Expanded Structured Abstract

Prosthodontic and Endodontic Management of a Patient with Skeletal Class III Malocclusion: A Clinical Report

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Purpose: Class III malocclusion has been defined as complete anterior cross-bite and mesial relation between the mandibular and maxillary molars,[1] and if skeletally severe may require surgical correction,[2] adjunctive orthodontics, occlusal adjustment, and prosthodontic treatment.[3] An alternative conservative approach precludes the surgical intervention, particularly in adult patients.[4] This article describes the prosthodontic and endodontic management of a partially edentulous Class III malocclusion patient using removable coping-retained overdentures in both the maxillary and mandibular arches.

Case Presentation: A 63-year-old man with a severe Class III malocclusion presented the following complaints: difficulty in chewing, mobile mandibular teeth, and dissatisfaction with his esthetic appearance. His medical record revealed a history of pharmacologically controlled diabetes mellitus type II.

Dental and radiographic examination confirmed the presence of the mandibular left central and lateral incisors, canine, second premolar, second molar, mandibular right lateral incisor, canine, second premolar, maxillary left central and lateral incisors, canine, first premolar, and maxillary right lateral incisor and canine (Fig 1); an anterior cross-bite; loss of periodontal support around the mandibular incisors; plus mobility and gingival recession. Oral examination and cephalometric analysis confirmed a mixed dental and skeletal Class III malocclusion. Orthognathic surgery was not considered or prescribed because of the patient's age and systemic condition. Milled cast coping–retained overdentures were planned for both mandibular and maxillary arches.

The labioversion of the mandibular incisors and the length and bulk of the premolar and molar teeth required endodontic treatment to permit their use as abutments for overlying denture base material. After the teeth were prepared, a definitive impression for coping fabrication was made with a custom tray using condensation putty (Zetaplus, Zhermack) and light-body silicone impression materials (Oranwash, Zhermack). After Cr-Ni metal alloy (Wiron 99, Bego) copings were adjusted, the copings were luted with glass-ionomer cement (Medicem, Promedica) (Fig 2a). The day after cementation, impressions for coping-retained overdentures were made with custom trays and medium-viscosity addition silicone impression material (Panasil Contact Plus, Kettenbach). The impressions were cast and occlusion rims made to record the patient's vertical dimension of occlusion. A bilateral balanced articulation was developed using 33-degree anatomic acrylic resin teeth (Optognath, Bayer), and maximal soft tissue coverage was used for maxillary and mandibular coping-retained overdentures. The overdenture prostheses were processed with heat-polymerizing acrylic resin (Meliodent, Heraeus Kulzer).

The patient was examined 48 hours later for postinsertion adjustment and then followed on a monthly basis (Fig 2b). At the 18-month follow-up, he stated that he had no complaints with his overdentures.

Conclusion: This patient's systemic and economic concerns determined the prescription of our selected protocol, which addressed and satisfied both patient- and dentist-mediated clinical management concerns.

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This case report was presented as a poster at the 28th Annual Conference of the European Prosthodontic Association, 16–18 September 2004, Kusadasi, Turkey.

Int J Prosthodont 2005;18:163–164.

Fig 1 *(left)* Anterior and bilateral posterior cross-bite.

Fig 2a *(right)* Anterior view of copings.
Fig 2b *(below)* Definitive prostheses.

References

1. Proffit WR, Fields HW. Contemporary Orthodontics, ed 3. St Louis: Mosby, 2000.
2. Hochman N, EhrlichY, Yaffe A. Diagnosis and mode of treatment for "pseudo" Class III patients and its effects on masticatory movements. J Oral Rehabil 1996;23:541–547.
3. Abrams L. Occlusal adjustment. In: Goldman HM, Cohen DW (eds). Periodontal Therapy, ed 6. St Louis: Mosby, 1980.
4. Ehrlich J, Yaffe A, Hochman N. Various methods of achieving anterior guidance. J Prosthet Dent 1989;62:505–509.

Literature Abstract

In vitro fracture strength of teeth restored with different all-ceramic crown systems

This in vitro study evaluated the fracture resistance of crowns made of metal-ceramic and three all-ceramic systems: *(1)* a 0.4-mm aluminum oxide coping; *(2)* a 0.6-mm aluminum oxide coping; and *(3)* a 0.6-mm zirconia ceramic coping. Ten maxillary central incisors were used in each group: Group MCC (control), metal-ceramic crown (JRVT High Noble Alloy); Group AC4, crown with 0.4-mm aluminum oxide coping (Procera AllCeram); Group AC6, crown with 0.6-mm aluminum oxide coping (Procera AllCeram); Group ZC6, crown with 0.6-mm zirconia ceramic coping (Procera AllZirkon). All teeth were prepared with a standardized all-ceramic crown restoration with a 1.0-mm shoulder finish line. All restorations were cemented with phosphate-monomer modified cement (Panavia 21) after treatment with a bonding agent (Clearfil SE Bond). All specimens were stored in 100% relative humidity in a normal saline solution for one week. Fracture strength was tested with a universal testing machine at a 30-degree angle to the long axis of the tooth. The mean failure values were: Group MCC, 405 ± 130 N; Group AC4, 447 ± 123 N; Group AC6, 476 ± 174 N; and Group ZC6, 381 ± 166 N. The results were statistically insignificant among various groups. All failures occurred on the supporting tooth structure. Based on the results of this study, Procera AllCeram and Procera AllZirkon may be used in place of metal-ceramic crowns when a resinous cement and bonding agent are used.

Potiket N, Chiche G, Finger IM. *J Prosthet Dent* 2004;92:491–495. **References:** 27. **Reprints:** Dr Narong Potiket, School of Dentistry, Louisiana State University, Health Sciences Center, 1100 Florida Ave, Box 222, New Orleans, LA 70119. fax: 504 619-8741—*Ansgar C. Cheng, Singapore*