TEMPORARY FLEXIBLE REMOVABLE PARTIAL DENTURE: A CLINICAL REPORT

ABSTRACT
Missing tooth, replacement a must and it becomes best if a denture patient wearing is comfortable. Innovation of flexible dentures, flexibility combined with strength and light weight provides total comfort and great looks. Features of these prostheses are good retention, aesthetically superb and virtually invisible, excellent strength, easy in handling, no involvement of metal, noninvasive procedures, comfort. All of these factors become important when producing long-term provisional prostheses during implant or complex restorative cases, or when used for permanent removable appliances. This case study presents that the patient with long missing dentition in upper anterior region can be temporary treated esthetically and comfortably with flexible removable partial dentures.

Key words: Flexible Denture, Provisional Prostheses, Removable Partial Denture.

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INTRODUCTION

When tooth extraction is unavoidable the resulting mutilation causes patients a great deal of anxiety that tends to be even more intense when esthetic appearance is compromised. This problem can be solved with making temporary denture. After the surgical area has healed this temporary denture is replaced by permanent denture. If the missing area requires long span fixed partial bridge, the edentulous patient can treated with a removable partial denture (RPD). There are several types of RPD’s. All of them use standard denture teeth as replacements for the missing natural teeth. The differences between them are the materials used to support the denture teeth and retain the RPD in the mouth.

The application of nylon-like materials to the fabrication of dental appliances has been seen as an advance in dentistry. This material generally replaces the metal, and the pink acrylic denture material used to build the framework for standard RPD’s.

Thermoplastic materials for dental prostheses, Valplast (Valplast Int. Corp.-USA) and Flexiplast (Bredent - Germany), were first introduced to dentistry in the 1950s. Both materials were similar grades of polyamides (nylon plastics). Since their introduction, there has been a continued interest in thermoplastic dental materials. Acetal was first proposed as an unbreakable thermoplastic resin RPD material in 1971. It was during this period that Rapid Injection Systems developed the first tooth-colored clasps with a thermoplastic fluoropolymer. In 1992 The Flexite Company developed and patented the first pre-formed tooth-color clasps known as Clasps-Eze. This product, made of a nylon material, is available in pink and clear color shades and currently sold worldwide.

Thermoplastic resins are used for a broad variety of applications from removable flexible partial dentures preformed partial denture clasps, fiber reinforced fixed partial dentures, provisional crowns and bridges, obturators and speech therapy appliances, orthodontic retainers and brackets, impression tray and border molding materials, occlusal splints, sleep apnea appliances, and implant abutments.

Thermoplastic resins and co-polymers have many advantages over conventional resin systems:

Some of these advantages include:

1. Cosmetically elegant; no metal clasps and can also be combined with natural colour clasps.
2. Metal, monomer and acrylic free
3. Can be used for patients allergic to conventional acrylic restorations.
4. Lightweight, strong and durable
5. Flexible dentures are almost unbreakable and can be made thinner than traditional acrylic dentures, providing more comfort and confidence for the patient.
6. Flexible dentures have just the right degree of flexibility and will not warp or become brittle.
7. The material used can provide translucency that blends with the natural tone of tissue for a more natural appearance.

All of these factors become important when producing long-term provisional prostheses during implant or complex restorative cases, or when used for permanent removable appliances.

This clinical report describes an esthetic flexible RPD (deflex) used for the temporary treatment of a patient with long missing dentition in upper anterior region.

CASE REPORT

A 24-year-old woman was referred to the Dentistry Faculty (Department of Prosthodontics) for the replacement of the missing maxillary anterior teeth (Figure 1). The patient’s main complaint was the high level of embarrassment caused by congenitally missing anterior teeth. A panoramic radiograph revealed no development of primary or secondary teeth/tooth germs (Figure 2). Clinical and radiographic examination was revealed that there were no restorations, caries with abutment teeth so implant supported fixed prosthesis were planned for the edentulous spaces.

The patient underwent implant operation and four dental implants were placed in both sides of maxillary canine and lateral incisor regions. Twenty one days after the operation, the soft tissues appeared healthy without any sign of inflammation. Initial impressions of mandible and maxilla were made with an alginate for the construction of study casts. Interim RPDs were fabricated to provide immediate esthetic results, re-establish the occlusion by replacing missing teeth, and allow the patient to become familiar with removable dentures before delivery of the long interim provisional prostheses. To mount the maxillary master cast, an acrylic template was built up with the immediate provisional removable dentures in position.
muffle has a hole in its structure, adapted to the nozzle of a cylinder in which the aluminum capsule containing the flexible resin is melted. After the prosthesis was fabricated, the flexible temporary maxillary RPD was checked intraorally. The occlusal and other adjustments were made and then the prosthesis was send to the laboratory for finishing and polishing (Figure 3). Patient really appreciates the tooth colored esthetics. An acetal single cast partial denture that is color matched for the patient is both esthetic and the flexibility aids in retention and comfort (Figure 4).

**DISCUSSION**

Thermoplastic resins have been used in dentistry for over 50 years. During that time the applications have continued to grow, and the interest in these materials of both the profession and the public has increased. Patient success is high since these appliances can be extremely aesthetic. Flexible resins are mainly indicated for the construction of RPD in anterior region for esthetic requirements like translucency and natural appearance. One must remember that careful attention must be paid to the basic concepts of diagnosis and design, and a different approach to clasp design is essential.

Acetal as a homo-polymer has good short thermo-mechanical properties, but as a co-polymer has better long-term stability. Acetal resin is very strong, resists wear and fracturing, and is quite flexible. It is rigid enough for a long time clinical service. An important characteristic of this material is its flexibility, enabling the denture to have an excellent and more comfortable insertion. These characteristics make it an ideal material for pre-formed clasps for partial dentures, single pressed unilateral partial dentures, partial denture frameworks, provisional bridges, occlusal splints, and even implant abutments. Acetal resin resists occlusal wear and is well suited for maintaining vertical dimension during provisional restorative therapy. However thermoplastic acetal resin is very expensive as a provisional restorative material.

Ritterbeck relates that the absence of porosity as a result of monomer release is reflected in improved hygiene, since biofilm adherence and bacterial calculus formation are hindered. The denture made with flexible resin is lighter than the denture made of conventional acrylic resin, which means more comfortable for the patient. Resin bonded fixed partial denture can be used for temporary treatment before replacement the definitive

*Fabrication of long term temporary thermoplastic resin RPD:*

The first impression of the maxilla and mandible were made with a irreversible hydrocolloid (Kromopan, Sesto Fiorentino, Firenze, Italy) to acquire the anatomic molds in common plaster. The maxillary mold was outlined, and there movable temporary partial denture was planned on this maxillary cast. Rests were made on the maxillary teeth to support the denture. Radiographic examination of abutments revealed that these teeth had good root formation and enough root lengths to set clasps. After obtaining the working models, the retentive regions were relieved. The bases were made with a wax roll, and a mold of the facial arch was taken. The maxillary model was mounted in an articulator then the mandibular model was mounted in the articulator the maxillary-mandibular relationship was checked. The prosthetic teeth shade was selected, and then the teeth were mounted in the laboratory. After mounting teeth, the denture was checked intraorally. The temporary flexible maxillary prosthesis was included in a differential metal muffle to be adapted to the injection machine. The
implant supported prosthesis. The resin bonded fixed partial denture is not new, but there is still some concern about the longevity of this type of prosthesis and totally untested. A review of about 60 on the clinical survival of resin bonded fixed partial dentures put the 4-year survival rate at 74%. The patient in this case report had a long edentulous space in anterior region to make temporary fixed resin bonded partial denture. Because of the risk of cementation failure, we did not use the adhesive bridge. Also a conventional RPD was not preferred as a temporary prosthesis because of the metal clasps which cause esthetics problem in anterior region.

CONCLUSION

In the present case, flexible framework RPD has served as a successful until the permanent fixed prosthesis have restored in anterior esthetic region and increased patient’s the quality of life in this interim. With the development of new properties, elastomers and copolymer alloys, there are certain to be additional new applications for thermoplastic resins in the future, to help patients with damaged or missing teeth.

REFERENCES


