



Overdenture Using Access Post System for Abutment Teeth: A Case Report

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ABSTRACT:

Complete edentulism significantly impacts both oral and general health, leading to a decline in quality of life. While complete dentures are the standard treatment, their success depends on various factors. Also it is inevitable that the mandibular ridge resorption occurs at a greater rate than maxillary resorption, often compromising denture retention. Overdentures, supported by retained natural teeth, help preserve bone and enhance denture stability. However, abutment teeth are at risk of fracture, necessitating precise treatment planning. This case report presents the rehabilitation of a partially edentulous patient with a tooth-supported overdenture, incorporating a novel technique for preserving abutment teeth with poor prognosis.

Introduction

Completely edentulous state considerably affects the oral and general health of patients. It in-turn declines the overall quality of life. The choice of treatment for the oral rehabilitation of such patients is complete denture prosthesis [1]. However, replacing the lost tissues by means of dentures is challenging both for the dentist and the patient. Patient satisfaction with denture is influenced by factors such as denture quality, denture stability, denture bearing area, past experience with denture and acceptability to a new denture. Some patients do not succeed in acquiring any masticatory skills and are unsuccessful in settling to the prosthesis. Such patients suffer greatly in terms of psychology because of impaired function, discomfort, troubled self-image and altered social interaction [1]. In treating edentulous patients it is critical to be noted that loss of teeth from the alveolar ridge eventually causes resorption as a normal physiologic process [2]. As stated by Atwood et al. mandibular ridge resorption is

four times greater than maxilla. This phenomenon greatly affects the stability and retention of the mandibular denture [3].

In mandibular edentulous cases, overdenture treatment has been more popular. Lord et al. states that Overdenture refers to a complete denture supported by both the residual ridge and retained teeth [4]. By the technique of retaining few teeth in the arch for overdenture treatment, preservation of bone volume and vertical height of the ridge is achieved, thereby increasing the stability and retention of the denture. However there is always a risk of fracture of abutment teeth [5]. Thus, such cases require correct treatment planning and meticulous execution.

In this case report, treatment of a partially edentulous patient was treated with tooth supported overdenture, with the help of incorporating a technique for the preservation of abutment teeth which had poor prognosis.



Patient information

A 63 year old female patient came to the OPD of Prosthodontic department of D.Y.Patil dental college, Nerul, Navi Mumbai with the chief complaint of difficulty in chewing. Patient was conscious, cooperative and well-oriented to the surroundings. Patient gave history of hypertension and was under medication since past 4 years.

Clinical Findings

On further clinical examination, it was revealed that the patient had completely edentulous maxillary arch and partially edentulous mandibular arch. Teeth present in the lower arch were the mandibular left and right anteriors, with a pre-existing fixed prosthesis over it.

An Orthopantomogram was taken to assess the teeth underlying the fixed prosthesis. The radiographic report showed that remaining teeth were periodontally

compromised. Thus it was inferred that a Removable partial denture would not restore function and aesthetics to optimum. Also, mandibular canines were concluded to serve as abutments for an overdenture, owing to the fact that they have longer roots than the other anterior teeth. We applied Dewan's principle, which emphasizes that preserving existing structures is more crucial than precisely replacing what has been lost.

Therapeutic Intervention

Photographs and impressions of the Maxillary and Mandibular arches were taken. After thorough treatment planning with the diagnostic mounting of casts, it was noted that the interarch distance necessary for the aesthetic and functional placement of acrylic teeth was adequate. The further treatment plan was vigilantly divided into three phases. Phase one included removing the fixed prosthodontic appliance and extracting all three mandibular incisors that were periodontally compromised (Figure 1).

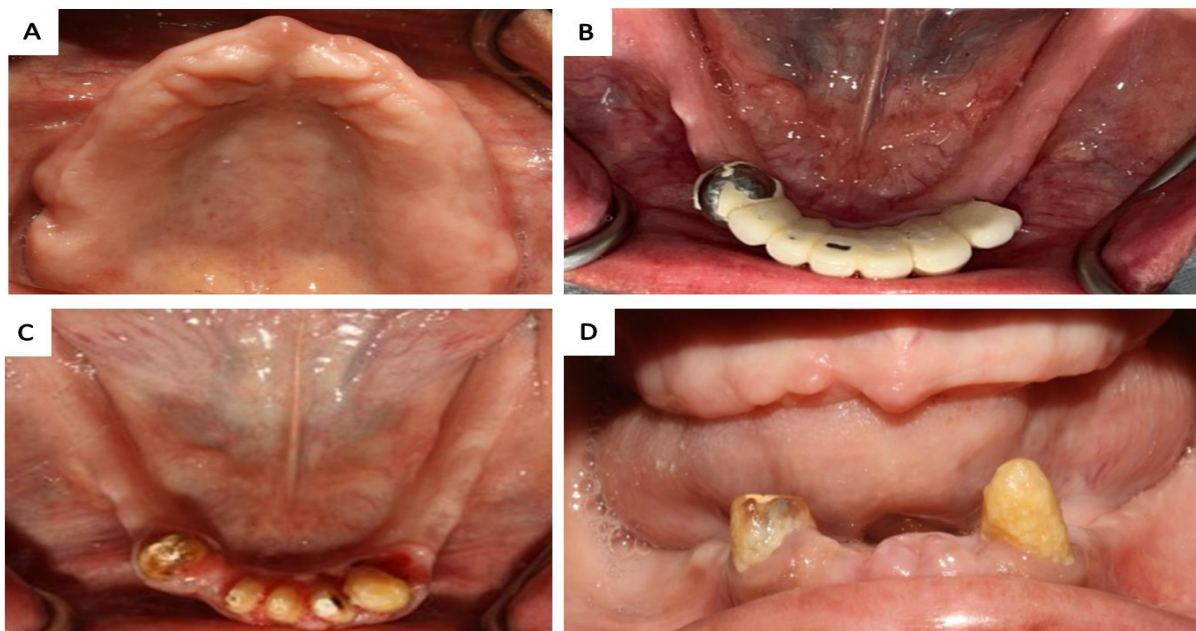


Figure 1: A) Intraoral view of Edentulous Maxillary arch, B) Intraoral view of Mandibular arch with fixed prosthesis in the lower anteriors, C) Phase 1- Removal of fixed Prosthesis, D) Phase 1- Extraction of mandibular incisors

Phase two included endodontic treatment of the mandibular left and right canines. The third phase included prosthodontic rehabilitation. Post-endodontic

treatment, the mandibular canines were prepared. We shaped the teeth into a dome form, reducing them to the level of the ridge and the primary impression taken in



alginate. Border moulding was done, and the secondary impression was made using medium body addition silicone. The master cast was obtained. Face bow transfer was done, and casts were mounted on semi semi-adjustable articulator using jaw relation records. Following that, a teeth arrangement try-in was done. Vertical dimension were verified and centric and eccentric contacts were evaluated. Facial and functional harmony was studied, and the patient's approval was obtained. The denture was then waxed and flaked for processing. After curing, lab remounting and selective grinding were done. Finally, the dentures were finished and polished.

Post space preparation was done in the canines, which were selected as abutment teeth with the primary

reamer and countersink drill provided by the manufacturer. The Access Posts selection was done carefully. Stainless steel posts by Accesspost Overdenture - EDS (Catalog no. 520-02) were used. The set consisted of No. 2 OVD posts, a primary Reamer, and a countersink drill, which were of direct and non-coping style. The Access Posts were cemented using glass ionomer cement (Figure 2). The female cap was then attached chair-side to the denture using auto polymerizing acrylic resin. For this purpose, a piece of glove cut square was used to cover the height and contour of the head (to avoid locking), and the nylon cap was placed on the ball of the post. Once the nylon cap was picked up, glove pieces were removed and it was flash trimmed. The denture was adjusted and equilibrated according to the patient.

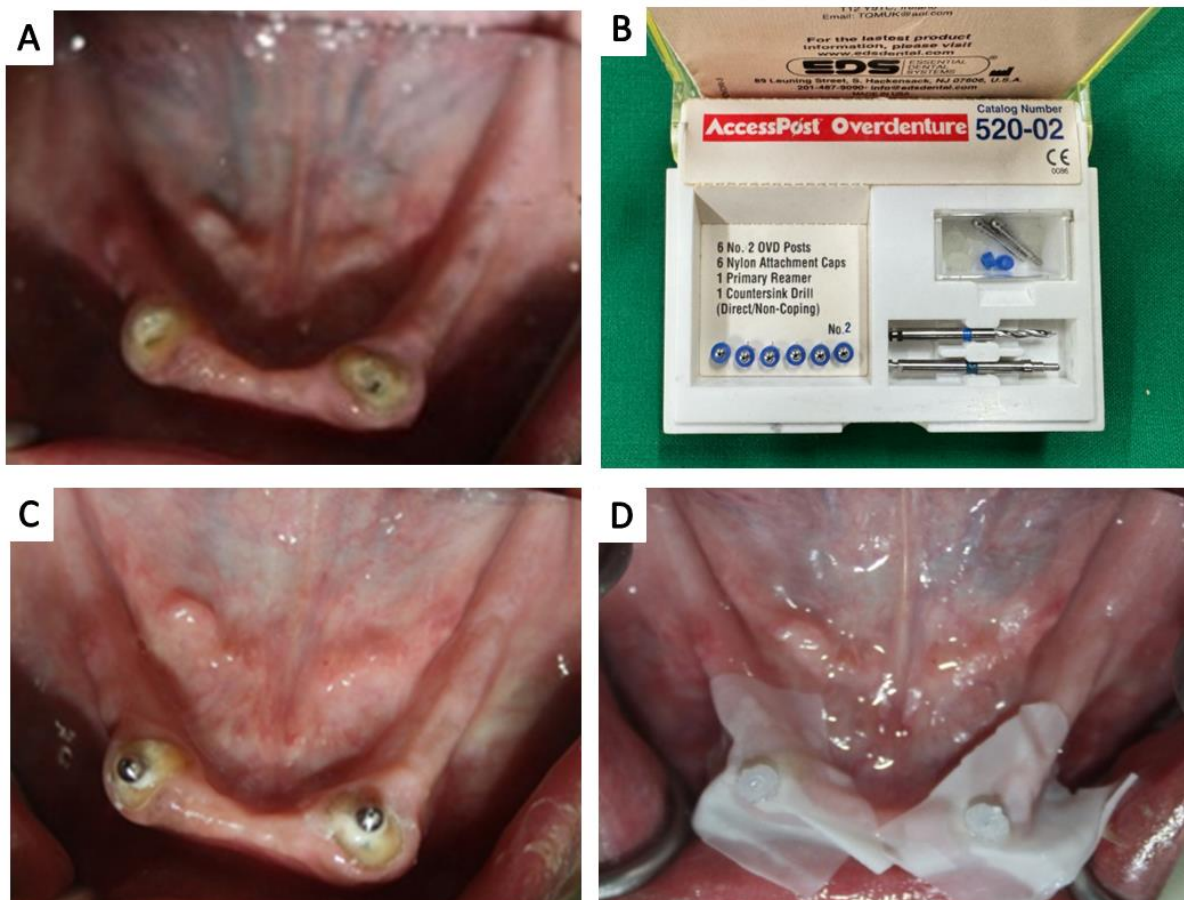


Figure 2: A) Post space preparation done with the Mandibular Canines, B) Access Post Overdenture (EDS- USA) kit, C) C-Access Posts cemented with the help of GIC, and D) Glove piece used as space



Final polishing and finishing of the denture were performed, and the denture insertion in the patient's mouth was done (Figure 3). Post insertion instructions

were given along with a recall appointment. The following day, the patient was recalled, their mouth was inspected for any sore areas and final corrections were done.

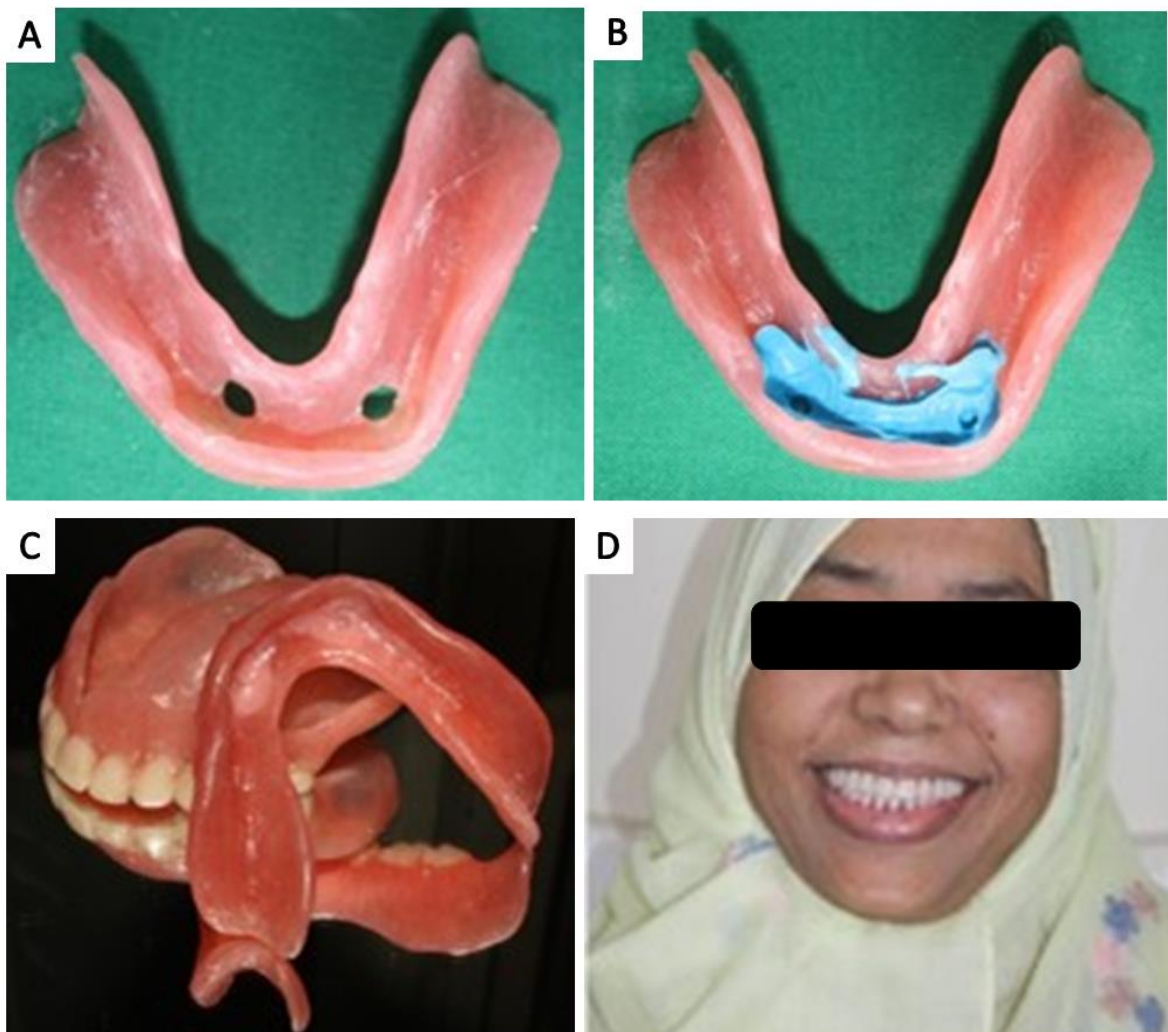


Figure 3: A) Denture trimmed for pick-up, B) Light body impression material flown to verify position, C) Finished and Polished Complete Overdentures, D) Denture inserted in the patient's mouth

Follow-up and Outcomes

Follow-up was done after 1 week. As stated by the patient during follow-up, no issues with speaking, mastication, or aesthetics were noted. The final prosthesis was stable and well retained. The technique of incorporating an access post system aided in better functional and aesthetic outcomes and served as a conservative approach to root preservation.

Discussion

Tooth-borne overdenture attachment therapy is a treatment option rarely chosen in today's aggressive marketing of implant treatment. But not all patients are able to afford the treatment costs of osseointegrated implants. The concept of overdentures, though not a



complete answer, provides a positive means of treatment which is cost effective.

A tooth-borne overdenture may be advised whenever a few teeth remain in the arch. The use of teeth as overdenture abutments is beneficial to patients as they help in delaying the process of resorption of denture foundation [6]. A study by Crown and Rooney (1975) concluded that retention of mandibular canines for overdentures led to preservation of alveolar bone. Thus canines were selected to be retained and as abutment teeth in the case.

Also, it is seen that overdentures give better function and control because of intact proprioception to the patients. The overdenture patients have chewing efficiency which is one-third higher than that of complete denture wearers [7].

The success of the overdenture treatment depends upon the proper attachment selection for the particular case [8]. Attachment selection is based on available buccolingual and interarch space, amount of bone support, opposing dentition, clinical experience, personal preferences, maintenance problems and cost [8].

Access posts are stud attachments that work well with overdentures, as they are the simplest of all. They occupy a small vertical space and the male units on the different roots do not require parallelism. The ball and socket attachment of Access post allows rotation of the denture attachment. Small head of the attachment limits the amount of material that has to be removed from the denture. The nylon cap provides 3-5 pounds of retention. The technical work required is minimal and can be carried out at chairside, thus making it cost effective. Access post overdenture (EDS-USA) is superior to any other passive overdenture because flange and second tier dissipate functional stresses and prevents "bottoming out" eliminating the high apical stresses under function common to other passive posts [9].

Although it is a feasible alternative, it is not often used to its full potential. Knowledge of proper abutment planning and exact post use is limited and needs to be incorporated and more dived-in by clinicians. The

incorporation of attachments in overdentures into everyday dental practice will open up another dimension in dental treatment planning and patient satisfaction.

Conclusion

Successful overdenture rehabilitation was done with the help of careful case selection, abutment preparation and proper periodic follow-up. With follow-up reports from the patient it was noted that they experienced better mastication and stability than the previous fixed prosthesis which had poor prognosis. Also it was concluded that the final restoration was stable, well retained and aesthetic, serving as a conservative approach to root preservation. This case report highlights a conservative approach to root preservation in abutment teeth using Accesspost system to provide better attachment to the mandibular overdenture.

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