

Flexible denture - A flexible substitute for Rigid Denture.

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Abstract

In an era of implants and fixed prosthesis, removable partial dentures are still a treatment of choice for a wide range of patients and clinicians. As every other treatment option, removable prosthesis also has some disadvantages. But with introduction of flexible partial dentures, many of the disadvantages of conventional acrylic and cast partial dentures are taken care of. Hard and soft tissue undercuts are often encountered within the fabrication of dentures in partially as well as fully edentulous arches. Although alteration of dentures by different relining material can serve the aim, however the different denture base materials stands in superior position compared to alternative choices. Partially edentulous patients with challenging conditions like abused ridges, allergy to denture resins, undercuts due to angulated remaining teeth, cancerous lesions and cleft palate pose a great challenge for the fabrication of a successful removable partial denture. Flexible denture offers a simpler and cost effective treatment for the oral rehabilitation of such cases. This case study presents that the patient with long missing dentition in upper and lower arch can be temporary treated esthetically and comfortably with flexible removable partial dentures.

Key Words: *Partially edentulous, Flexible removable prosthesis, Undercuts.*

Introduction

The fabrication of a prosthesis for the partially edentulous arch encounters a special challenge where soft and hard tissue interferences, multiple paths of placement, tilted teeth and deranged occlusion complicate the treatment plan. Oral diseases like carcinomas and cysts require partial or complete removal of involved structures which further challenges the prosthesis design. Important factors like number of abutments, periodontal health and angulations of the abutments, length of edentulous span, condition of overlying mucosa, quantity and quality of bone in edentulous area determine the selection of prosthesis for such patients. Additionally, patient requirements, expectations and affordability of the treatment procedure can't be neglected.

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Unilateral or bilateral undercuts are frequently encountered and may complicate successful fabrication of denture prosthesis. Management of these situations conventionally includes alteration of the denture prosthesis bearing area, adaptation of the denture base, careful planning of the path of insertion and the use of resilient lining material. An alternative denture prosthesis design in which optimal flange height and thickness can be achieved is by using flexible denture base material. It is nylon based thermoplastic material that does not sacrifice function and preserves aesthetics. Soft dentures are an excellent alternative to traditional hard-fitted dentures. Traditionally relining dentures with a soft base increases comfort at the cost of chewing efficiency. To make up for the loss of chewing efficiency, denture wearers would use dentures adhesive which causes its own problems. The aim of this report is to present the management of a patient with Flexible Denture.

Case Report

A 58 years old male patient was reported to department of Prosthetic dentistry, R.D.C., PIMS., Loni . His chief complaint was to replace his missing upper and lower

teeth. The patient had lost his dentition due to progressive periodontitis . Appointments were scheduled.

Intraoral and Radiological examination

Intraoral examination revealed missing 16, 26 in maxillary arch and missing 35,36,37,46,47 in mandibular arch.(Fig 1,2.) Radiographic examination revealed that the condition of the remaining teeth was good & can be used. After thorough diagnosis and necessary investigations like radiographs and clinical findings, treatment was planned to fabricate the flexible partial denture.

Fabrication of prosthesis



Fig.1.Pre-operative Maxillary Arch.



Fig 2.Pre-operative Mandibular Arch..

Impression of upper arch and lower arch was made with irreversible hydrocolloid impression material(DPI). Special tray was fabricated for mandibular arch, border moulding was done and final impression of lower was made with Zinc oxide eugenol Impression paste. Final cast was retrieved from final impression. Record base & wax occlusal rim was fabricated. Jaw relation was recorded & mounted on the articulator. Teeth arrangement was done.Denture was processed in flexible denture material (Fig 3). Flexible partial Denture was placed in patient's mouth . Occlusion and extensions were checked (Fig 4,5). Recall appointments were scheduled after one day, one week and two weeks and any minor adjustments were made up to patient satisfaction.



Fig.3. Final Flexible Partial Denture



Fig. 4.-Post-operative Maxillary Arch,



Fig 5.Post-operative Mandibular Arch.

Discussion and Summary

The most commonly used material for the fabrication of complete / partial dentures so far has been PMMA. This material is not ideal in every respect and it is the combination of virtues rather than one single desirable property that accounts for its popularity and usage. In spite of various advancements and research in dental materials, training, and techniques across the world, the fracture, foul smell, and allergy to PMMA could not be avoided[1].Patients, who start wearing dentures at an early age due to various reasons, often get frustrated and start searching something better available for them.

Although, cast partial denture has been a viable substitute, the requirement of high skill in preparation, technique-sensitive casting procedure, heavy weight, and visibility of metal clasp made it more difficult and cumbersome alternative and net results have not been encouraging[2].

The most recent preference in denture materials has been the use of nylon-like material for the fabrication of removable dental appliances. This material generally replaces the metal and the methyl methacrylate denture base material used conventionally to build the framework for standard removable partial dentures. It is nearly unbreakable, esthetically acceptable being colored like

the gums, can be fabricated quite thin, and can form not only the denture base but the clasps also [3]. Since, the clasps are built below the height of contours of teeth, they are practically indistinguishable from the gums that normally surround the teeth. It is much easier for the dentist to work with these materials while adjusting the prosthesis in patient's mouth, using slow-speed grinding tools. Also, the post insertion maintenance is easy, which makes it a very "user- friendly" denture base material [4,5]. This new-generation nylon-based thermoplastic material has a predictable long-term performance. It is stable in nature and provides resistance to polymer unzipping. It also has a high creep resistance and fatigue endurance along with the excellent wear characteristics and solvent resistance. It has no porosity, no biological material build-up, and stains[6].

The translucency of the material picks up underlying tissue tones, making it almost impossible to detect in the mouth [7].

Flexible dentures exhibit viscoelastic behaviour that lead to improvement in masticatory function and patients comfort compared with hard dentures .Flexible dentures show little effects on the mucosa of denture bearing area and little changes on the mucosa. Denture bearing area of flexible denture are more healthy with less tissues changes compared with traditional acrylic denture. Flexible removable partial dentures can adapt to the shape and movement of mouth and for this reason, these are far more comfortable to wear[8]. There are no metal/wire clasps used in Flexible partial denture. The clasps are also made up of flexible thermoplastic material with excellent esthetics. Different clasp designs are used[9]. Patients with maxillary tuberosity undercuts often pose challenges in denture fabrication. Flexible denture flanges for patients exhibiting undercut tuberosities can solve this problem[10].

Conclusion

No product can solve all the problems associated with partial prosthesis,nor can it meet all the requirements of a challenged mouth. The key is to solve and address as many problems and needs as possible in a simple way that is affordable for the patient. An effort has been made to focus on improvements over conventional partial denture in aesthetics,function, durability, and longevity of a Partial Denture made from a Flexible denture material.Flexible partial denture may become a simpler

answer to complex partially edentulous oral conditions. This treatment modality is not expensive and is helpful for the patients with poor economical background in the rural region .With Proper Care & prosthodontic treatment the patient can enjoy a relatively normal life.

References

1. Anusavice KJ. 10th ed. Philadelphia: WB Saunders; 1996. Phillips' Science Of Dental Materials; p. 238.
2. Jagger DC, Harrison A, Jandt KD. The Reinforcement of Dentures. J Oral Rehabil. 1999;26:185–94.
3. Stafford GD, Huggett R, MacGregor AR, Graham J. The Use of Nylon as Denture Base Material. J Dent.1986;14:18–22.
4. Munns D. Nylon as a Denture Base Material. Dent Pract. 1962;13:142.
5. Nishigawa G, Matsunaga T, Maruo Y, Okamoto M, Natsuaki N, Minagi S. Finite Element Analysis of the Effect of the Bucco-Lingual Position of Artificial Posterior Teeth under Occlusal Force on the Denture Supporting Bone of the Edentulous Patients. J Oral Rehab. 2003;30:646–52.
6. Dhiman RK Col, Roy Chowdhury SK. Midline Fracture in Single Complete Acrylic vs Flexible Dentures. MJAFI. 2009;65:141–5.
7. Dr. Sunitha N Shamnur, Dr. Jagadeesh KN,Dr. Kalavathi SD,Dr. Kashinath KR2. "Flexible dentures" – an alternate for rigid dentures?Journal of Dental Sciences & Research 1:1: Pages 74 – 79.
8. Ghada M. Mustafa BDS, MSc; Mohammed A. Abed AlBaki BDS, MSc.;Sahar A. Naji BDS, MSc; Comparing the Effects of Denture Base Materials on Hygiene of Mucosal Denture Bearing Area. Tikrit Journal for Dental Sciences 1:2013:71-76.
9. Paul Kaplan, MSci, DDS, MSD Flexible Removable Partial Dentures: Design and Clasp Concepts. Nov. 2008, Dentistry today 6.Dr.Sunitha N Shamnur1, Dr.Jagadeesh KN1, Dr.Kalavathi SD1, Dr.Kashinath KR "Flexible dentures" – an alternate for rigid dentures? Journal of Dental Sciences & Research 1:1: Pages 74 – 79
10. Lowe LG.Flexible denture flanges for patients exhibiting undercut tuberosities and reduced width of the buccal vestibule: a clinical report. The Journal of Prosthetic Dentistry, 2004;92(2):128-131.