Journal of Cardiovascular Disease Research

ISSN: 0975-3583, 0976-2833 VOL12, ISSUE05, 2021

TOOTH SUPPORTED OVERDENTURE- A CASE REPORT

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Abstract

In the present times, partial or complete edentulism has become a fairly common occurrence among the elderly population. Tooth loss ultimately leads to bone loss in these patients, in part, also caused due to disuse. This process can be fended off by salvaging the remaining natural teeth of the patient as abutments and constructing a prosthesis over them. The concept behind a tooth supported overdenture in patients having a few firm teeth, is to increase retention, stability and support of the prosthesis.

Key words : Overdentures, edentulism, access posts.

Introduction

Overdenture treatment uses a removable complete denture that overlies retained teeth, tooth roots, or dental implants. This treatment is not a new concept and practitioners have successfully employed existing tooth structures or retained roots to assist with complete denture treatment for more than a century[1]. Retained root abutments can give better retention, support, and stability to an overdenture and also provide proprioception which would otherwise be lost with conventional denture treatment[2]

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Case report

A 54 year old male patient reported to the department of Prosthodontics with a chief complaint of missing teeth. On clinical examination, only the upper and lower canines were present bilaterally. Tooth loss was diagnosed to be a result of caries, mobility and a general inadequacy of oral hygiene measures on the part of the patient. Intraoral periapical radiographs of these teeth (13,23,33 and 43) revealed adequate bone support and the absence of any periapical pathologies (Fig 3). The proposed treatment plan involved retaining the maxillary and mandibular canines to serve as abutments for an overdenture prosthesis. Preliminary impressions were made in order to obtain a diagnostic mounting, to ascertain the amount of inter-arch space available for the overdenture components. The treatment plan involved fabricating an access post overdenture for both arches, which would help increasing the retention and stability. The treatment plan was explained to the patient and a written consent was obtained before proceeding with the treatment.

The steps involved in the treatment protocol were as follows :

Oral prophylaxis: oral prophylaxis of the remaining teeth was done to get rid of any plaque and debris prior to commencing endodontic treatment.

Endodontic treatment: Endodontic treatment of 13, 23, 33 and 43 was carried out before post space preparation. These teeth were then reduced to about 1mm above the gingival level and finished in a dome-shaped form.

Denture fabrication:

Primary impressions of the both the upper and lower arches were made using Irreversible Hydrocolloid impression material (Tropicalgin, Zhermack) and the casts were poured (Fig 4). These casts were then used to fabricate special trays using autopolymerizing acrylic resin (DPI). Border molding was done using Low fusing compound in order to obtain a peripheral seal. (Fig 5) Subsequently, final impressions were made using light bodied impression material (Zetaplus, Zhermack) to obtain master casts (Fig 6). Jaw relations were recorded and teeth arrangement was done (Gnathostar). The try-in was performed and the dentures were

ISSN: 0975-3583, 0976-2833 VOL12, ISSUE05, 2021

processed in a conventional manner. The patient was instructed to wear these dentures for 1 week before proceeding with the access post insertion.

Post space preparation: The post lengths were measured against intraoral periapical radiographs, leaving 3-5mm of gutta percha within the canals. Remaining gutta percha was removed with a Peeso reamer (According to the manufacturer No. 3 Peeso reamer for Red primary reamer, No. 4 Peeso reamer for Blue primary reamer and No. 5 Peeso reamer for Green primary reamer). After measuring the width of the canals, the Blue Primary reamer was used to prepare the full length of the access post. The countersink drill was then used to create a flange and second tier preparations. Trial insertion of the access posts (Essential Dental Systems [EDS]) was done to determine their fit.

The post spaces were then irrigated to remove any debris and dried with paper points. Type 1 GIC was coated evenly on the posts and applied to the post spaces using a lentulospiral. Correct seating of the posts was ensured, excess cement was wiped off and the seating was verified by taking intraoral periapical radiographs.

Pick-up of nylon caps in the denture: Rubber bands corresponding to the size of the access posts were placed to cover the height of contour of the ball of the post. Small squares cut from a glove piece were placed on top these rubber bands to prevent any acrylic from sticking to the ball component (Fig 12). The nylon caps were then secured on top of the ball of the posts. Sticky wax was placed on top of the nylon caps and the denture was seated. The denture was removed and the area to which the wax stuck was relieved to create space for the nylon caps. Vaseline was applied on the ridges and the remaining areas of the denture as a separating medium. Pink coloured self-cure acrylic resin (DPI) was mixed and placed in the relieved areas. The denture was then seated and patient was asked to bite in centric till the acrylic set. The dentures were then removed with the pick-up attachment caps housed within the intaglio surface of the dentures. (Fig 13) The rubber bands and glove pieces were removed and the flash was trimmed ensuring relief around the gingival margins to prevent soreness.

The patient was called for follow-ups one week and one month post insertion and was found to be comfortable and highly satisfied with the treatment outcome.

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Discussion:

DeVan has famously stated that the perpetual preservation of what remains is more important than the meticulous replacement of what is missing. In accordance with this statement, the primary aim of a tooth-supported overdenture is to preserve the residual hard and soft tissues. Studies have shown that the retention of mandibular canines for overdentures led to preservation of alveolar bone[3]. Chewing efficiency in overdenture patients has been reported to be 33% higher as compared to complete denture wearers[4]. Appropriate attachment and case selection plays a crucial role in the success of the treatment. Attachment selection is generally dependent on buccolingual and inter arch space, amount of bone support, opposing dentition, maintenance and cost incurred.[5]

The nylon cap provides 3-5 pounds of retention, thereby making the prosthesis more stable and retentive when compared to conventional dentures. Access post overdentures are superior to any other passive overdentures because the flange and second tier dissipate functional stresses and avert bottoming out of the post, reducing apical stresses. Overdentures also have a leading edge thanks to the retention of proprioception, which vastly improve patient comfort.[6]

Conclusion

Access post overdentures are a practical treatment alternative in patients with good dexterity. They not only improve retention and stability, but also provide proprioception, which goes a long way in improving patient comfort. As the name suggests, this treatment modality also provides access to the periapical region in case re-treatment is needed at a later date, making the overall treatment outcome highly predictable.

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Fig 1: Pre-operative Extraoral

ISSN: 0975-3583, 0976-2833 VOL12, ISSUE05, 2021

Fig 2: Pre-operative Intraoral

Fig 3: Pre-operative OPG

Fig 4: Primary impressions made in irreversible hydrocolloid

Fig 5: Border molding done in low-fusing compound

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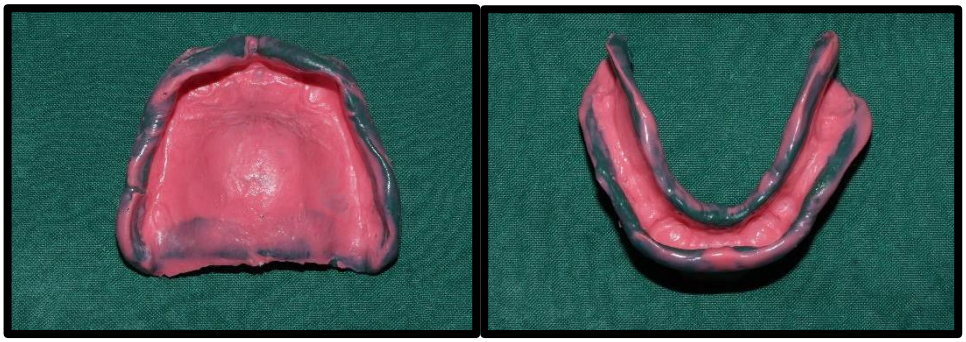

Fig 6: Light bodied polyether used for final wash impression

Fig 7: Master cast

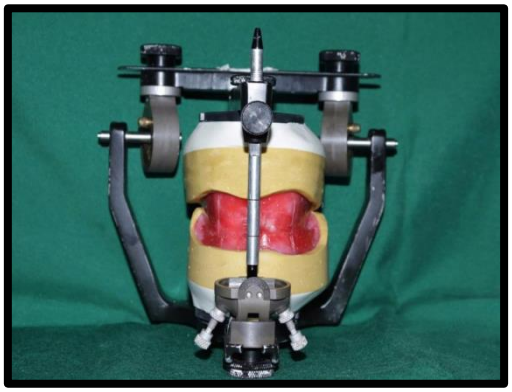

Fig 8: Facebow record and mounting

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Fig 8: Try-In of Waxed Up Denture

Fig 9: Acrylized denture

Fig 10: EDS Access post overdenture kit

Fig 11: EDS Posts cemented

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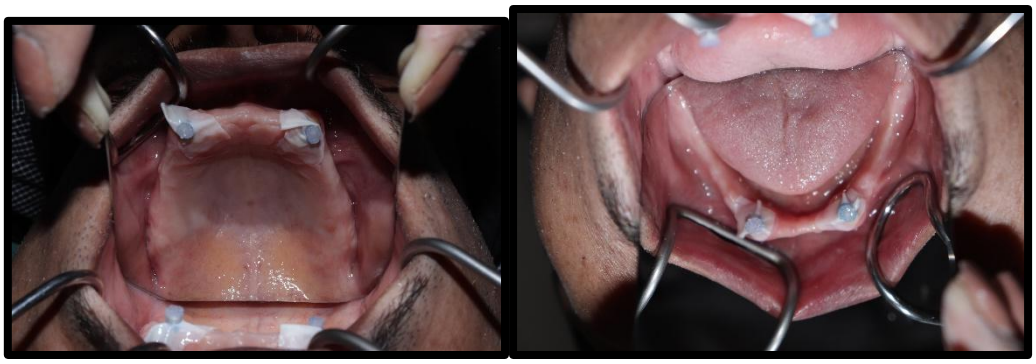

Fig 12: Pickup Of Nylon Cap In Denture

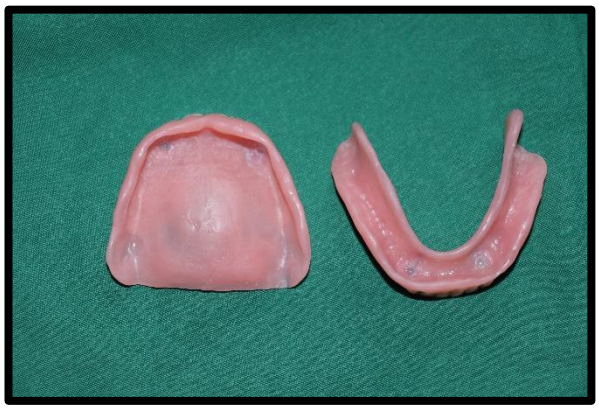

Fig 13: Nylon Caps Picked Up

Fig 14: Final Denture

ISSN: 0975-3583, 0976-2833 VOL12, ISSUE05, 2021

Final 15: Before And After