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CASE REPORT

A Novel Cu-Sil Denture with Flexible Framework and Traditional Cast Partial Denture – A Case Report

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ABSTRACT

Preservation of natural teeth is the current primary concern in dentistry. The presence of few teeth in the oral cavity aids in the preservation of alveolar ridge integrity, the maintenance of proprioception, and the patient's psychological well-being. A Cu-sil denture is a novel alternative treatment option for those who desire to replace their lost teeth while retaining their few remaining teeth. This case study describes an alternate procedure for making Cu-sil-like denture in the maxilla and traditional cast partial denture (CPD) in the mandibular arch.

Keywords: Esthetic clasps, Edentulous, Partially / rehabilitation, Missing teeth.

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INTRODUCTION

De Van states, "perpetual preservation of that which remains rather than meticulous replacement of that which has been lost."[1,2] The primary focus of modern dentistry is to conserve natural teeth, alveolar ridge integrity, and periodontium proprioceptive ability. It also has a psychological benefit for patients.[2] Cu-Sil denture is a tissue-bearing prosthesis with a soft elastomeric gasket that clasps the neck of each natural tooth, locking out food and fluids while also cushioning and splinting each natural tooth from the hard denture base. It prevents tooth loss and improves the prognosis of abutments that are loose, mobile, isolated, elongated, or periodontally involved by eliminating wear, stress, and torque.[3] This clinical report discusses the rehabilitation of a patient with innovation on Cu-Sil denture with a flexible acrylic framework for the maxillary arch and a conventional cast partial denture for the mandibular arch.

CASE REPORT

A male patient, 52 years old, reported to the Department of Prosthodontics with the major complaint of loosening & self-repaired fractured upper removable partial denture (RPD) and missing tooth in posterior region in the lower arch for the past 6 months. He was unhappy with the metal clasp, fit and comfort of the upper denture. The patient was diabetic and under medication for 5 years. Dental history revealed that the lost teeth were extracted because of caries and periodontal disease. The patient arrived with a mandibular Kennedy's Class II modification I edentulous arch with missing teeth 36, 37, and 46. In maxillary arch 14, 15, and 27 were present *(Fig 1)*.

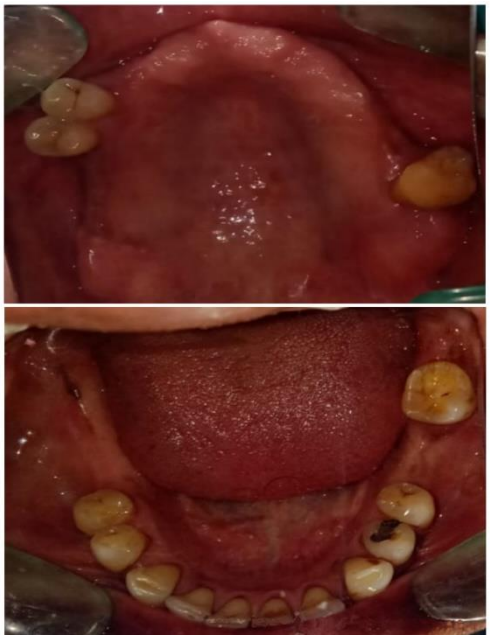

Fig 1: Intra oral view of maxillary and mandibular arches

The patient had been wearing the present interim RPD for the past 2 years with a history of midline fracture for 2 times. He attempted to repair the fracture of RPD with commercial adhesives. Oral

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hygiene was satisfactory. The patient refused for the extraction or endodontic therapy and was also more particular about exposure of metal clasp and weight of RPD. A cast partial denture (CPD) for the mandibular arch and a novel Cu-sil denture with flexible framework for the maxillary arch were proposed as definitive treatment. The patient was informed about the treatment plan, and upon his consent, the procedure was carried out.

PROCEDURE:
Primary impressions of the maxillary and mandibular arches were made with irreversible hydrocolloid impression material alginate (Algingum, Prime Dental product Pvt Ltd, Maharashtra, Thane, India). The study casts were obtained.

FABRICATION OF MAXILLARY FLEXIBLE FRAMEWORK:
Conventional border molding was performed with green stick compound (Pinnacle tracing stick, DPI, Mumbai, India), and the impression was made with light body elastomer (Gc Flexceed, Gc Corp, Tokyo, Japan) and left in the mouth, over which a pickup impression was made with alginate in the maxillary arch. The master cast was made. A custom denture base with an occlusal rim was fabricated. A wax pattern was made on the maxillary arch which clasps the neck of 14,15 and 27.

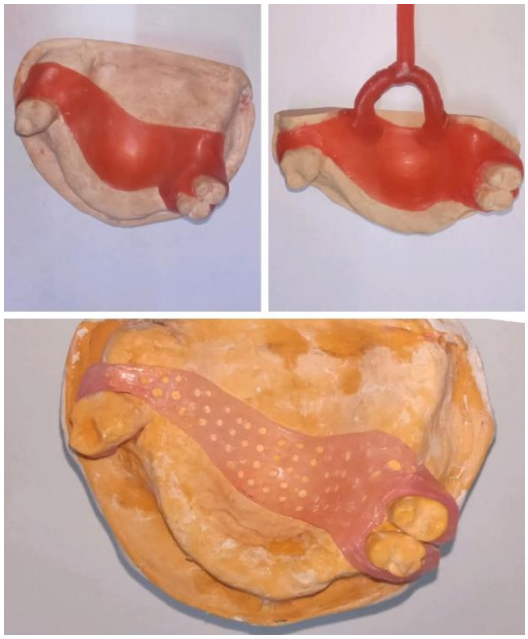

Fig 2: Flexible acrylic framework

Lucitone FRS (Lucitone FRS, Dentsply, York, PA) is a flexible resin system and monomer-free thermoplastic dental polymer with low flexural modulus.[3] This framework was obtained by injection molding technique in which multiple small holes were placed for mechanical retention of acrylic resin (*Fig 2*).

Fig 3: Bite registration and try in

TREATMENT OF THE MANDIBULAR ARCH:
The diagnostic model was examined and surveyed by Ney surveyor (M Ney Co.,Hartford, Conn). The path of insertion and removal, aesthetics, interferences, and guiding planes were the four main factors considered. 4 Because the lingual sulcus depth was more than 8 mm when measured, the denture design opted was a Lingual bar as a major connector. The circumferential clasps with mesial rest on 35, 47, and circumferential clasp with distal rest on 45 were designed based on the favorable undercuts. Mouth preparations were carried out in the patient's mouth and final impressions were made using putty, light body of polyvinyl siloxane impression material (Gc Flexceed, Gc Corp, Tokyo, Japan). A definitive cast was made of die stone (ultra Rock, Kalabhai karson Pvt Ltd., India) and surveyed. Refractory casts were made and the wax pattern was fabricated on it. The framework was casted by using conventional procedure and the fit of the framework was evaluated intraorally and adjusted wherever needed. The occlusal rim was made for both maxillary and mandibular arches. Bite registration and try in done *(Fig 3)*. Curing was done using conventional method, and the final prosthesis was finished, polished and inserted. *(Fig 4)*

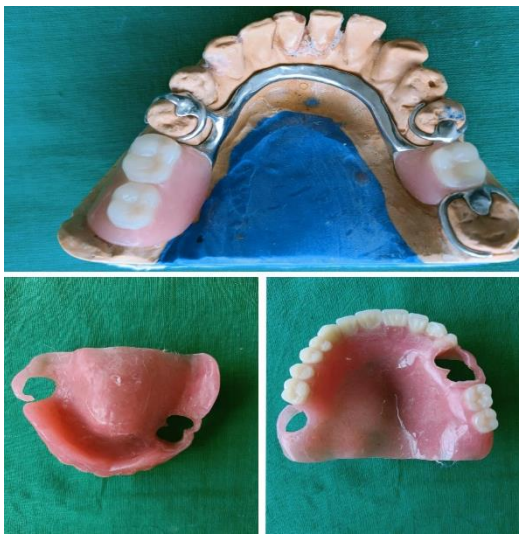

Fig 4: Final prosthesis

The patient was extremely satisfied with the fit and esthetics *(Fig 5).* Post insertion instructions was given.

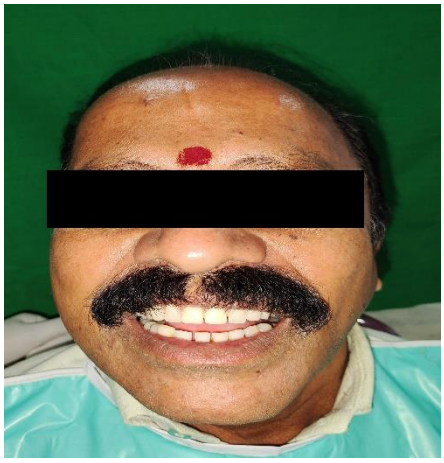

Fig 5: Post insertion extra oral view of the patient

DISCUSSION

The patients having very few remaining teeth can be treated by fabrication of overdentures or immediate dentures or transitional dentures. Overdentures may not always be a favorable option for all such cases due its contraindications, the need for endodontic procedures, the requirement of more patient visits, and financial reasons.[2] Many patients refuse for total extraction as it has a detrimental effect on their psychology. Cu-sil dentures serves as an amicable treatment option for such patients. Agerberg and Carlsson reported that esthetics should be prioritised than function in prosthodontic patients.[5] Numerous patients fail to wear the partial dentures as they find the display of clasp assemblies esthetically unacceptable.[6] Ali Afzal Khan et al reported an increase in esthetics and masticatory efficiency following treatment with CPD to replace missing teeth in a partially edentulous individual.[7,8]

The Cu-sil denture prosthesis fabricated from a flexible framework, gives an excellent fit, comfort (thin and lightweight), is resistant to fractures, and is aesthetically pleasing due to the translucent and pink shade which matches very well to that of natural tissues.[9]

In our case report, Cu-sil denture was made of a flexible framework. This is an advantage over soft lined Cu-sil denture which has a tendency of fungal growth & poor oral hygiene due to difficulty in cleaning the prosthesis by the patient. It also is an advantage over that of silicone gasket due to the tendency of tear with usage. Follow up after 3 months revealed that the patient was satisfied and was maintaining the prosthesis well.

CONCLUSION

No partial prosthesis can address all of the needs of a compromised mouth. The aim is to answer and address as many issues and requirements as feasible in a simple and cost-effective manner. An effort has been made to focus on improvements in the aesthetics, function, durability, and longevity of a Cu-sil Denture produced from a Flexible framework over traditional methods.

CONFLICT OF INTEREST

There is no conflict of interest

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