

Strategically placed implant for maxillary Kennedy class III: A case report

Aung Win, Myat Nyan, Kyaw Tint
University of Dental Medicine, Mandalay

Abstract

The most beneficial use of an implant with removable partial denture is to use it as an adjunct to enhance retention and stability thus reducing patient discomfort resulting from prosthesis movement. The presented case was aimed to demonstrate the comprehensive prosthodontics treatment for maxillary Kennedy class III removable partial denture with adjunctive use of dental implants for improved aesthetics, patient comfort and function.

Introduction

Although the edentulous population is decreasing due to developing materials and technologies to preserve teeth by conservative treatments, partially edentulous cases are still common in clinical practice. Some of these cases are appropriate for fixed restorations whereas many of them necessitate removable partial dentures as the most reliable and appropriate treatment.

Conventional removable partial dentures are widely prescribed with variable clinical success. The problems encountered are inadequate retention and stability, less patient comfort and poor aesthetics, affecting the patient's quality of life. Implant retained overdentures have become a common treatment modality for partially edentulous patients. Recently, the implant-supported overdenture is generally considered as an

alternative treatment for patient due to its cost effective, and predictable treatment outcome. It has been proven to increase patient satisfaction [1]. Generally, two-implant retained overdenture treatment is considered as standard of care in mandibular edentulous cases [2].

In removable partial denture treatment, many patients often complain of a metal clasp if it is a visible part of removable partial dentures (RPDs). In the present days, there is an expanding demand on aesthetics and the dental practitioners have more challenges about prescribing aesthetic and functional RPDs to their patients and this made the mission more troublesome in view of fulfilling all the objectives of RPDs; accomplishing ideal aesthetics of the denture, while ensuring retention and stability of the prosthesis in order to preserve the supporting tooth and supporting tissue in healthy state [3].

Case report

A healthy 58-year-old woman visited to the post-graduate prosthodontic clinic at University of Dental Medicine Mandalay. She had a high aesthetic demand for prosthodontic treatment for Kennedy class III partially edentulous maxillary arch with limited financial resource.

On clinical examination, maxillary anterior teeth and last molars remained bilaterally. The conventional cast metal RPD

would necessitate unsightly metal clasps at canines. The patient was explained about the situation and the need of dental implant to improve aesthetics and function. The panoramic radiograph showed reduced bone height in the entire edentulous area except adjacent to remaining teeth. For implant-supported fixed restoration, maxillary sinus augmentation would be necessary which would cost beyond the patient's financial limit. So, the alternative treatment option was explained and patient agreed to follow it. It included placement of each implant just distal to each canine bilaterally and prescription of implant-retained RPD.

After necessary investigation and planning, two dental implants, 3.5 mm in diameter and 11 mm in length (Tione, Taiwan) were placed surgically. During healing period, an interim acrylic partial denture was delivered, relieving over the implant areas.



Figure 1. Panoramic radiograph for pre-operative assessment



Figure 2. Two ball type implants at anterior edentulous region

Three months after surgery, preliminary impressions were made with irreversible hydrocolloid (Jeltrate, Dentsply, Henan, China) for fabricating study casts. The upper and lower individual spaced trays were fabricated with self-cure acrylic resin. After the adhesive for silicone impression material was applied on the trays, the final impressions were taken with light body silicone impression material and pick up impression copings for implants.



Figure 3. Final impression for implant retained removable cast denture



Figure4. Cast partial denture

The master cast was mounted on a semiadjustable articulator (Shofu, Japan) by using facebow transfer and interocclusal record. The teeth arrangement was done with resin anatomical denture teeth.

During denture delivery, the dalbo plus system to implants and RPD was clinically

attached at chairside. Self-cured acrylic resin was mixed and poured inside the relieved area of the denture. Then, the denture was transferred and seated intraorally with the patient closed his mouth in CR position. After the acrylic cure set, the flash-out resin was removed from the intaglio surface of the overdenture.

The designed occlusal scheme was verified and adjusted with clinical remount technique. The patient instructions of denture care, dental care and implant care were provided. The patient was encouraged to use of water jet and small brush for cleaning the implants and tissue surrounding.



Figure 5. Cleaning the fitting surface of denture with water jet and small brush



Figure 6. Cleaning the implant and surrounding tissue with water jet and small brush

The patient was fully satisfied with the outcome of the treatment that it enhanced both facial appearance and function of the dentures. The facial profile of the patients was improved compared with the pre-treatment.



Figure 6. Patient was satisfied with the RPD with no visible clasps

The patient was asked for regular 6-month follow-up interval for assessing the performance of retentive element and the adaptation of the denture base to soft tissue. Meanwhile, the status of the implants such as: bone loss and soft tissues condition was recorded.

Conclusion and clinical implication: The use of implant retained removable partial denture is a cost-effective strategy in conjunction with the conventional mandibular removable partial denture that can ultimately enhance the quality of life of the patient.

References

1. Burns DR, Unger JW, Coffey JP, Waldrop TC and Elswick RK. Randomized, prospective, clinical evaluation of prosthodontic modalities for mandibular implantoverdenture treatment. *J Prosthet Dent* 2011; 106(1):12-22
2. Feine JS, Carisson GE, Awad MA, Chehade A, Chehade A, Duncan WJ, Gizani S, Head T, Lund JP, MacEntee M, Mericske-Stern R, Mojon P, Morsis J, Naert I, Payne AG, Penrod J, Stoker GT, Tawse-Smith A, Taylor TD, Thomason JM, Thomson WM, Wismeijer D. The McGill consensus statement on overdentures. Mandibular two-implant overdentures as first choice standard of care for edentulous patients. Montreal, Quebec, May 24-25, 2002. *Int J Oral Maxillofac Implants*. 2002; July-Aug; 17(4):601-602.
3. Alwan S, Ismail I. Retentive forces, tensile strength and deflection fatigue of acetal thermoplastic clasp material in comparison with cobalt-chromium alloy. *J Bagh Coll Dentistry*. 2014; 26: 59-66.