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Prosthodontic Rehabilitation Of A Patient With Parkinson's Disease: A Case Report

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Abstract:
Parkinson's disease is an idiopathic neurological disorder characterized by tremors, rigidity, bradykinesia and postural instability. Impairment of motor skills and cognition compromise the patient's diet, nutrition and ability to maintain proper oral hygiene. As a result dental caries and edentulism seems to be a direct impending predicament. People with Parkinson's disease are often more impacted by their non-motor symptoms than motor symptoms such as apathy, depression, constipation, sleep behaviour disorders, loss of sense of smell and cognitive impairment[1]. Prosthodontics management of patients with Parkinson's disease requires special care and diligent handling, especially in those cases where the patient's socioeconomic status is not good and patient cannot come several times for fabrication of a complete denture. This clinical report presents a case of a Parkinson's patient who was completely rehabilitated with modified techniques for denture fabrication.

Keywords: *Parkinson's disease, detachable handles and occlusal rims, tich buttons*

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I. Introduction

Parkinson's disease (PD) is a long-term degenerative disorder of the central nervous system that mainly affects the motor system. The symptoms generally come on slowly over time. This is due to the progressive degeneration of nerve cells in the brain resulting in a decrease in dopamine levels. Dopamine is a chemical that helps in transmitting messages between cells. Most Parkinson's patients are old and are less likely to opt for dental treatments except for emergencies and functional impairment[2].

Early in the disease, the most obvious signs are shaking, rigidity, slowness of movement and difficulty with walking and thinking. Dementia becomes common in the advanced stages of the disease[3]. Depression and anxiety are also common signs in more than one third of people with Parkinson's disease. Other symptoms include sensory, sleep and emotional problems. The main motor symptoms are collectively called parkinsonian syndrome. The cause of Parkinson's disease is generally unknown but believed to involve both genetic and environmental factors. Those with a family member affected are more likely to get the disease themselves.

Removable partial dentures tend to be dislodged or swallowed while complete dentures fall out more often. They can even break following sudden jerky movements. Tremors caused by Parkinson's disease can make dental appointments a challenge. These patients have a hard time opening their mouth for longer time. Anxiety increases the Parkinson's symptoms. It is important that patient should remain calm during dental treatment. It is essential to make the environment stress free as possible[4].

Various studies[5-7] have been done on the fabrication of complete denture for patients suffering from Parkinson's disease. The main drawback of previous studies was its cost. Here, tich buttons were used instead of metal styli to solve this problem. Tich buttons are cheap and more easily available.

This case report describes the fabrication of complete denture for a patient suffering from Parkinson's disease by using certain modifications, like combining border moulding, final impressions of both arches and jaw relation procedures[8] in one appointment by using a custom tray with detachable handles and occlusal rims with the help of tick buttons and use of non-anatomic teeth that helped in delivery of the denture in reduced number of appointments.

II. Case Report

A 72 year old female patient reported to the Department of Prosthodontics and Crown and Bridge, St Gregorios Dental college, Chelad, Kothamangalam with a chief complaint of inability to chew food and difficulty in speech. Patient gives history of complete loss of teeth since 7 years. The patient had a 7- year medical history of Parkinson's disease and was on medication for the same. The physical and financial status of the patient led to planning a conventional acrylic complete denture with certain modifications.

Procedure:

On the first day, primary impressions were made with an impression compound in the conventional manner and the primary cast was obtained. Spacers of 0.5mm along with tissue stops were made. Acrylic resin was mixed and adapted on the primary cast to make a custom tray in the conventional manner. Before the acrylic resin was set, the sleeve of one tich button was inserted in the anterior region and two in the posterior region (Figure 1A). Now the other part of the tich button was placed on the anterior and handles were made (Figure 1B)

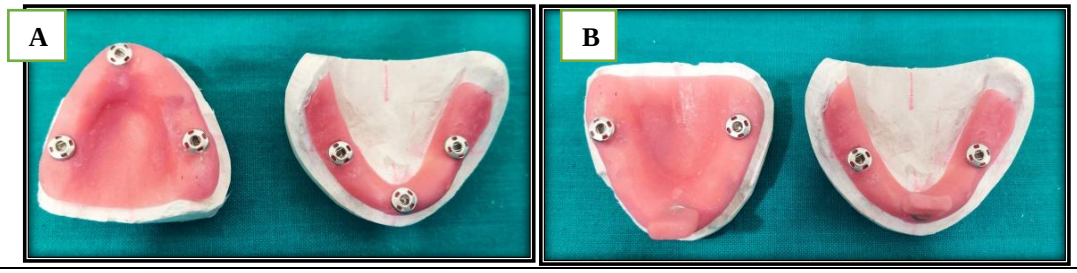

Figure 1: Maxillary and mandibular special trays.
A: sleeve of one tich button in the anterior region and two in the posterior region.
B: detachable handles placed by locking the sleeves of tich button.

After setting, the handles were separated from the tray and all tich buttons locked with its other part. An acrylic framework was made and attached to the locked sleeves which acts as a base for the detachable occlusal rims. Occlusal rims were fabricated on this acrylic plate. Now the maxillary and mandibular custom trays were ready for making final impressions with the detachable handles and occlusal rims, depending on the procedure.

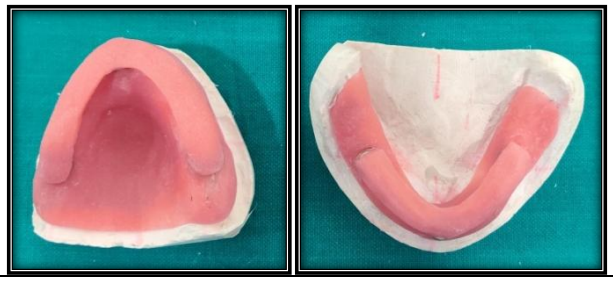

Figure 2: An acrylic base framework locked onto the tich buttons for fabrication of detachable occlusal rims

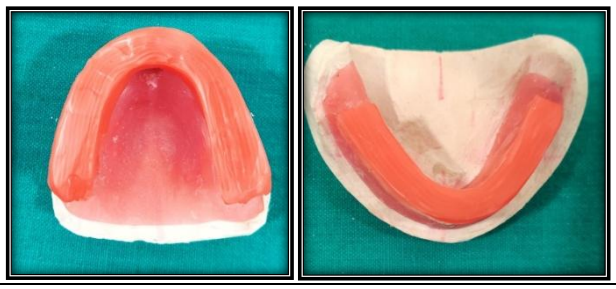

Figure 3: Detachable wax occlusal rims fabricated

On the second appointment, with the handles attached, border molding was completed using greenstick impression compound (Figure 4). Now the handles were removed and occlusal rims were attached and vertical and centric jaw relation records were established in a conventional manner. The final impressions were made

with zinc oxide eugenol impression paste with handles reattached. After the final impression, both occlusal rims were reattached and sealed at the established vertical and centric relation (Figure 5).

Figure 4: Maxillary and mandibular trays after border moulding using greenstick impression compound

Figure 5: Recording of jaw relation after final impressions

Custom tray and final impressions from occlusal rims were separated and handles reattached and impressions were poured after beading and boxing. Master cast was obtained (Figure 6) and occlusal rims were reattached. Measurements of the proper position of buttons and height of the rims noted to avoid any error in placing buttons on denture bases.

Figure 6: Master casts obtained

Finally, mounting was done. Denture bases were fabricated in the conventional manner but at the same time placing sleeves of buttons on it before setting. Position of the buttons can be verified by rims as well as measurements taken before. Now the rims reattached on the new sleeves and teeth arrangement was done (Figure 7). On the third appointment, trial dentures were checked in the patient's mouth for esthetics, phonetics, border extensions, midline and vertical dimension. To avoid a fourth visit, wax up and carving were done at the time of teeth arrangement.

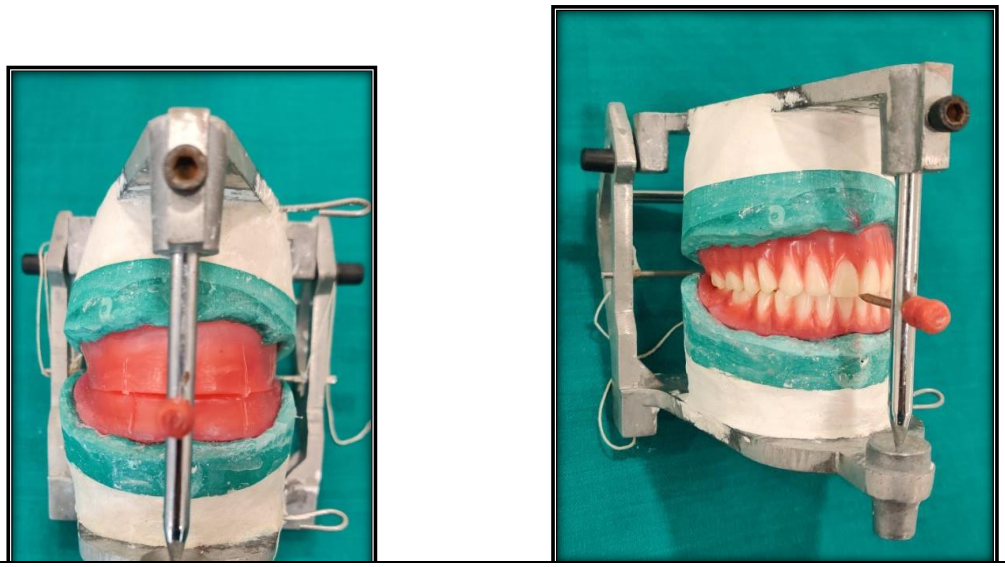

Figure 7: Articulation and mounting of casts on mean value articulator, teeth arrangement

The dentures were acrilyzed, finished and polished in conventional manner. The complete denture was checked for the final fit and occlusion intraorally, and hence delivered to the patient.

Figure 8: Final denture after finishing and polishing

Figure 9: Pre-operative and post-operative extra oral images

III. Discussion

Parkinson's disease is a chronic, progressive, neurodegenerative disorder, characterized by resting tremor (in hands, arms, legs, jaw and face), rigidity and stiffness (limbs and trunk), and postural instability or impaired balance and coordination. There are peculiar clinical features of this disease, like resting tremors, muscular rigidity and hypokinesia, facial impassiveness and cogwheel type of rigidity[9].

Dentists face many problems[10] in fabrication of complete denture in such patients because increased tremors, increased saliva, diminished adaptive skills and poor muscle control make impression making and jaw relation recording difficult, causing compromised retention. When the centre of gravity is displaced, there may be tendency to fall forward/backward. The tongue may dislodge the mandibular denture and facial muscles that

are rigid or uncontrollable may prevent a maxillary denture from maintaining a retentive seal. Also, the patient finds it difficult to care for and maintain the denture.

The patient was not able to visit several times for the procedure. Therefore, border moulding, final impression and jaw relation procedures were combined in one appointment by using a custom tray with detachable handles and occlusal rims with the help of tich buttons. In such cases, face bow transfer and Gothic arch tracings cannot be recorded due to the medical and physical condition of the patient. This eliminated the use of a semi or fully adjustable articulator. Monoplane teeth can be used to compensate for the variable centric relation.

IV. Conclusion

The technique described here is relatively simple and a drastic departure from the conventional procedure. With this innovative technique, complete denture was delivered in short term visits and was also very economical for the patient. Although this technique increases laboratory time, it reduces the clinical visits without compromising the basic principles of complete denture fabrication.

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