A Simplified Technique for Solving the Transfer Problem of Implant-Supported Fixed Partial Dentures for Patients With Microstomia

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Techniques for treating a fully or partially edentulous patient with microstomia have been developed to overcome the challenge of accessing the oral cavity. Management of the problems associated with providing implant-supported fixed partial dentures for patients with microstomia has not been well reported. This article describes a solution for the transfer problem that occurs when making an impression of an implant-supported fixed partial dentures for patients with microstomia.

Key Words: microstomia, implant-supported fixed partial denture, impression

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INTRODUCTION

Microstomia is defined as an abnormally small oral orifice.[1] Microstomia may result from surgical treatment of orofacial neoplasms, cleft lips, maxillofacial trauma, burns, and radiotherapy.[2] Microstomia can also occur as a result of genetic disorders, such as partial duplication of chromosome 6q,[3] Hallopeau-Siemens–type recessive dystrophic epidermolysis bullosa,[4] Freeman-Sheldon (whistling face) syndrome,[5] Burton skeletal dysplasia,[6] and such diseases as Plummer-Vinson syndrome or scleroderma.[2] Prosthodontic treatment is more complex because of the reduced oral opening characteristic of fully or partially edentulous patients with microstomia.[7] In particular, the initial difficulty in prosthetic rehabilitation is making the impression.[8] Modified impression techniques, including the use of sectional impression trays, modified stock trays, and flexible impression trays, have been reported to overcome this difficulty.[9,10] Also, several denture designs, including sectional[11–13] and collapsible designs,[7,14] have been used to overcome to prosthodontic challenges. The two segments of the collapsible dentures have been connected by using pins,[15] using a locking tool,[7] latching a swing-lock assembly,[11] and locking the denture segments with magnets[14] or attachments.[16] Also, flexible denture materials may be used to ease insertion of prosthetics.[17] Although implant-supported fixed partial dentures (FPDs) have been reported for microstomia patients,[18,19] management of the problems associated with providing implant-supported FPDs has not been well reported. This article describes a solution for the transfer problem that occur in making impressions of implant-supported FPDs for patients with microstomia.

TECHNIQUE

1. Make preliminary impressions of both arches with irreversible hydrocolloid (CA37, Cavex Holland B, Haarlem, Netherlands) using plastic mini stock

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Figures 1–8. Figure 1. Intraoral view of a patient with microstomia. **Figure 2.** Prepared acrylic resin custom trays. **Figure 3.** Definitive impressions. **Figure 4.** Back view of acrylic resin custom trays with definitive impressions. **Figure 5.** Fixed partial denture (FPD) fixed with self-cure autopolymerizing acrylic resin. **Figure 6.** FPD placed with the analog and abutment assembly. **Figure 7.** View of FPD placed with the analog and abutment assembly on the cast. **Figure 8.** Intraoral view of the definitive FPDs.

trays (Teknik Dis Deposu, Istanbul,Turkey) (Figure 1). Pour the casts with type IV stone (BEGO, Bremen, Germany).

2. Prepare sectional mandibular and maxillary acrylic resin custom trays (Paladur, Heraeus Kulzer GmbH, Hanau, Germany) (Figure 2).
3. Screw impression copings (Indirect transfer, Zimmer Dental, Carlsbad, San Diego, Calif) onto the implants (Zimmer Dental).
4. Make secondary impressions of both arches with polyether-based impression material (Impregum, 3M ESPE, Seefeld, Germany) using sectional custom trays for each arch.
5. Insert the transfer analog (Zimmer) and impression coping (Zimmer) assemblies into the impressions (Figures 3 and 4) and pour the casts with type IV stone.
6. Screw prefabricated abutments (Zimmer) onto analogs on the casts of both arches, wax up the FPDs, and cast with a chrome-nickel alloy (Remanium CS, Dentaurum Group, Ispringen, Germany).
7. Try the FPDs in the mouth. Cut the FPD unplaced with the separating disc (Supercut STM Separating disc, Dentaurum Group) and fix it with self-cure autopolymerizing acrylic resin (Meliodent, HeraeusKulzer, Hanau, Germany) in the mouth (Figure 5).
8. Solder the FPD with chrome-nickel alloy soldering material (Remanium CS, Dentaurum Group). Place

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the analog and abutment assembly into the FPD (Figures 6 and 7).

9. Cut the cast with a bur (Super hard metal bur, Dentaurum Group), remove the analog (Zimmer) and fixed FPD with type IV stone on the cast, and deliver the FPDs to the patient (Figure 8).

Discussion

Prosthodontic rehabilitation of patients with microstomia has been presented in several case reports.[7,13,15,19] These reports have mainly focused on impression procedures and design of the impression trays.[7,13,15] However, fabrication of implant-supported FPDs using conventional impression procedures has also been reported for the prosthodontic rehabilitation of patients with microstomia.[18,19] Although the oral rehabilitation of these patients presents a considerable challange, problems of the transfer of implants during the impression-making stage and solutions to this problem have not been well reported. The technique described herein provides a solution to the transfer problem in making impressions of the implant-supported FPDs for patients with microstomia. Advantages of the described technique include the elimination of repeated impression-making procedures because of the mistransferred positions of the implants during fabrication and the reduced chair-side time. The disadvantage of this technique is its increased technical sensitivity associated with the additional impression-making steps.

Summary

Modified impression techniques have been developed that include the use of sectional impression trays, modified stock trays, and flexible impression trays for patients with microstomia. This article describes a solution for the transfer problem that occurs in making impressions of implant-supported FPDs for patients with microstomia.

Abbreviation

FPD: fixed partial denture

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