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Case Note

Telescopic crowns used as retainers for Kennedy class II removable partial dentures: A case report

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Abstract

Prosthetic treatment of the patients with Kennedy class II (unilateral saddle area bounded anteriorly by natural teeth) is a complex process, because of the difficulties in choosing a proper method to maintain good retention, stability and prevention of unwanted movements of dentures. Removable dentures attached by means of telescopic anchors are regarded to be a good clinical solution in these cases. This is a clinical case showing the use of telescopic crown retained removable partial denture (TRPD) to treat a Kennedy class II partial edentulous arch. The technique used in this case is an effective method in overcoming these difficulties faced by the clinician to provide a long term solution to the patient.

Key words: Telescopic crown, Kennedy class II, Removable partial dentures

Introduction

Telescopic crown is a system, which consists of two elements: internal crown, called male or primary crown and external crown, called female or secondary crown. The primary crown is cemented on the abutment tooth and the secondary crown is attached to the removable denture and has the shape similar to natural tooth. Telescopic crowns were initially introduced as retainers for removable partial dentures (RPDs) at the beginning of the 20th century. They are also known as a double crown, crown and sleeve coping (CSC), or as Konuskrone, a German term that described a cone shaped design[1].

Prosthetic treatment of patients with Kennedy class II is a complex process, due to the difficulties in satisfying the patient and maintaining its long term prognosis.

Among the different treatment methods, removable dentures that are retained with clasps only, render the patients with an inefficient mastication, generate inflammation of periodontium and increase mobility of abutments mainly caused by denture clasps[2]. Additionally, intensive bone atrophy and dentures settling into gingival tissues cause extrusion of the clinical crowns and subsequent occlusal disturbances[3,4]. Tooth-tissue supported removable dentures are more comfortable, because part of the occlusal forces is transmitted in physiological way through the periodontium to the alveolar bone. While tooth supported fixed partial designs like cantilever bridges have harmful prognosis on the abutment teeth, removable dentures attached by means of telescopic anchors are regarded to be a good clinical solution.These kind of restorations in patients give an opportunity to reduce destructive rotational and horizontal occlusal forces by directing them more axially[2]. It can also increase the stability of abutment teeth with periodontal disorders and protect them from pathologic migration, and, thus, may enhance the functional effect of the prosthetic treatment.

The telescopic crowns are fabricated with an average wall taper of 6-degree angle[5-7]. The tapered configuration of the contacting walls of primary and secondary crowns generates a compressive intersurface tension which should be sufficiently strong to sustain the RPD in place. Taper of the walls of the primary coping can be adjusted to a predetermined angle, according to special requirements of each patient. They can be milled to exact configurations of taper angles of the walls with each other to create a common path of insertion for outer telescopic crowns of a retrievable superstructure[1]. Modifying the height or degree of taper of the copings can control the amount of retention for the superstructure on the copings[8].

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Case report

A female patient, 40 years old, came to KIST Medical College and Hospital with the complaint of missing posterior teeth. Clinical examination revealed missing lower left first and second molars and slight over eruption of the opposing molars. She had a heavy amalgam restoration on the lower left second premolar. While taking history she revealed that her teeth were extracted 6 months back due to caries.

The patient had a strong desire to replace the missing teeth with a fixed partial denture since she was not satisfied with her previous RPD. A cantilever bridge was not a suitable option, so she was counseled and informed about other alternative modes of treatment. She was given options for a cast partial denture, implants and telescopic crown retained removable partial denture. She refused the options of partial dentures and was not able to afford implants. The patient approved for telescopic dentures with metal crowns and extensions using acrylic base and teeth as there would be no extension of acrylic resin besides the needed saddle area and root canal treatment on the abutment teeth would not be required.

Method

The first and second mandibular left premolars were chosen as the abutments for the telescopic crowns. Impression was taken with alginate (Zelgan plus, Dentsply, Gurgaon, India) before tooth preparation for fabrication of temporary crown. Tooth preparation was done to reduce the axial walls to 2mm, forming a supragingival chamfer margin to create enough space for the metal coping and metal crown. Impression was taken with polyvinyl siloxane impression material (Aquasil, Dentsply, Konstanz, Germany). Temporary crown was luted with temporary luting cement (Templute, Prime Dental Products Pvt. Ltd, Mumbai, India).

The metal copings prepared were modified to produce a taper of average 6 degree using a surveyor and milling machine (marathon 103 surveyor milling machine).

Impression was taken of the metal copings and edentulous area after the copings were luted with luting cement (GC FijiCEM, GC Corporation, Tokyo, Japan) for the fabrication of special tray. Border moulding was done on the edentulous area and final impression was taken with light body elastomer (Reprosil, Dentsply, Milfard, USA) for the fabrication of fused metal crown with metallic mesh.

Fit of fused metal crown along with the metallic mesh was verified and bite registration was done and transferred on the articulator. After the arrangement of artificial teeth, try in was done to check proper fit, retention, stability and occlusion. Finally the TRPD was inserted after minor correction

Instruction to patient was given on how to remove the denture and maintain proper hygiene. Appointments for recall visits were given after 1day and 3 months.

Fig 1: Initial picture

Fig 2: After crown cutting

Fig 3: After luting of temporary crown

Fig 4: Preparing a 6 taper using surveyor and milling machine

Fig 5: Occlusal view of metal copings

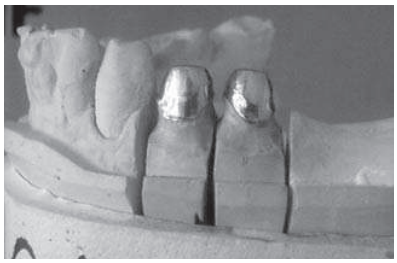

Fig 6: Lateral view of metal copings

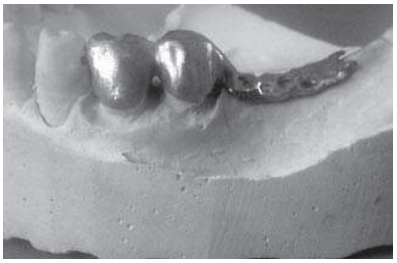

Fig 7: External crown with metallic mesh

Fig 8: Final TRPD inserted in patient's mouth

Discussion

Among the different treatment methods to replace teeth in a Kennedy class II case, cantilever bridges are probably the most misused. Using cantilever bridges in Kennedy class II cases may significantly weaken the abutment teeth due to the leverage action (cantilever force) on the most posterior pontics. This will ultimately cause failure of the treatment due to distal drifting of the abutment teeth, occlusal instability and finally loss of the natural standing teeth. The use of telescopic denture prevents these effects by transferring pressure on the mucosa, neutralizing the cantilever force.

Designs can be altered in TRPDs according to the patients need and porcelain fused to metal crowns can be placed for aesthetic purposes. This modification will require root canal therapy on the abutment teeth due to the increased space of at least 1.5mm for the placement of porcelain and will increase cost and more appointments.

Although the initial cost of telescopic denture is slightly more than conventional denture and lab work is slightly complex; the long term effect of this is good. TRPDs may even help to save tooth as, strict parallism does not need to be acquired and parallism can be acquired by milling the metal copings. Due to excellent fit of copings on the abutment teeth and ease of retrievability, cleaning can be done properly which will decrease the incidence to caries on abutment teeth[9].

Other benefits of TRPDs are that they are very easily extended if a tooth has to be extracted, they can be fitted also to high-risk abutments[10]. Additional periodontal or endodontic therapy, extraction of failed abutments, and/or implant placement after the completion of prosthodontic treatment can be done[9].

TRPDs are apparently an antiquated method of treatment, but when appropriately applied, have remained a refined and effective prosthodontic solution for selected complex patient treatments that require unique clinical and technical skills[11-13].

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