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Case Report

CUSIL DENTURE: A NOVEL CONSERVATIVE APPROACH

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ABSTRACT

Background: Preservation of remaining teeth should always be the prime concern for a dentist than replacement of the missing teeth. It has become feasible to fabricate a prosthesis leaving an outlet to allow any remaining teeth to thrust through without destroying the suction which usually holds the prosthesis in place. One such novel conservative approach is CuSil denture.

Case Description: The present report describes an approach to preserve remaining teeth by the use of CuSil denture in a 45 year old male.

Conclusion: CuSil denture serves as an alternative treatment option in patients presenting with few remaining teeth.

Clinical Significance: CuSil denture is a form of transitional denture that can prove to be an easy and affordable treatment option for patients who are not willing for the extraction of the remaining healthy teeth.

Keywords: CuSil Denture, Silicone soft liner, Transitional denture, Proprioception.

INTRODUCTION

The realization that removal of teeth results in bone loss and potential problems with removable prostheses has been a concern of dentistry for decades. Dentists have long recognized the difference that the presence of teeth makes to preservation of alveolar ridge integrity. Studies such as that of Atwood and Tallgren show that mandibular loss is four times greater than maxillary loss.

It appears that the presence of a healthy periodontal ligament maintains alveolar ridge morphology, whereas a diseased periodontal ligament, or its absence, is associated with variable but inevitable time-dependent reduction in residual ridge dimensions. In the past the extraction of entire dentitions with, complete denture replacements used to be promoted as an inexpensive and permanent solution for oral health care. The legacy of this approach has become a major oral morphological problem: advanced residual ridge resorption (RRR)¹.

Even a single healthy tooth in the arch can help in preservation of alveolar ridge height. Preserving natural teeth also helps in maintenance of proprioceptive ability of periodontium. Single remaining teeth in the arch can increase the stability of the entire denture many fold over a completely edentulous arch. Treatment options are such arches with very few remaining

teeth includes overdentures, immediate dentures and transitional dentures. Overdentures may not always be a favorable option in all such patients because of contraindications, need for endodontic treatment for which the patient may not be willing for, poor positioning of remaining teeth, requirement of more patient visits and economic reasons.

Transitional dentures prove to be a good treatment option for such patients who are not willing for the extraction of the remaining healthy teeth. CuSil denture is one such transitional denture which is rarely opted for treatment in dental practice but can prove an easy and affordable treatment option for such arches.

A CuSil denture is essentially a full denture with holes through which natural teeth protrude without destroying the suction which usually holds the denture in place. These holes are surrounded by gasket of silicone rubber which hugs the natural teeth, allowing a natural suction to form under the denture. In addition it also gives mechanical stability offered by the immobility of the natural teeth. These are especially useful in situations in which the remaining teeth are on the same side of the arch.

This case report describes a newer approach to save the few remaining teeth via the CuSil denture.

CASE REPORT

A 45-year-old male was self-referred to Department of Prosthodontics, with a chief complaint of masticatory and speech difficulty, poor esthetics and wanted replacement of missing teeth. Prior to treatment, a detailed dental, medical and social history was obtained. The patient was in good general health and the medical history was noncontributory. Patient presented with edentulous mandibular ridge with only single tooth present in the posterior region of right quadrant and a completely edentulous maxillary ridge (Fig.1). Patient was not willing for the single tooth in the mandibular arch to get extracted. So it was decided to retain the tooth and fabricate a CuSil denture.

Maxillary and mandibular impressions were made by using irreversible hydrocolloid (Zelgan, Dentsply, India). Impressions were poured with dental stone (Gypstone, Prevest Denpro, Jammu, India) and casts were obtained. Mandibular cast was surveyed to detect severe undercut. Any severe undercut was removed by tooth preparation before making final impression. Special tray was fabricated with wax spacer covering the edentulous ridge and remaining tooth. Border molding was done by the conventional methods using green stick impression compound. Mandibular secondary impression was made using medium body elastomeric impression material (Reposil, Dentsply, India). After jaw relation and try in procedures, wax up was done by enclosing the remaining tooth. Denture was cured with heat cure acrylic resin (Trevalon, Dentsply, India) in usual manner; a denture is obtained with a hole in the region of remaining tooth. The undersurface of denture around the hole is scrapped with a bur to create a space for the soft liner (Fig. 2). A thin layer of silicone soft liner (Ufi Gel P, Voco, Germany) was applied in this region following manufacturer instructions and insert denture in patient mouth. Take out the denture after recommended curing time of soft liner. Cut the extra soft liner with blade and varnish was applied. Denture was delivered, occlusion was checked (Fig. 3) and post insertion instructions were given.

DISCUSSION

CuSil denture is an acrylic tissue-bearing appliance featuring a soft elastomeric gasket which clasps the neck of each natural tooth, sealing out food and fluids, and cushioning and splinting each natural tooth from the hard denture base.

They are used mostly as “transitional” dentures, and are especially recommended when the remaining teeth are likely to be lost for any reason or in cases where stable teeth are poorly distributed about the dental arch. The CuSil denture can finally be altered into a regular full denture if the patient one day loses all the natural teeth. It is also easy to replace lost natural teeth on the CuSil denture, and the denture can be relined like any other standard denture.

They are commonly indicated when there is need to stabilize denture, provides cushion and they splint the mobile teeth, in cases of periodontally involved teeth. In teeth with small or weak root structure, they are also recommended when there is not enough undercuts present for clasps. Also it is a wonderful

alternative to eliminate extractions, when patient want roofless denture, patient with single isolated tooth.

CuSil dentures are not the best solution for people with numerous, evenly distributed (on both sides of the arch) stable natural teeth, this will result in a weak appliance. A partial denture may be as good or even better solution. They are also unsatisfactory in areas with severe under-cuts and with maxillary anterior teeth; they are often unsatisfactory if a patient has a high smile line.

Its advantages are that it is the simplest, gentlest removable partial denture. When compared to cast partial denture CuSil eliminates wear, stress and torque of metal clasps. The abutment teeth rarely need adjusting as they would for a cast partial for path of insertion and rest areas. No special preparations or impression techniques are required. It minimizes adjustments and chair time and saves money.

As silicone elastomeric is used around the retained tooth it acts as soft elastomeric gasket which clasps the neck of each natural tooth, sealing out food and fluids, and cushioning and splinting each natural tooth from the hard denture base².

It helps prevent tooth loss and prolong the life of mobile, isolated, periodontally involved abutments by eliminating wear, stress, improve stability of loose teeth. Loss of all the teeth can cause psychological trauma to the patient. So saving even a single tooth can give psychological benefit to the patient.

Even though the retained teeth may be periodontally diseased, they still may provide sufficient support for the transmission of masticatory pressures and sufficient periodontal ligament receptors to initiate a jaw opening reflex³. Hence, a retained tooth enhances proprioception due to the preservation of PDL fibers. Also there is reduced loading of residual alveolar ridge which in turn reduces bone resorption as compared to complete denture^{4,5} and hence vertical height is maintained to a much greater level⁶.

Their disadvantage is that denture is more prone to breakage especially for mandibular denture, if the remaining natural teeth are located in the front of the arch. This is because the holes that allow the penetration of the natural teeth weaken the architecture of a lower denture.

CONCLUSION

This clinical report describes a technique to fabricate the CuSil denture which is a usable alternative treatment option for dentist. It serves as a transitional denture. It is an excellent option for the patients willing to replace their missing teeth while retaining their very few remaining teeth. Factors to be considered during treatment planning include number of teeth present, their distribution across the arch, periodontal status and undercuts.

CLINICAL SIGNIFICANCE

CuSil denture is a form of transitional denture that can prove to be an easy and affordable treatment option for patients who are not willing for the extraction of the remaining healthy teeth.

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Figure 1: Pre-operative intraoral view showing single remaining tooth in

mandibular right posterior region



Figure 2: Mandibular denture with hole in natural tooth region



Figure 3: Intra-oral view showing CuSil denture in occlusion

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