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Case Report

Preserving natural dentition and enhancing prosthetic rehabilitation with Cu-Sil denture: A case report

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ABSTRACT

Background: A specific type of transitional denture called a Cu-Sil denture provides a therapy alternative for people who have a lot of natural teeth still in place and do not want to have them extracted. This is particularly salutary for cases where people may feel tone-conscious about the negative impact of tooth loss on their appearance and emotional well-being. **Purpose:** The purpose of this case report is to provide prosthetic rehabilitation for a partially edentulous patient while conserving the remaining natural teeth and their supporting structures. **Case:** With only three teeth (12, 13, and 14) remained in the maxillary arch, a 63-year-old man complained to the department of prosthodontics that he had difficulties speaking and eating since he had been missing both upper and lower teeth for a period of five years. **Case management:**This case report represents a simple method to fabricate a Cu-Sil denture in a partially edentulous patient. **Conclusion:** Cu-Sil dentures present a promising alternative for partially edentulous patients, offering a method to preserve and support the remaining natural teeth while providing effective prosthetic rehabilitation. The relining material, silicone, functions as a cushion to support the remaining natural teeth. Additionally, the use of a chairside soft-tissue liner in the basic removable partial denture helps to stabilize and retain the existing natural teeth.

Keywords: Cu-Sil denture; Edentulism; Remaining natural teeth; Soft liners; Medicine

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INTRODUCTION

Edentulism can have negative effects on a person's oral health, function, appearance, and emotional well-being. It is crucial to address this issue quickly and effectively in order to improve their overall health and quality of life.[1] Modern dentistry places a high focus on preserving natural teeth, which can help maintain proper oral function and improve overall quality of life.[2] Even when many natural teeth are still present, prosthetic rehabilitation is possible through options such as overdentures, immediate dentures, transitional dentures, or complete dentures after removing all remaining teeth. After a full-mouth extraction, it is frequently able to save some natural teeth and the structures that support them, enabling them to continue to function for many years.[3] Cu-Sil dentures are a type of transitional denture that can help preserve the alveolar crest structure and provide bumpers and splinting for each natural tooth from the hard tempera denture base. By featuring a soft elastomeric seal that holds the natural tooth's neck in place, Cu-Sil dentures can keep food and fluids out while conserving the natural teeth and their supporting structures. This makes Cu-Sil dentures a great option for cases where patients want to save their remaining teeth without undergoing tooth medication or redundant laboratory procedures. Additionally, one of the benefits of Cu-Sil dentures is that they can be modified to accommodate any missing teeth that may arise in the future.[4] Cu-Sil dentures are advised for individuals who have few remaining teeth, whose general health or supporting tissue suggests a poor prognosis for full dentures, and who are not well enough to benefit from fixed or other detachable partial dentures.[5] Cu-Sil dentures, however, might not be appropriate in situations where there are an excessive number of residual teeth, inadequate oral hygiene and infection control, or hostile undercuts that could interfere with the manufacture and positioning of the denture. The purpose of this study is to demonstrate the effectiveness of Cu-Sil dentures in prosthetic rehabilitation while conserving the remaining natural teeth and their supporting structures.[6] Cu-Sil dentures can be fabricated using different methods, including conventional fashion, injection moulding fashion, and digital fashion (which includes Computer-aided design

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(CAD) dan Computer-aided manufacturing (CAM) and 3 dimension (3D) printing). The method for fabricating Cu-Sil dentures in standard dental setups utilizing widely accessible long-term soft liners is described in this case study as necessary.[7] The purpose of this case report is to provide prosthetic rehabilitation for a partially edentulous patient while conserving the remaining natural teeth and their supporting structures.

CASE

The patient, a 63-year-old man, came to the prosthodontics department to complain about having trouble speaking and eating because he had lost both of his upper and lower arch teeth five years prior. Just three teeth (12, 13, and 14) remained in the maxillary arch after the intraoral examination; the other teeth had all been extracted five years prior (Figures 1A and 1B). The mandibular ridge was slightly resorbed (Figure 1C), while the maxillary ridge was well-formed. The remaining teeth, however, were sound periodontally and in good condition. The patient had worn dentures for the previous three years, but they had broken from repeated use. During the extraoral examination, nothing clinically important was found. It was determined to plan a maxillary Cu-Sil denture and a mandibular conventional complete denture for the patient, taking into account his advanced age, impaired health, and socioeconomic level.

CASE MANAGEMENT

Irreversible hydrocolloid impression material (Algitex Alginate Impression Material-Dental Product of India) was used to create the maxillary arch's primary impression. On the other hand, the mandibular edentulous arch was first cast using dental plaster after being obtained using a modeling plastic imprint compound (Pinnacle Tracing Sticks; Dental Products of India) in a metal stock tray. To prevent unnecessary stresses on the teeth, a custom tray was made for the maxillary and mandibular casts. The maxillary custom tray was made with a double spacer (DPI-RR cold cure; Dental Products of India) on the remaining teeth. Green stick impression compound (Pinnacle Tracing Sticks; Dental Products of India) was

Figure 1. A. Extraoral frontal view, B. Intraoral maxillary arch, C. Intraoral mandibular arch.

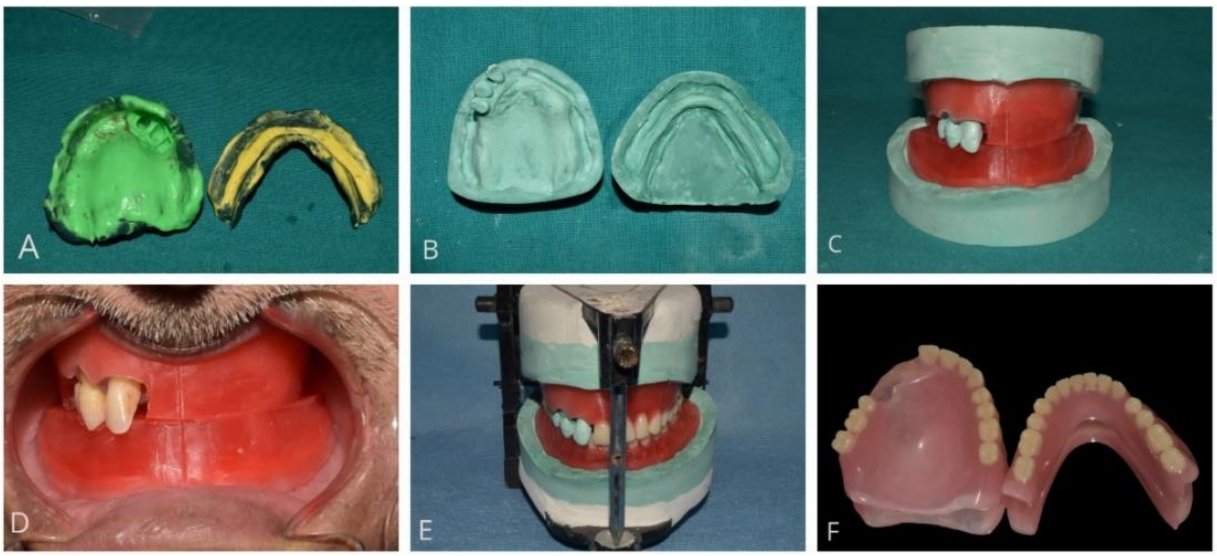

Figure 2. A. Secondary impression, B. Master cast, C. Occlusal rim, D. Jaw relation, E. Teeth arrangement, F. Final cured denture.

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used for border molding the maxillary mandibular arch, and additional silicone light body impression material was used for the secondary impression (Avuegum Light Body; Dental Avenue) (Figure 2A). Dental stone was poured into the secondary impressions to make the master casts (Figure 2B), and the denture bases and occlusal rims were created on these master casts (Figure 2C). After recording the maxillo-mandibular connection, both casts were placed on an articulator (Figures 2D and 2E).

Traditional methods were used to position the artificial teeth, and a try-in procedure was carried out. Traditional dewaxing was done. During the dough stage, the resin known as heat cure acrylic (DPI heat cure; Dental Product of India) was combined and applied to the dewaxed area. After that, traditional curing was done. After the denture was retrieved, it was polished and finished (Figure 2F). The space in the maxillary partial denture around the remaining teeth was expanded to provide a 3 mm clearance around

Figure 3. A-B. 3mm clearance around natural teeth, C. Armamentarium required, D. Silicon adhesive application E-F. Permanent silicone liner applied on teeth and denture placed in position**.**

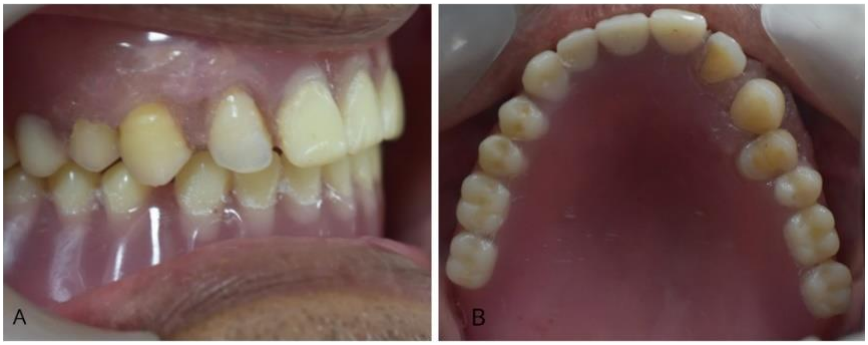

Figure 4. A-B After removal of excess silicon soft liner material, Lateral and occlusal view.

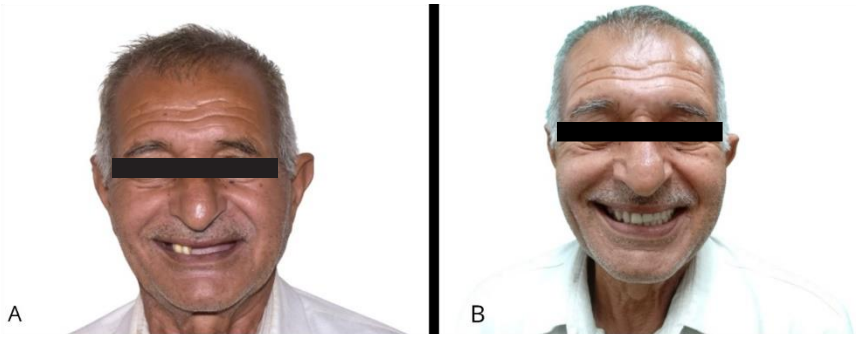

Figure 5. A. Pre-operative view, B. Post-operative view.

the teeth after the denture was completed and polished (Figures 3A and 3B).

Silicone liner adhesive was applied to the surrounding acrylic neck area of the denture, allowed to dry for 10 seconds, and then inserted in the patient's mouth (Figures 3C, 3D). Silicone liner material consisting of base and catalyst was mixed and applied to the space area around the tooth cervical region of the denture base, inserted in the oral cavity, and allowed to set for 3 minutes (Figures 3E and 3F).

Following the application of the liner material, the denture was extracted, and the surplus material was removed via trimming (Figures 4A and 4B). The resulting denture was then inserted into the patient. These figures show the pre-operative and post-operative conditions (Figures 5A and 5B). Demonstrating successful denture insertion and ensuring patient safety and comfort.

DISCUSSION

When treating patients who have very few natural teeth left, it's critical to take into consideration all available treatment choices. Transitional dentures, overdentures, and immediate dentures are all workable solutions, but each has advantages and disadvantages of its own. Because they need to be maintained meticulously with several visits and endodontic therapy, overdentures may not be appropriate in every situation.[8] Alternatively, undergoing full tooth extraction and immediate denture placement may elicit psychological repercussions. Cu-Sil dentures represent one therapeutic strategy that can helphelp maintain the patient's remaining natural teeth and bone structure while also offering psychological benefits. benefits.[9] By preserving natural teeth and the tissues that support them, this kind of denture helps patients feel better mentally and emotionally. The goal of this kind of denture is to preserve natural teeth and the tissues that support them, which will enhance the patient's mood and emotional health. When compared to patients wearing traditional complete dentures, fixed,fixed, partial supported Cu-Sil like dentures can improve masticatory efficiency by increasing prosthesis retention and stability. stability.[10] One advantage of Cu-SilSil dentures is that they don't need any specializedspecialized tools or supplies. In addition, the denture can be adjusted to take the place of a lost tooth in the future. Cu-Sil dentures have the potential to be functional for an extended period of time since they preserve natural teeth and the tissues that support them. For individuals who have few natural teeth remaining and would prefer not to have their teeth extracted, Cu-Sil dentures are a prudent and practical therapeutic alternative. Patients who have periodontal issues or do not wish to undergo other procedures may also benefit from Cu-SilSil dentures. dentures.[11] Additionally, Cu-Sil dentures can serve as a transitional denture for patients who require them. Furthermore, patients with single, isolated teeth or a need to preserve their remaining natural teeth can benefit from Cu-Sil dentures. Cu-Sil dentures may not be suitable for all patients. There are certain contraindications that should be considered before recommending this type of transitional denture. Specifically, Cu-Sil dentures may not be appropriate for patients with too many remaining natural teeth, severe soft and hard tissue undercuts, high smile lines, or bruxism. A careful evaluation of each patient's individual case and oral health is necessary to determine the most appropriate treatment option.[12] Despite having just one or two permanent teeth, the Cu-Sil denture retains its stability and ease of manufacture, among other benefits. In addition, it helps patients maintain proprioception, minimizes any possible psychological effects, and improves speaking, mastication, and aesthetics. Furthermore, this kind of denture does away with the necessity for clasps because it splints, cushions, and stabilizes teeth using an elastomeric gasket that offers retention and keeps food out while promoting good oral hygiene.[9,13] In addition, a Cu-Sil-like denture presents a viable option for young patients with distinct edentulous situations, such as several missing primary teeth and a few erupted permanent teeth that cannot be employed as space-maintaining abutment teeth. There are certain possible drawbacks of Cu-Sil dentures that should be taken into account. First off, the soft liner that is used usually has a short functional life and may need to be replaced on a regular basis. Furthermore, plaque buildup may occur along the entire gingival margin of the remaining teeth that the denture covers, which could be detrimental to oral health. Lastly, it's critical to understand that Cu-Sil lower dentures are brittle when pressed up against natural upper teeth.[14] The case study that follows provides a concrete example of the clinical use and results of Cu-Sil dentures in a particular patient setting and provides empirical information on the benefits and drawbacks of the technology. This article provides a thorough examination and analysis of Cu-Sil dentures, highlighting their essential role in modern prosthetic dentistry and striking a balance between their prospective benefits and practical considerations.[15]

CONCLUSION

The Cu-Sil denture is a transitional denture that offers an effective treatment option for cases with limited remaining natural teeth. Its ability to conserve the remaining natural teeth and their supporting structures, coupled with its flexibility to accommodate future tooth loss, makes it a favorable option for many patients. Furthermore, by preserving the natural teeth and the tissues that support them, this seal can enhance the general health and function of the mouth. Overall, the Cu-Sil denture's soft elastomeric seal is a crucial component that contributes to the denture's effectiveness and patient satisfaction.

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