Case Report

European Journal of Prosthodontics

Access this article online

DOI: 10.4103/2347-4610.131983

Website: www.eurjprosthodont.org

Quick Response Code:

Conservative approach for the treatment of geriatric edentulous patient with grossly resorbed mandibular ridge

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ABSTRACT

The construction of complete denture prosthesis for a geriatric patient with grossly resorbed mandible has always been a challenge to our profession. Poor mandibular ridges accompanied by thin and atrophic oral mucous membrane leads to increased bruising and damage under occlusal loading. Nutrition and diet play an important role in all edentulous patients, but particularly with the geriatric patient. This case report presents a conservative prosthodontic option that includes a modified final impression technique using admixed compound followed by permanent lining of the mandibular denture with a heat-cure silicone-based resilient soft liner along with dietary counseling.

KEYWORDS: Admixed technique, dietary counseling, Molloplast® B, resilient soft liner

Introduction

Gross mandibular alveolar resorption is a localized pathologic process, not reversed by removal of causative factors, despite the internal bone remodeling and deposition that goes on even in the presence of pathologic external osteoclastic activity responsible for the loss of bone substance.[1] Problems associated with the prosthesis is mainly due to decreased area available for support, encroachment of surrounding mobile tissues onto the denture borders, loose and uncomfortable dentures, and all this is exacerbated by poor neuromuscular control and faulty construction of denture.

Implants are a good option but are mostly avoided because of geriatric patient's systemic condition, financial consideration, or the anxiety associated with surgical procedure. Furthermore, endosseous implants need adequate height of alveolus and cancellous bone rather than compact bone for its support. Management of geriatric patient involves correct selection and understanding of denture construction technique as well as proper knowledge of the psychologic and nutritional make-up of the patient.

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Case Report

This case report describes treatment of a 74-year-old female patient with a grossly resorbed mandibular ridge [Figure 1]. She was a complete denture wearer since 30 years and had complain of loose and hurting lower denture. After thorough systemic and clinical evaluation, a new set of complete dentures were planned. A treatment plan with modification in the impression technique, selection of teeth set, and permanent soft liner in the mandibular denture was formulated and patient consent was taken.

Primary impressions were taken with alginate (Tropicalgin, Zhermack, Italy) as it applies minimum pressure to the underlying tissues. Special trays, without spacer, were constructed from autopolymerizing acrylic resin (DPI, Mumbai, India) and checked for correct extension in the oral cavity. Final impression of the lower arch was made with controlled pressure using admixed compound. This compound had red impression compound (Y-Dents, MDM corporation, Delhi, India) and green impression compound (DPI, Mumbai, India) in the ratio of three parts by weight of the red compound to seven parts by weight of the green stick compound. Both materials were placed in bowl of water at 60°C and kneaded into a homogenous mass. The mix again softened in a water bath at a temperature of 68-70°C. The material was loaded on

the tray, preformed, heat-soaked in warm water for 30 s and inserted into the relaxed mouth. All routine border molding movements were carried out with an additional extension in the sublingual crescent area. Impression was removed after 30 s and placed in cold water [Figure 2]. A final wash impression was not required.[2] A master cast was poured in dental stone III (Goldstone, Asian Chemicals, India). A temporary denture base of autopolymerizing acrylic resin with a thickness of approximately 2 mm was fabricated over the master cast. This served the purpose of a spacer for the future application of silicone-based soft liner material to the acrylic denture base. Maxillomandibular relations were recorded. Non-anatomic teeth set (Dentek, Pune, India) was used and tried in patient mouth. After the try-in, the wax pattern with the spacer was invested into the flask. Dewaxing was then carried out for approximately 4 min in boiling water. Wax residues removed after opening the flask. Alginate-based separating medium (Deepti Dental Products, Ratnagiri, India) was applied over the plaster surfaces in the flask as well as over the master cast and spacer was repositioned. Heat polymerizing acrylic polymer (Ashvin, Delhi, India) was mixed with monomer according to manufacturer's instruction. During packing of acrylic material, a polyethylene foil was placed between the spacer and the heat cured acrylic resin. The flask was put in cold water and brought to boil for approximately for 30 min. Flask was allowed to cool down and opened to remove polyethylene foil and spacer. Alginate-based separating medium was applied over the master cast. Polyethylene foil was again placed over the prepacked acrylic and silicone soft liner (Molloplast® B, Detax, Germany) was taken with clean spatula from the container and placed over the polyethylene foil. Trial closure was done and excess material of soft liner and polyethylene were removed. Flask was closed again and placed in cold water, which was brought to boil slowly, for approximately 2 h. Flask was allowed to cool down and opened. Denture was removed, trimming of acrylic resin was done with acrylic trimmers and stone, while excess soft liner was trimmed with special grinding sleeves and discs. Polishing of acrylic resin was done with pumice and buff, while soft liner polishing was done with Lustrol gloss varnish (Lustrol, Detax, Germany). Finished upper denture and lower denture with soft liner were delivered [Figure 3].

Discussion

Success in geriatric dentistry is accomplished by building up patient's confidence. Treating elderly with patience and understanding and planning short morning visits is advantageous. Basic knowledge of the nutritional needs of the elderly and their daily diet chart can help to create a strong foundation for the prosthesis through proper diet counseling [Figure 4].

Denture constructed should cover broad area with maximum extension to provide maximum retention, stability, and support. The controlled pressure used in the admixed impression technique results in uniform load distribution over the entire denture bearing area. Extension of the mandibular denture over the resting tissues of the sublingual crescent seal area completes the border seal and increases the surface area covered by the mandibular denture, resulting in

Figure 1: Grossly resorbed mandibular ridge

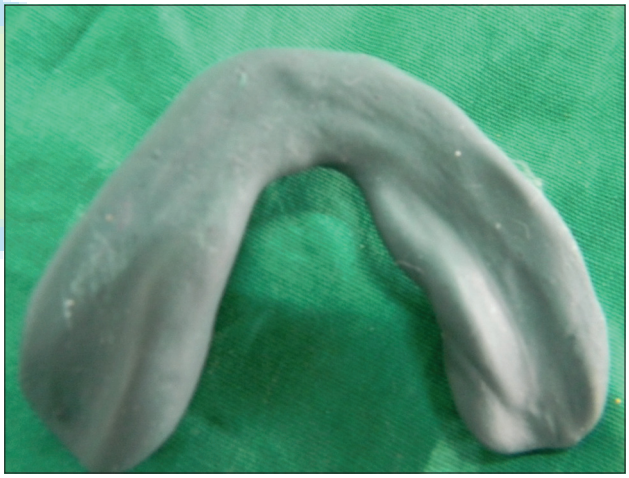

Figure 2: Final mandibular impression with admixed compound

Figure 3: Lower denture with permanent silicone soft liner

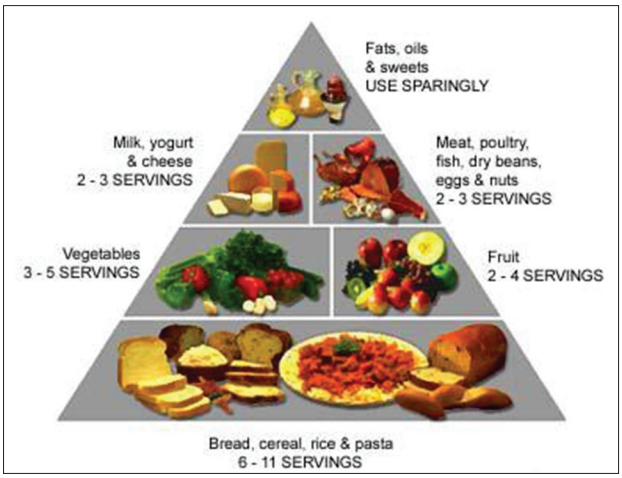

Figure 4: Food pyramid

greater retention by allowing the tongue to aid in maintaining the denture in position.[3] One of the functional problem associated with flat mandibular ridge is of instability. Non-anatomic teeth used, rectified this problem to a certain extent by reducing the lateral forces. Another problem is of inability of the residual ridge and its overlying tissues to withstand masticatory forces.[4,5] The decreased capability of thinned mucosa to support vertical load can be improved by using soft lining material on denture fitting surface. Heat polymerizing silicone-based permanent soft liner material serves for a long-time, making the denture wears more comfortable for the patient. Simultaneous polymerization of acrylic denture base material and the soft liner ensures rapid laboratory procedure avoiding the need for a second flasking. It also eliminates the chances of dimensional changes associated with reflasking of a cured denture. Prepolymerization of the acrylic resin prevents the possible reactions between the silicone liner and the acrylic resin monomer. The stiffness of this prepolymerized resin prevents its distortion or deformation by the silicone-based soft liner material during packing. Correct processing technique, optimum thickness of 2 mm, and proper home care results in longevity of silicone-based soft liner material.[6-10]

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How to cite this article: Shah RJ, Shah SG, Chauhan V. Conservative approach for the treatment of geriatric edentulous patient with grossly resorbed mandibular ridge. Eur J Prosthodont 2014;2:67-9.

Source of Support: Nil, **Conflict of Interest:** None declared.