Oral rehabilitation of a parkinson disease patient: A case report

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Abstract
Parkinson's disease is a progressive neurologic disorder. Compromised voluntary and involuntary control of the orofacial-pharyngeal musculature of patients with Parkinson's disease may lead to difficulty in mastication, dysphagia and tremors of the mouth and chin. All of these problems represent major challenges for the clinician with regard to the Prosthodontic rehabilitation. This case report describes the use of implants to support mandibular complete denture along with flexible removable partial denture to rehabilitate totally and partially missing teeth in a patient with a Parkinson's disease.

Keywords: Flexible RPD, Implant supported over denture, Parkinson disease, Valplast.

Introduction
Parkinson's disease is a chronic progressive neurologic disorder caused by neurodegenration (predominantly of the substantia nigra) and leading to an insufficiency of dopaminergic neuro-transmitters. Parkinson's disease affects predominantly older individuals.

Three cardinal signs that characterize Parkinson's disease and causes disability to patients are dyskinesia (involuntary movement), bradykinesia (slow movement) and akinesia (muscular rigidity).

People with Parkinson's disease may experience multiple oral health problems such as xerostomia or sialorrhea, dry mouth and/or burning mouth syndrome, poor oral hygiene and denture problems. Additionally, compromised voluntary and involuntary muscle control of oro facial-pharyngeal muscles may lead to difficulty in mastication, dysphagia and tremors of the mouth and chin. All of these problems complicate procedures involved with oral rehabilitation of patients with Parkinson's disease and challenging to the clinician.[1-7]

Complete denture wearers must learn to control the dentures with their lips, cheeks and tongue if the prostheses are to function successfully.[8] However, not everyone is able to develop this skill, particularly the patients with Parkinson's disease. The development of osseointegrated implants has revolutionized the treatment of missing teeth and thereby reduced these problems associated with dentures.[1-7,9-12]

This case report describes the use of dental implants to support the over denture prosthesis in the mandibular arch and flexible removable partial denture in the maxillary arch to replace few missing teeth.

Case Report
A 55 year old male patient reported to the department of Prosthodontics with a chief complaint of difficulty in eating food due to an ill fitting denture. The patient was looking for complete oral health checkup followed by replacement of all missing teeth. Medical history of the patient revealed that he was suffering from Parkinson's disease and he is undergoing pharmacotherapy. Past dental history included extraction of all mandibular teeth, few maxillary teeth i.e. 18, 17,16,27,28 followed by mandibular conventional complete denture made for him by practitioner.

He also complained of difficulty with managing lower complete dentures, as he cannot control movements of mandible which were observed during examination also. The treatment plan was made to rehabilitate the patient with implant supported complete denture along with maxillary partial denture made of valplast from observations and to meet his expectations.

Maxillary and mandibular preliminary impressions were made with irreversible hydrocolloid (alginate) and casts were poured. Upon mandibular cast, stent was fabricated with radiographic markers and got cone beam computerized tomography (CBCT) done to evaluate quality and quantity of bone at assumed sites of implant placement. CBCT revealed presence of adequate bone at sites of implant placement.

Two piece implants were selected with dimensions of 5.5 X 10.5, 5.5 X 11.5 and placed in A and E locations of mandible (Fig. 1). The implants were allowed to integrate for a period of four months in the mandible followed by second surgery inorder to fix attachments for overdenture. (Fig. 2) Impression was made with alginate of lower edentulous foundation to fabricate custom tray to obtain final impression, thus final impression was made. (Fig. 3)

Jaw relation registrations were made appropriately, carefully mounted and teeth arrangement was done. Jaw relation registrations, teeth arrangement were verified during try in followed by fabrication of complete denture and insertion. At the stage of insertion, intaglio of lower complete denture was provided with a space to fix snap on attachment over abutments to attain stable denture. (Fig. 4)

In the upper arch, flexible removable partial denture made of valplast was fabricated to replace missing teeth in relation to 17, 16 and 27 (Fig. 5) occlusion was verified once again and patient was recalled periodically once in 4 months. (Fig. 6)

At the one year follow up examination, the periimplant soft tissues remained in good condition and no obvious periimplant bone loss was noted. The patient reported that his quality of life had improved considerably as a result of this treatment.

Fig. 1: Implants placed in A & E locations of mandible-OPG X RAY

Fig. 2: Intra oral view of overdenture attachments

Fig. 3: Final impression of mandibular edentulous foundation

Fig. 4: Intaglio surface of mandibular denture modified to receive snap on attachments

Fig. 5: RPD made of valplast to replace 17, 16 & 27

Fig. 6: Completed prostheses in occlusion

Discussion

Muscular equilibrium, which normally stabilizes prosthesis in static and dynamic conditions, is greatly diminished in Parkinson disease as a result of their motor system dysfunction. The absolute case of stabilization via the synergistic and antagonistic cooperation of the orofacial muscular is limited, making it difficult to ensure the stabilization of the prosthesis, especially in the mandible. As a consequence, Parkinson's disease patients present difficulties for treatment with removable prosthesis.[1-7,9-12]

Denture problems can influence nutritional intake, dietary enjoyment, self esteem, social interaction and social acceptability as well as causing embarrassment to the individual .As the success of dentures depends, to a large extent on the wearers ability to control them with their orofacial musculature where as muscular incoordination, rigid facial muscles and xerostomia associated with Parkinson's disease patients would jeopardize denture retention, stability along with insertion, removal and cleaning of prostheses.

Various methods have been tried to fabricate complete dentures by means of neutral zone technique, flange technique, use of monoplane teeth and occlusion without interferences and lastly the use of denture adhesives to overcome the difficulties and improve satisfaction with Parkinson's disease affected individuals.[3-7]

The above said conventional methods of denture provision had limited success rates, as a result use of dental implants to anchor prosthesis would be advantageous in individuals with Parkinson's disease.[3-7,9-12] Hence, an implant supported overdenture was prescribed and fabricated to reduce the problems associated with dentures especially for Parkinson's disease patients.

To rehabilitate partially edentulous situations with Parkinson's disease individuals would need to fabricate

removable partial dentures with maximum coverage to prevent its aspiration and choking. Attachments are not advocated as the patient lacks the necessary stable movement for the insertion of the prosthesis. Flexible dentures (valplast), a recently available prosthetic material for removable partial dentures might provide good retention and stability because of its snug fit.[3-6] For all above reasons flexible removable partial denture made of valplast was used in the present case to rehabilitate partially missing teeth in the maxillary arch.

In the present treatment, implant supported overdenture and flexible removable partial dentures were prescribed and used as a method to rehabilitate completely edentulous mandibular arch and partially edentulous situation with maxillary arch. Patient was instructed with usage of prosthesis and maintenance of oral hygiene and reviewed on a regular basis once in 4 months.

Conclusion

Parkinsonism is a disease which affects the orofacial and pharyngeal musculature and limits the treatment planned to assist mastication, deglutition, speech and esthetics. Oral rehabilitation of Parkinson's disease individuals with implant supported overdenture for completely edentulous mandible and flexible removable partial denture to replace few missing teeth in the maxillary arch were doomed to be successful. Upon follow up no complications were observed and the patient's mastication ability and life quality had improved successfully.

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