

## CASE REPORT

### A Revolutionary Strategy for Managing Severe Labial Undercut and Residual Canines in a Patient with a Hyper-Gag Reflex- A Case Report

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#### ABSTRACT

Individually, the existence of a labial undercut, retained natural teeth or a hyper-gag reaction causes considerable difficulty in rehabilitating a patient. However, all three, as seen in this case report, provide a challenge to Prosthodontists' in terms of not just prosthesis fabrication but also meeting the patients' expectations. This case report demonstrates a comprehensive approach to managing with this very challenging scenario.

**Keywords:** Cusil denture, Hyper-gag response, Labial deep undercut, Retained teeth

**How to cite this article:** Akshayalingam Meenakshi, Gopinath Tarunika. A Revolutionary Strategy for Managing Severe Labial Undercut and Residual Canines in a Patient with a Hyper-Gag Reflex- A Case Report. *J Clin Prosth Impl* 2022;4(2):51-54. <https://doi.org/10.55995/j-cpi.2022012>

#### INTRODUCTION

On a routine basis, a Prosthodontist handles a diverse array of patients with varying demands. A Prosthodontist is not only confronted with a variety of ridges but also with unpredictability in the distribution of remaining teeth and distinctive mental attitudes in each patient.<sup>1,2</sup>

In the modern era, one's social acceptability is determined by one's appearance, making facial aesthetics a significant component of one's persona. The realism of the prosthesis can either restore or damage a patient's self-esteem. Rehabilitating an oral cavity is frequently a difficult procedure that is exacerbated by any morphological irregularities.<sup>3</sup> The surgical treatment of anomalies is not always possible owing to a variety of issues, the most crucial of which is gaining the patient's permission.<sup>4</sup>

The fundamental principal of modern dentistry is to conserve as much of the hard and soft tissues as possible.<sup>5</sup> In their findings, Va Crum and Rooney demonstrated that when some teeth are present, there is markedly decreased alveolar bone resorption than that in edentulous subjects.<sup>6</sup> Additional advantage of retaining natural teeth is that it sustains the periodontium's proprioceptive function and offers psychological benefit to the patient.<sup>7</sup> Although elimination of unfavorable undercuts can be done via surgery however one of its disadvantages is decrease in the amount of surface available to support the denture. Numerous systemic diseases which include uncontrolled diabetes mellitus and heart ailments restrict such surgical rehabilitation.<sup>8</sup>

The current article not only describes a simple, conservative and non-surgical method of fabricating a hybrid cu-sil plus gum fit denture but also the use of training plate to control gag reflex.

#### CASE DESCRIPTION

A 72 years old female patient reported to Department of Prosthodontics, Tamilnadu Government Dental College, with complaint of difficulty in eating. She had no relevant medical history.

The patient experienced severe gag response when intra oral examination was attempted, which was managed with sour candy. She had only two teeth remaining 13 and 23 but showed attrition. The patient had large square shaped arch with proclined anterior maxillary ridge and severe labial undercut (Fig 1).



Figure 1: Intra oral examination

The patient was not willing for other procedures such as complete dentures, overdenture or preprosthetic surgery. Taking into consideration all

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the factors, the following treatment plan was formulated:

#### Technique:

##### Obtaining primary casts:

After obtaining informed consent for the fabricated treatment plan, combination of modified Kroll's method and Fleece and Linston's Anesthetic technique were used to record preliminary impressions using irreversible hydrocolloid for maxillary arch and impression compound for mandibular arch. Primary casts were obtained.

##### Management of gag response:

On the day of the impression, the patient was directed to massage the posterior most portion of the palate for 1 minute 5 times a day until she no longer felt gagging reflex. The patient was instructed to wear the mandibular training plates every day for the following week, with the amount of time spent wearing them increasing with each day (Fig 2). Mandibular training plates were initially given to the patient as gag is far less prevalent. This was followed by maxillary training plates. Maxillary training plates were created with the labial undercut and remaining natural teeth in consideration. Once she was comfortable with the maxillary training plates, she was instructed to wear them both at the same time until she was comfortable. The entire process took about 15 days to finish.



Figure 2: Training plates

##### Fabrication of hybrid cu-sill + gum fit denture:

Custom trays were fabricated on primary casts. Border molding and secondary impression were recorded (Fig 3). During jaw relation, the labial flange of the maxillary record base was totally eliminated from the canine-to-canine area, making room for the canines and easing the labial undercut. Jaw relationships were recorded (Fig 4). Articulation was completed, as well as the arrangement of prosthetic teeth. The wax trail was

completed.

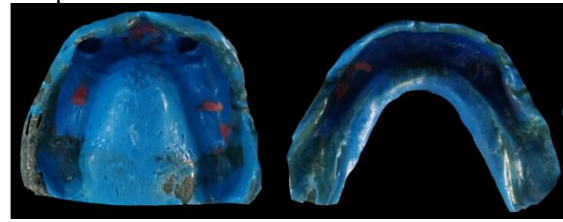


Figure 3: Maxillary and mandibular border molding and secondary impression

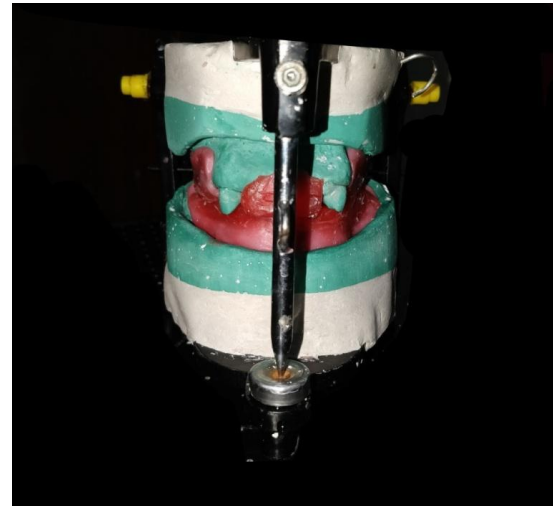


Figure 4: Articulation post jaw relation



Figure 5: Wax up and soft tissue clasp



Figure 6: Denture fabricated

After all of the modifications had been completed, wax up procedure began. During the wax up procedure, the labial area of the ridge above the canines was waxed and a 19 gauge wire was utilized to produce a clasp enabling retention by engaging the labial undercut (Fig 5). Modified flasking technique with polyvinyl siloxane putty preserves the design of labial flange and facilitates the easy removal of denture after processing. The space in the maxillary partial denture surrounding the remaining canines was broadened to provide 5 mm room around the teeth (Fig 6). Silicon adhesive was applied to the denture and the silicone soft liner was inserted to fill the space between the denture and the natural teeth. The occlusion was assessed and the same post-insertion instructions were provided as with any removable prosthesis. The patient was reviewed one day after insertion and afterwards on a monthly basis (Fig 7). The patient was instructed to regularly soak the denture in a denture cleansing agent and to use a soft brush to remove any debris. Regular follow-ups and replacement of liner when required was recommended.



Figure 7: Post insertion front view

## DISCUSSION

One of the most crucial phases in creating a successful prosthesis is to appeal to the patient's desires by giving meaning to their demands. The hyper-gag reflex, extensive labial undercut, and preserved natural canines are the challenges in this instance. A remedy had to be developed to address the aforementioned issues while also fulfilling the patients' expectations.

It is often argued that gagging is a prolonged anxiety reaction caused by a psychosomatic condition.<sup>9</sup> This problem was solved in the patient by desensitizing her to external stimuli employing acrylic training plates and using a modified Krols technique while registering the impression.<sup>10, 11</sup>

Cu-sil dentures were designed to preserve the remaining natural teeth and have a good influence on denture retention and stability.<sup>12</sup> The patient's proclined anterior maxillary ridge and anterior undercut was leveraged for our advantage, using flangeless denture and resilient liners.

The hybrid cu-sil + gum fit denture required to be lined by soft liners. However, no other special impression techniques or equipments were required. In addition, the liners' flexibility allows them to be readily withdrawn and replaced in severe undercut regions without causing damage.

## CONCLUSION

This case study shows the fabrication of a hybrid cu-sil gum fit denture, which is a realistic and cost-effective approach for rehabilitating a proclined maxillary ridge with few natural teeth remaining. The report also reveals that training plates are successful in diminishing the patient's hyper-gag reflex.

## CONFLICT OF INTEREST

There is no conflict of interest

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