatrostalne odlivke na prepariranim zubima.

4. Napraviti voštane modele lingvalnih površina preparacije slično voštanim modelima – krunica na radnom modelu (slika 3).

5. Metodom livenja napraviti metalne odlivke, a zatim očistiti, peskirati i degasirati.

6. Naneti i ispeći opaker-porcelan na delove metalnog odlivka koji su vidljivi sa vestibularne strane.

7. Smestiti modifikovane metalne odlivke precizno i pažljivo na vatrostalne odlivke (slika 4).



Slika 3. Voštani modeli lingvalnih površina krunica
Figure 3. Wax patterns of lingual surfaces of crowns

2. Make an impression of the prepared teeth and make a master cast with stone.

3. Duplicate the master cast and make a refractory dies of the prepared teeth.

4. Make wax patterns of the lingual surfaces of the preparations, similar to waxing three quarter crowns on the master cast (Figure 3).

5. By use of the lost wax procedure, make castings and after that clean and degas.

6. Apply and fire opaque porcelain to the metal portion of the casting that would be visible from the vestibular surface.

7. Seat the modified castings accurately on the refractory dies (Figure 4).



Slika 4. Vatrostalni odlivak sa metalnom odlivkom
Figure 4. Refractory dies with metal castings in place

8. Labijalne površine krunica napravljene su od porcelana koji prekriva opaker na metalu. Ispeći krunice prema uputstvu proizvođača (slika 5).

9. Kada su krunice izmodelovane i završene na vatrostalnom odlivku, sa korektnom okluzijom, pristupa se finalnom glaziranju porculana.

10. Nakon uspešne probe, metal se peskira i unutrašnja površina keramičkog dela krunice česticama aluminijum tri-oksida veličine 50 mikrometara.

11. Zatim, tretirati svaku površinu keramičkog dela krunice sa 9,6% rastvorom fluoro-vodonične kiseline.

12. Cementiranje krunice vrši se providnim, ili obojenim, niskoviskoznim smolastim cementom (slika 6).

8. The labial surfaces of the crowns are made with porcelain to cover the opaque porcelain on the metal. Fire the crowns according the manufacturer's instructions (Figure 5).

9. After the crowns are shaped and finished on the refractory dies, the occlusion is corrected, give the porcelain a final glaze.

10. After a successful try-in, sandblast the metal and porcelain fitting surfaces of the crown with 50 mikrometers aluminium-oxide.

11. Treat the porcelain inner surface of the crown with 9,6% solution of hydrofluoric acid.

12. Cement the crowns with translucent, or colored, low-viscosity, dual affinity resin cement (FUJI IX) (Figure 6).



Slika 5. Krune posle nanošenja porculana i pre glaziranja
Figure 5. Crowns after facial porcelain build-up and firing before final glazing



Slika 6. Kompletna restauracija u ustima pacijenta
(vestibularni i lingvalni izgled)
Figure 6. Completed restoration in patient's mouth

Zaključak

Kombinacija keramičke krune sa lingvalnom i okluzalnom metalnom površinom ispunjava iste estetske zahteve kao i kompletna keramička kruna, ali nisu prisutni problemi vezani za okluzalnu površinu. Međutim, što je i za očekivati, naučni milje još uvek nije našao odgovore na sve dileme vezane za mehaničke performanse savremenih keramičkih materijala. Sva istraživanja usmerena na dobijanje žilavih keramika sa povećanom čvrstoćom na savijanje veoma su aktuelna.

Conclusion

The combination of a facial veneer and a metal lingual or occlusal surface provides has the aesthetic properties of an all-ceramic restoration, but not the problems associate with a porcelain occlusal surface. It is not surprising, though, that scientific circles have not yet responded to all the dilemmas concerning mechanical performances of contemporary ceramic materials. All current researches aimed at devising tough ceramic materials with increased hardness to flexure forces are the subject of strong professional attention.

LITERATURA / REFERENCES

1. Đuričić-Obradović Kosovka. Porculanske fasete. BMG Beograd, 2002; 11–12.
2. Goldstein R. Esthetics in dentistry (vol.I), B.C. Decker Inc. Hamilton, London 1998; ch. 7.
3. Denry LI. All ceramic restorations. U: Rosenstiel FS, Land FM, Fujimoto J. Contemporary fixed prosthodontics, Mosby Inc, St. Louis 2001; ch. 25.
4. Peumans M, Van Meerbeek B, et al. Five year clinical performance of porcelain veneers. Quintessence Int 1998; 29: 211–221.

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