



## Prosthodontic Rehabilitation of a Partially Edentulous Patient Using Maxillary and Mandibular Acrylic Treatment Partial Dentures: A Clinical Case Report

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DOI: 10.5281/zenodo.20829962

Submission Date: 15 April 2026 | Published Date: 24 June 2026

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### Abstract

**Background:** Partial edentulism is associated with compromised esthetics, masticatory efficiency, phonetics, and psychological well-being. In patients presenting with a severely reduced dentition, interim prosthetic rehabilitation plays a crucial role in restoring oral function and preparing the patient for definitive treatment.

**Case Report:** A patient reported with multiple missing teeth in both arches and only teeth 11, 21, 18, 33, 34, 43, 44, and 45 remaining. Clinical examination revealed partially edentulous maxillary and mandibular arches with impaired mastication, compromised esthetics, and reduced vertical support. Following comprehensive examination and treatment planning, maxillary and mandibular acrylic removable partial dentures were fabricated as treatment partial dentures (TPDs). Conventional prosthodontic procedures including primary impressions, jaw relation assessment, teeth arrangement, try-in, processing, insertion, and post-insertion adjustments were performed. The prostheses restored esthetics, phonetics, masticatory efficiency, and patient confidence.

**Conclusion:** Acrylic treatment partial dentures represent an economical, minimally invasive, and effective interim treatment modality for patients with severely reduced dentition. They facilitate functional rehabilitation while allowing assessment of patient adaptation before definitive prosthodontic therapy.

**Keywords:** Acrylic removable partial denture; Interim prosthesis; Oral rehabilitation; Partially edentulous patient; Prosthodontic rehabilitation; Treatment partial denture.

## INTRODUCTION

Partial edentulism remains one of the most common clinical conditions encountered in prosthodontic practice. Loss of multiple teeth adversely affects mastication, speech, facial esthetics, occlusal stability, and quality of life. The degree of impairment increases significantly in patients with a severely reduced dentition, where only a few strategically distributed teeth remain in the dental arches. Such patients frequently experience compromised chewing efficiency, altered phonetics, diminished facial support, and psychosocial distress.<sup>1,2</sup>

The management of partially edentulous patients requires careful evaluation of the remaining dentition, periodontal status, occlusal relationships, and future treatment options. While definitive rehabilitation may involve cast removable partial dentures, implant-supported prostheses, or fixed restorations, interim prosthetic rehabilitation is often necessary to restore function and esthetics during treatment planning and patient adaptation.<sup>3</sup>

Treatment partial dentures (TPDs), also referred to as acrylic removable partial dentures or gum flippers, are provisional prostheses designed to replace missing teeth and associated soft tissues. They serve multiple purposes, including restoration of esthetics, maintenance of arch integrity, preservation of occlusal relationships, and evaluation of patient tolerance to removable prostheses.<sup>4,5</sup>

This case report describes the fabrication and delivery of maxillary and mandibular acrylic treatment partial dentures for a patient presenting with severely reduced dentition.

## CASE REPORT

A patient reported to the Confidential Multi-Speciality Dental and Orthodontic Clinic, Sahibzada Ajit Singh Nagar (Mohali), Punjab, India with the chief complaints of difficulty in chewing food, impaired appearance due to missing teeth, and reduced confidence while speaking and smiling.

### Clinical Examination

Extraoral examination revealed a mildly reduced lower facial height and inadequate lip support secondary to extensive tooth loss. No significant temporomandibular joint abnormalities were observed.

Intraoral examination revealed a partially edentulous maxillary and mandibular arch. The remaining teeth were:

**Maxillary arch:** 11, 21, and 18

**Mandibular arch:** 33, 34, 43, 44, and 45

The residual ridges were moderately well formed and covered with healthy mucosa. The remaining teeth exhibited satisfactory periodontal support and were considered suitable for preservation. Oral hygiene instructions were provided and necessary prophylactic measures were undertaken before prosthetic rehabilitation.

The distribution of the remaining teeth resulted in a severely compromised dentition with inadequate posterior occlusal support. The patient expressed a preference for an economical and non-invasive treatment option.

### Treatment Planning

Various treatment options including implant-supported prostheses, cast removable partial dentures, and acrylic removable partial dentures were discussed with the patient. Considering the patient's clinical condition, financial considerations, and desire for immediate restoration of function and esthetics, maxillary and mandibular acrylic treatment partial dentures were planned.

The objectives of treatment were:

1. Restoration of masticatory function.
2. Improvement of facial esthetics.
3. Enhancement of speech.
4. Maintenance of occlusal relationships.
5. Provision of an interim prosthesis prior to future definitive treatment.

### Clinical Procedure

#### Primary Impression

Primary impressions of both arches were made using putty viscosity elastomeric impression material (Zhermack Elite HD+ Putty Soft, Zhermack SpA, Italy) (Figure 1) in appropriately selected stock trays (GDC Edentulous Perforated Impression Trays, GDC Fine Crafted Dental Pvt. Ltd., Hoshiarpur, Punjab, India). The impressions were poured in dental stone to obtain diagnostic casts.



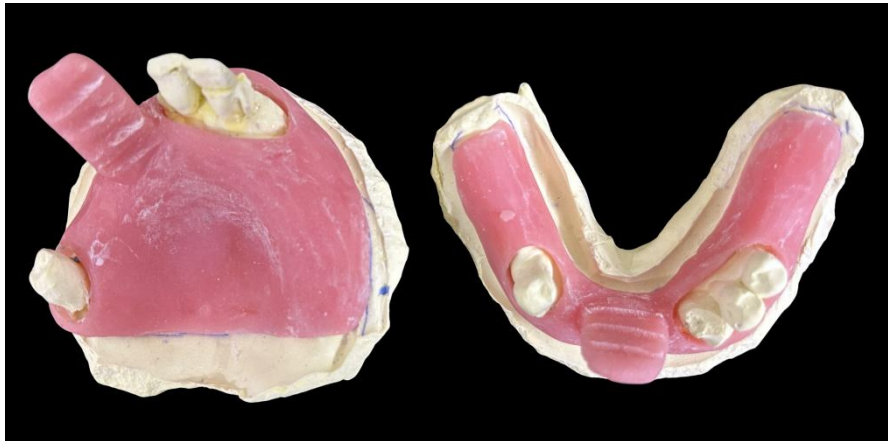
**Figure 1:** Preliminary impressions – maxillary & mandibular

### Mouth Preparation

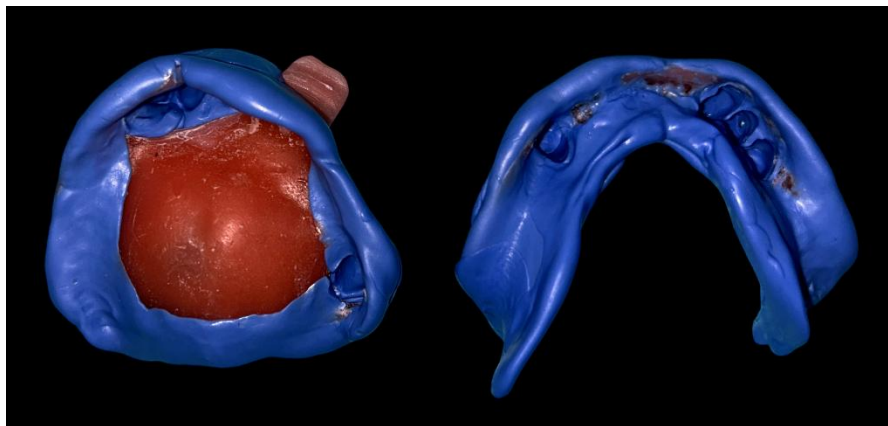
The remaining teeth were evaluated and minor enameloplasty was performed where necessary to eliminate occlusal interferences. Oral hygiene reinforcement was provided.

### Custom Tray Fabrication and Border Molding

Custom trays were fabricated on the preliminary casts using autopolymerizing acrylic resin (DPI RR Cold Cure, Dental Products of India, Mumbai, India) (Figure 2) with uniform wax spacer adaptation (MAARC Dental, Maharashtra, India). Border molding was performed using single-step technique i.e. using putty viscosity elastomeric impression material (Zhermack Elite HD+ Putty Soft, Zhermack SpA, Italy) (Figure 3) to capture functional sulcus depth and peripheral extensions accurately.



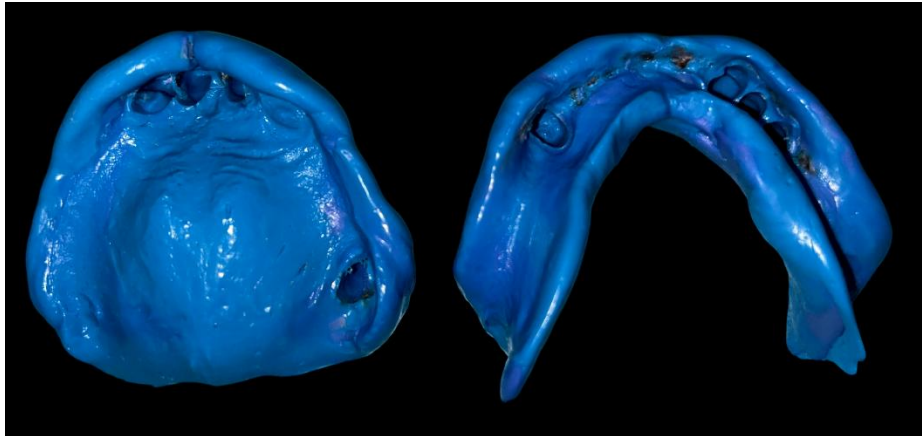
**Figure 2:** Special trays – maxillary & mandibular – occlusal view



**Figure 3:** Border Moulding

### Final Impressions

Definitive impressions were made using light-bodied material (Zhermack Elite Hd+ Light Body, Zhermack SpA, Italy) (Figure 4) to ensure optimal detail reproduction and dimensional stability. The master casts were poured in type IV gypsum product, i.e., die stone (GypRock stone, Rajkot, Gujarat, India) following standard laboratory protocols.



**Figure 4:** Final impressions – maxillary & mandibular

### Jaw Relation Records

After the definitive casts were obtained, temporary denture bases and occlusal rims (Figure 5) were fabricated. Orientation jaw relation was recorded using a facebow (Hanau™ Springbow, Whip Mix, Kentucky, USA), followed by transfer to the semiadjustable articulator (Hanau™ Wide-Vue, Whip Mix, Kentucky, USA). Tentative jaw relations were carried out following the facebow transfer. After recording the centric relation record (Figure 6), the casts were mounted on a semiadjustable articulator.



**Figure 5:** Occlusal rims – maxillary & mandibular



**Figure 6:** Jaw relation record

### Teeth Arrangement and Try-In

Artificial acrylic teeth were selected according to the patient's age, facial characteristics, and esthetic requirements. Wax trial dentures were fabricated and evaluated intraorally (Figure 7) for esthetics, phonetics, occlusion, and patient acceptance.

Necessary modifications were incorporated following the trial appointment.



**Figure 7:** Waxed up Try in

### Denture Processing

The dentures were processed using heat-polymerized polymethyl methacrylate resin following conventional laboratory procedures. Finishing and polishing were completed before insertion.

### Denture Insertion

The maxillary and mandibular acrylic treatment partial dentures were inserted and evaluated for retention, stability, extension, occlusion, and esthetics (Figure 8). Pressure-indicating paste was used to identify pressure spots, which were relieved accordingly.



**Figure 8:** Final removable partial dentures – in patient's mouth

### Post-Insertion Care

The patient was instructed regarding:

- Denture insertion and removal.
- Oral and denture hygiene maintenance.
- Adaptation period and expected initial discomfort.
- Avoidance of continuous denture wear during sleep.
- Scheduled follow-up visits.

At subsequent review appointments, the patient reported improved mastication, enhanced facial appearance, and increased confidence during social interactions (Figure 9).



**Figure 9:** Post operative view

## **DISCUSSION**

The preservation of remaining natural teeth in partially edentulous patients offers significant biological and functional advantages. Retained teeth contribute to proprioception, preservation of alveolar bone, maintenance of periodontal ligament function, and enhanced prosthesis support.<sup>6</sup>

Patients presenting with severely reduced dentition represent a prosthodontic challenge because of compromised support, altered occlusal relationships, and reduced masticatory efficiency. In such situations, interim prostheses play a critical role in restoring function and evaluating the patient's adaptation before definitive rehabilitation.<sup>7</sup>

Acrylic removable partial dentures have long been utilized as interim prostheses due to their simplicity, low cost, ease of fabrication, and ability to replace multiple missing teeth within a short period.<sup>8</sup> They are particularly useful when future treatment planning is uncertain or when additional clinical procedures are anticipated.

The present case involved only eight remaining teeth distributed unevenly between the maxillary and mandibular arches. Such a clinical situation often results in loss of posterior support and compromised occlusal stability. The treatment partial dentures restored missing teeth and soft tissue contours, thereby improving facial support and esthetics.

McGarry et al. emphasized that prosthodontic rehabilitation should focus on restoring function and improving quality of life rather than merely replacing missing teeth.<sup>9</sup> Interim prostheses assist clinicians in assessing vertical dimension, occlusal relationships, phonetics, and patient acceptance prior to definitive treatment.

Acrylic partial dentures also offer advantages in terms of repairability and modification. Additional teeth can be incorporated if further extractions become necessary, making them suitable transitional prostheses.<sup>10</sup> However, they possess limitations including reduced durability, increased plaque accumulation, and potential tissue irritation when compared with cast metal frameworks. Therefore, regular maintenance and follow-up are essential.

In the present case, the treatment objectives of restoring esthetics, speech, mastication, and patient confidence were successfully achieved. The prostheses also serve as a transitional phase before consideration of definitive prosthodontic rehabilitation.

## CONCLUSION

Treatment partial dentures remain a valuable treatment option for patients with extensive partial edentulism and severely reduced dentition. The use of maxillary and mandibular acrylic removable partial dentures in the present case successfully restored esthetics, phonetics, and masticatory function while providing an economical and non-invasive solution. Such prostheses can serve as effective transitional restorations and assist in planning future definitive rehabilitation.

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### CITATION

Arpit S., Ankit S., Annupriya S., Jyotsana S., & Sarthak M. (2026). Prosthodontic Rehabilitation of a Partially Edentulous Patient Using Maxillary and Mandibular Acrylic Treatment Partial Dentures: A Clinical Case Report. In Global Journal of Research in Dental Sciences (Vol. 6, Number 3, pp. 14–20).

<https://doi.org/10.5281/zenodo.20829962>