

## Case Report :

# Fabrication of a conservative, transitional cu-sil like denture: a case report

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## ABSTRACT

Preservation of last few retained teeth and alveolar bone is of prime concern in rehabilitation of partially edentulous arches as it provides better retention and stability not only to the transitional prosthesis but also provides a choice of definite treatment with implants. Cu-sil is one such conservative, transitional removable prosthesis which cuffs the teeth snugly due to soft liner collar around them. It also splints teeth and extend their service.

**KEYWORDS:** Cu-sil like denture, Transitional denture, Silicone soft liner, Proprioception and Mono-poly solution.

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## INTRODUCTION

Extractions mark the start-point of a progressive inevitable change called residual ridge resorption accompanying compromised masticatory function and poor esthetics and even psychological trauma as a collateral damage. Rehabilitation with partial or complete dentures is very often unsatisfactory due to reduced retention, stability and support.<sup>(1, 2)</sup> Partially edentulous arches pose as a hurdle in rehabilitation due to its transient state and even due to presence of teeth which may or may not favor the treatment. Cu-sil denture serves as a transitional denture to a state of complete edentulousness, specially aiding as a better alternative treatment modality in patient with few or even one remaining teeth.<sup>(3)</sup> Cu-sil as a transitional denture excludes the need of extraction, thus preserving the alveolar ridge structure in terms of width and height from further resorption.<sup>(4)</sup> Existing teeth also sustains periodontal ligament and hence preserving them also preserves proprioception for better neuro-muscular control, adding to the

psychological benefit of not being completely edentulous.<sup>(5-7)</sup> Requirement of no special teeth preparation or invasive techniques highlights the conservative nature of such prosthesis fabrication and also it does not require any extra clinical visits. Periodontally weak teeth are benefitted due to the splinting action of cu-sil denture extending their lives. Silicone cuffs of tissue conditioner around teeth provide cushioning effect from the rigid denture base by evenly distributing forces.<sup>(8)</sup> Vertical dimension is also preserved due to few remaining teeth. Best serving the purpose of the transitional prosthesis, they can be even altered to final prosthesis by adding the few teeth later on.

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## CASE REPORT

A 64 year old male patient visited department of prosthodontics with chief complains of difficulty in chewing and poor esthetics. Intra oral examination revealed partially edentulous arches with remaining 23, 24 in maxillary arch and 43, 44 and 45 in mandibular arch. Retained teeth were immobile but showed attrition and gingival recession. Patient was adamant about retaining his existing teeth and due to his systemic history of spondylitis, wanted a treatment including lesser visits and clinical time. After careful evaluation of his intra-oral and systemic condition, a transitional cu-sil like denture was planned for the patient. An informed consent was taken prior to starting the treatment. Upper and lower primary impression was taken using irreversible hydrocolloid (Imprint, DPI) and poured using type III dental stone. Dentulous area was blocked using modelling wax and a wax spacer was applied over the teeth portion. Custom tray was prepared over it using auto-polymerizing resin covering even the teeth portion ("Functional" impression technique<sup>(9)</sup>). Custom tray was border molded by section method using low fusing compound (Pinnacle, DPI). After completion of border molding wax spacer was scraped out and relief holes were made and secondary impression was made using condensation silicone light body

## DISCUSSION

Patient with partial edentulous arches having few remaining teeth are often treated by treatment partial dentures which is troubling and uncomfortable to the patient, due to lack of any better treatment modality. Fixed prosthesis is not considered a treatment option in cases with functionally compromised existing teeth in terms of unfavorable position, caries and periodontal support. Surgical risk, systemic health

(Oranwash, Zhermack). Secondary cast was poured, jaw relation and final trial was done in conventional manner. Wax up was done with wax sealed around the existing teeth in cuff like manner with flanges bucco-lingually. Denture was processed, finished and polished. An even space of 4-5 mm was created around the natural teeth in denture and verified for unimpeded insertion and removal. A roughened area of 2-3 mm was created and bonding agent was applied on inner as well as outer aspect and allowed to dry for 20 minutes. Tissue conditioner base and activator (Mollosil, Detax) were mixed and applied to fill in the gap between the teeth and denture base. It was pressed and merged to smoothness. After setting of the material denture was removed, excess liner was removed using small scissors and trimmed using silicone finishing burs. Two coats of Mono-poly solution were applied to the silicone portion and slowly heat dried under 60 watt bulb. Post insertion instructions were given including hygiene maintenance and using antimicrobial denture cleanser. Patient is advised not to use brush on the soft liner part and clean it thoroughly using a wet cloth.

A 3 month follow up was taken to ensure proper hygiene of tissue conditioner and to check its flexibility.

and economic reasons hinders treatment with implant supported/ retained prosthesis. Overdentures aren't preferred due to the invasive endodontic treatment, longer visits for endodontic treatment and improper teeth positioning, hence increasing overall cost of the treatment.<sup>(1, 10, 11)</sup> Such transient condition requires treatment with a transitional denture like cu-sil denture. Cu-sil denture is basically a complete denture having holes through which the remaining

natural teeth protrude. Natural teeth are encircled by collar of soft silicone liner. This elastomeric gasket ensures good hygiene around natural teeth by sealing out food and fluids. Better stability, anchorage and retention are achieved from both alveolar bone and retained teeth. During treatment, at certain stage retention achieved due to vacuum formed between denture base and tissue is hampered as such dentures have holes in dentate region but it is regained again after forming elastomeric cuffs around teeth.<sup>(12)</sup> It is even very time saving and convenient to reline the soft liner part at chair side using temporary silicone soft liner. Though being a better conservative treatment in partial edentulous cases, it is not indicated in cases with evenly distributed multiple teeth or teeth having aberrant angulations and unfavorable undercuts, as it weakens the prosthetic substructure especially in lower dentures if the retained teeth are in incisor area. Use of soft liner often leads to hygiene issues due to its high permeability and loss of flexibility demands relining at a regular interval. Relining is normally required after 3 to 6 months due to the reason that soft liner loses its flexibility due to leaching out of monomer or plasticizer. This period is lengthened by the use of mono-poly glaze solution or any other sealer solution over the soft liner part. Mono-poly solution is a

#### **CONCLUSION**

Partially edentulous arches with lesser number of functionally compromised teeth often require treatment with cu-sil like transitional dentures especially when patient wants to retain those teeth. It provides better retention and stability in comparison to any other removable partial denture in the best conservative way possible with well acceptance from patient. Lesser degree of alveolar bone loss allows patient to opt for a better definite treatment including implants in the future.

viscous solution formed by heating a mixture of heat cure polymer powder and autopolymerising monomer liquid in the ratio of 1:10 by weight, in a water bath at a temperature of 130° F or 54°C for 8-10 minutes. This solution is stored in an amber coloured glass bottle for sun protection to extend its shelf life. Mono-poly solution is applied using a brush in 2-3 layers and dried using the heat of 60 watt bulb at a distance of 2 inch. It not only maintains surface integrity of the soft liner but also decreases its permeability.<sup>(13, 14)</sup> Indications of cu-sil denture includes a wide spectrum of clinical conditions including patients with chronic gagging problem as a roofless maxillary denture getting stability and retention from tissue support as well as from existing teeth, in esthetic areas where recession has occurred flange gives better esthetic result by covering exposed roots in comparison to removable treatment partial dentures with metallic clasp and in pediatric patient with multiple missing teeth as a functional space maintainer till the permanent dentition is fully established or as a temporary functional rehabilitation till a definitive treatment is planned for such patients.<sup>(15)</sup> Lower rate of alveolar bone resorption keeps the options for implant open in the future as a part of definite rehabilitation.

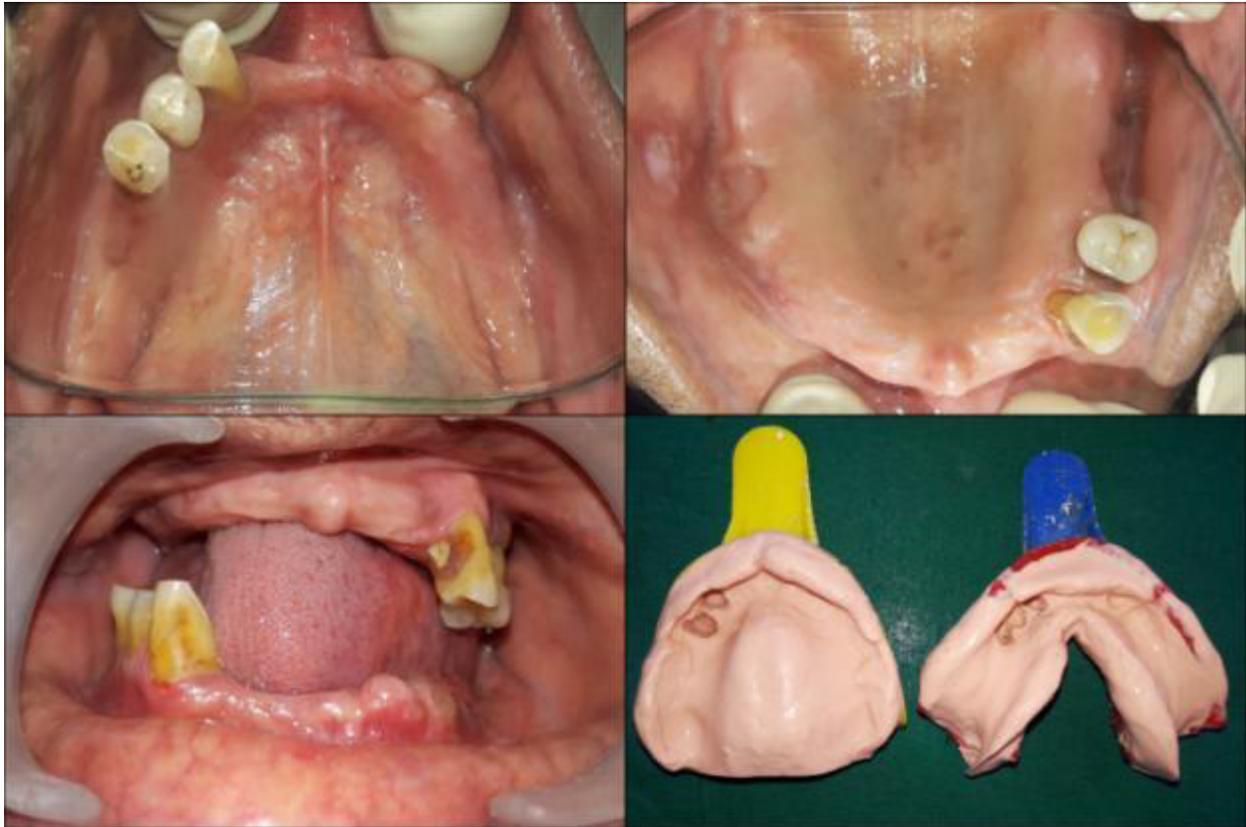


FIG.1 Pre-op partially edentulous state of the patient and primary impression using alginate

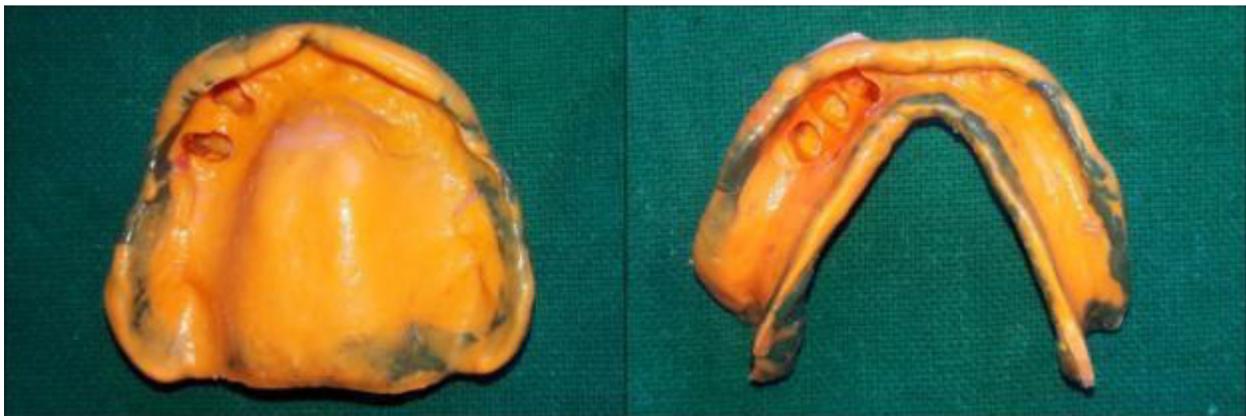


FIG.2 Final impression made using silicone light body



FIG.3 Final trial showing front, right and left lateral view

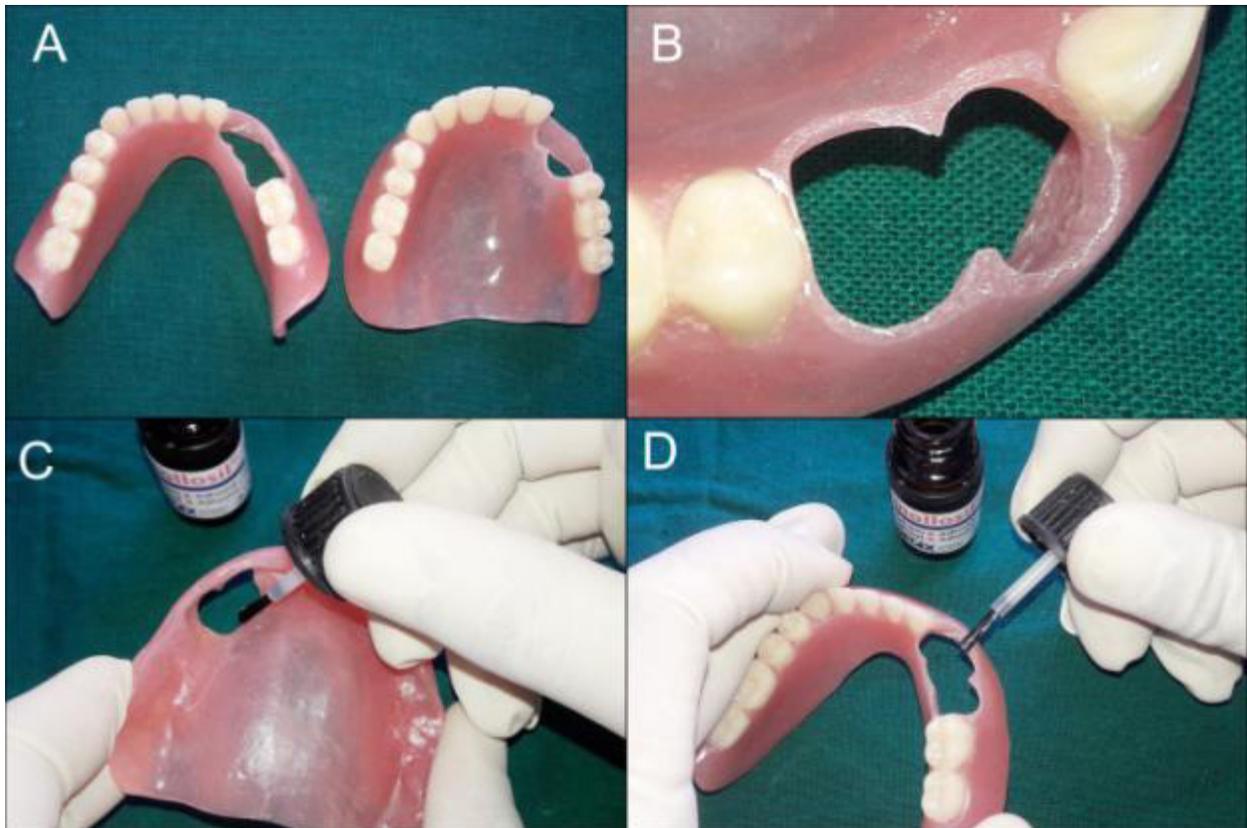


FIG.4 A) Polished denture with 4-5 mm space around teeth  
B) Close view showing evenly roughened band of 2mm for better bonding  
C) and D) Application of adhesive liquid to bond on inner and outer surface respectively



FIG.5 Denture with collar of silicone temporary soft liner, intaglio and polished surfaces



FIG.6 Mono-poly solution: constituents, preparation and application.



FIG.7 Denture insertion into patients mouth

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