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A simplified technique for fabricating complete dentures for patients with Parkinson's disease: a case report

Técnica simplificada como alternativa para confecção de próteses totais para paciente com Doença de Parkinson: relato de caso

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Abstract

Background and Objective: Parkinson's disease is a neurological disorder that affects 1% of individuals aged 60 years and older. The associated symptoms can impose limitations on the available dental treatment options. **Case description:** This case report follows the CARE guidelines and presents an adapted and simplified technique to fabricate complete dentures for a 74-year-old male edentulous patient with Parkinson's disease. This modified technique enabled the fabrication of complete dentures in 4 clinical sessions of approximately 40 minutes. The first session involved manufacturing a preliminary impression with fast-setting alginate. The base plates and occlusal rims were then adjusted for artificial teeth arrangement during the second session. The final prosthesis was completed in the third session, which involved a teeth try-in and fabrication of a functional impression with low-melting thermoplastic material and polyether. Finally, denture installation was performed in the fourth session and follow-up consisted of 3 weekly sessions. **Discussion:** Considering that the treatment provided satisfactory aesthetics and function, mastication and socialization benefits, and improved the self-esteem and well-being of the older patient with Parkinson's disease, the authors suggest this adapted and simplified technique for fabricating complete dentures.

Keywords: Parkinson's disease; complete denture; aged.

Resumo

Justificativa e Objetivo: A doença de Parkinson é uma desordem neurológica que afeta 1% dos indivíduos com 60 anos ou mais. Os sintomas associados podem impor limitações nas opções de tratamento odontológico disponíveis. **Descrição do caso:** Este relato de caso segue o protocolo CARE e apresenta uma adaptação da técnica simplificada para confecção de novas próteses totais, para um paciente edêntulo, do sexo masculino, de 74 anos com doença de Parkinson. Essa técnica modificada possibilita a confecção de próteses totais em quatro sessões clínicas de aproximadamente 40 minutos. A primeira sessão envolveu uma moldagem preliminar com alginato de presa rápida. As placas articulares com rodetes de cera foram ajustadas para montagem dos dentes artificiais durante a segunda sessão. A prótese definitiva foi concluída na terceira sessão, que envolveu a prova dos dentes e moldagem funcional com material termoplástico de baixa fusão e poliéter. Por fim, a instalação da prótese foi realizada na quarta sessão e o acompanhamento consistiu em três sessões semanais. **Discussão:** Considerando que o tratamento proporcionou estética e função satisfatórias, benefícios mastigatórios e de socialização, melhora da autoestima e bem-estar do idoso com doença de Parkinson, os autores sugerem o uso da adaptação da técnica simplificada para confecção de prótese total.

Palavras-chave: doença de Parkinson; prótese total; idosos.



INTRODUCTION

Parkinson's disease (PD) is a neurodegenerative condition of the central nervous system that is prevalent in older populations and is characterized by slow progression and uncertain etiology.¹ The associated symptoms result in difficulties executing daily activities and include hand, lip, and tongue tremors; dysphagia; sialorrhea; dry mouth; a burning sensation in the mouth; caries; periodontal disease; and orofacial pain related to tremors and rigidity of the orofacial muscles, leading to temporomandibular joint discomfort, tooth fracture, soft tissue trauma, and displacement of restorations.²

Tooth loss is common in patients with PD as they experience difficulty maintaining oral hygiene.³ Although few studies provide evidence on the benefits of dentures in these patients,^{4,5} several studies conducted in healthy older patients report the beneficial effect of dentures on quality of life, mastication, and preservation of the alveolar ridge.^{6,7}

The main challenges during the oral rehabilitation of edentulous patients with PD are related to the number and duration of clinical sessions needed to make complete dentures (CD), which generates pain and discomfort. The impression and intermaxillary registration procedures require prolonged mouth opening, controlled opening and closing of the mouth, and mandibular stability.

Therefore, this study designed a simplified technique for fabricating CD with reduced discomfort and time needed to make impressions, involving more than one procedure per ~40-minute session and thus allowing prosthesis fabrication to be completed in 4 sessions.⁸ This simplified procedure is indicated for any person and patient with PD who can benefit from this technique.

CASE DESCRIPTION

This case report follows the CARE guidelines⁹ and describes the oral rehabilitation of an older edentulous man with PD through a simplified technique for CD fabrication. The patient signed a written informed consent form allowing photographic recording and publication of the case.

The patient in question was male, 74 years old, single, a smoker, living with impaired cognition, and lived with a couple that acted as caregivers. The patient had been diagnosed with PD 5 years earlier and received medical treatment involving medication with levodopa. The patient's movement was slow and unbalanced. Signs of bradykinesia included tremors in the body, stiffness in the upper and lower limbs, and limited mobility in both hands. He maintained a slightly forward-leaning body posture and needed assistance to accommodate and move in a dental chair. The patient had been edentulous for 10 years and used an upper CD in a precarious retention and

conservation state. He complained about difficulties to masticate and mainly consumed soft food. The alveolar ridges showed good bone and mucous support providing adequate retention and stability to the CD (Figure 1A). The opening and closing of the mouth occurred in an uncontrolled way and were accompanied by mandibular tremors. A lower CD was initially not planned for this reason.

A simplified technique was used to fabricate the upper CD (Figure 2).^{8,10-14} The preliminary impression was made with stock trays and fast-setting alginate (Cavex Holland BV, Netherlands) through traction movement of the perioral muscles (Figure 1B). The aesthetic and functional adjustment of the baseplate was performed during the second session, which reestablished lip support, occlusal rim height, and the buccal corridor (Figure 1C). The upper occlusal rim was adjusted using a Fox ruler (Bio-art, Brazil), based on the parallelism between the occlusal rim, the

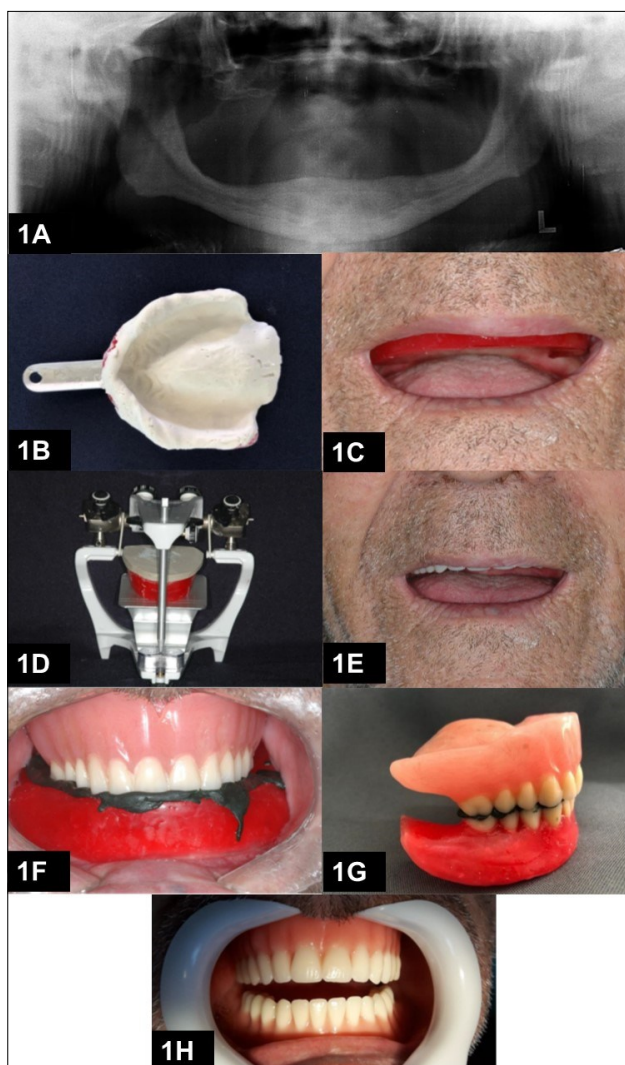


FIGURE 1. Clinical procedures of the simplified technique for fabricating complete dentures.

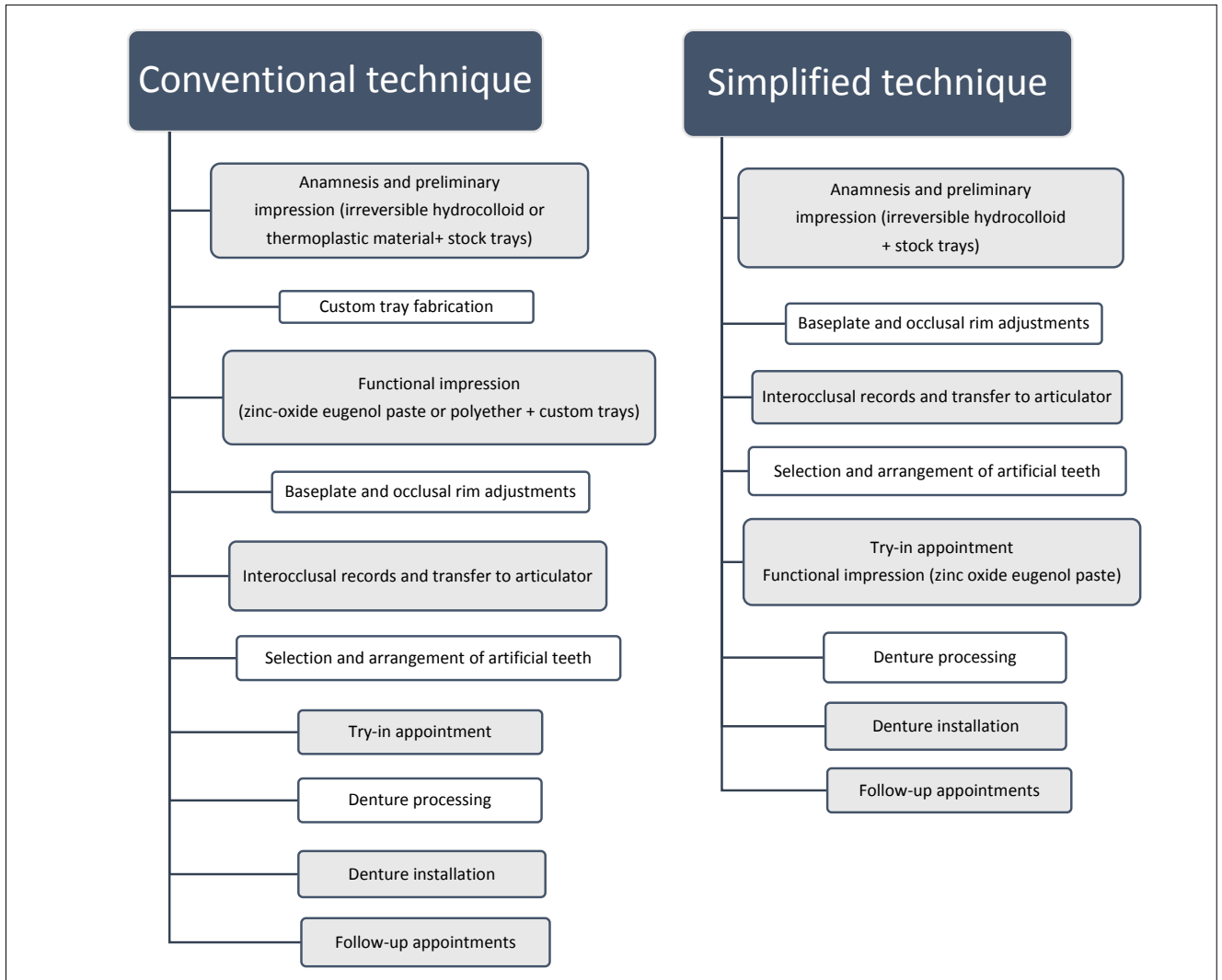


FIGURE 2. Sequence of clinical and laboratory steps for denture fabrication with the conventional and simplified techniques.

interpupillary line, and Camper's plane. The upper model was mounted on a semi-adjustable articulator using a flat occlusal plane indicator with a 15° angle (Bio-art, Brazil) (Figure 1D). During the teeth try-in, the aesthetic parameters were evaluated and a functional impression was made with thermoplastic material (Godiva Exata Verde, Brazil) and polyether (Imperium Soft, 3M, USA) to obtain a work model to further process the CD. The CD was installed in the fourth session, followed by monitoring on 3 weekly follow-up appointments (Figure 1E). Guidance on the use and cleaning of the CD was provided to the patient and his caregivers. After 6 months of adapting to the upper CD, the patient requested a lower CD to improve his mastication. The simplified technique was used in conjunction with an adaptation of the interocclusal record.

The preliminary impression of the lower ridge was made using the same technique described above. The lower occlusal rim followed the vertical dimension of occlusion,

obtained by combining metric and facial balance methods. Due to mandibular instability, the interocclusal record was taken by two operators working in tandem. One operator maintained the mandible in the most comfortable position occluded against the upper CD while the other cooled the thermoplastic material used for recording, thus avoiding movement during the procedure (Figure 1F). The models were transferred to an articulator for arrangement of the artificial teeth, in accordance with the upper CD. During the try-in appointment, few adjustments were needed and a functional impression was made (Figure 1G). The denture installation and follow-up procedures were identical to the ones used for the upper denture (Figure 1H). The patient reported pleasure in eating and improvements in chewing solid foods, self-esteem, and well-being. Prosthesis hygiene care was performed by the caregivers, who also reported improved socialization of the patient.

DISCUSSION

This simplified technique was chosen as it involves less clinical sessions (Figure 2).^{11–13} Adaptations were made to favor patient management and optimize clinical procedures while obtaining predictable results. The first modification involved making the upper and lower CD at separate times to take into account the difficulty controlling mouth movements experienced by the patient with PD. Secondly, fast-setting impression materials were selected to reduce appointment duration and patient discomfort.¹⁵ The transfer to the articulator simplified the arrangement of artificial teeth following the established occlusal plane.¹⁶ The 6-month adaptation period with the upper CD prior to fabrication of the lower CD allowed greater mandibular stability during interocclusal recording of the latter. Godiva's fast cooling and dimensional stability, combined with the physical restraint of the mandible, allowed interocclusal recording without distortions.

Studies that evaluated healthy patients rehabilitated with conventional and simplified techniques indicate that both result in similar patient satisfaction, quality of life, comfort, and masticatory function. Although the simplified technique is considered advantageous as it involves fewer clinical and

laboratory sessions and reduces treatment costs, adequate rehabilitation using this technique requires technical accuracy and professional experience.^{8,10–17}

Taking into account that the treatment provided satisfactory aesthetics and function, mastication and socialization benefits, and improved the self-esteem and wellbeing of the older patient with PD, the authors suggest this adapted and simplified CD fabrication technique.

Conflicts of interest

The authors declare no conflicts of interest.

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Author contributions

LRP: conceptualization, methodology, project administration, resources, supervision, writing – original draft. ECR: writing – original draft. MSK: writing – review & editing. FF: conceptualization, methodology, resources, writing – review & editing.

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