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Saudi Dental Journalwww.ksu.edu.sa
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CASE REPORT

Management of the flabby ridge using a modified window technique and polyvinylsiloxane impression material

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Received 15 September 2017; revised 18 October 2017; accepted 22 October 2017

KEYWORDS

Flabby tissue;
Fibrous tissue;
Window technique;
Polyvinylsiloxane

Abstract Flabby ridge is a common clinical finding affecting the alveolar ridges of the mandibular or maxillary arches. The anterior region of maxilla is the most affected area in edentulous patients. Dentures on flabby ridges have compromised stability, support, and retention unless adequate measures for its management are employed. Methods applied for flabby ridge management, include surgical removal and augmentation, special impression techniques, balanced distribution of occlusal loads and implant therapy. Special impressions often involve window technique for static impression of flabby area, which present multiple challenges. The purpose of this technique report is to present a modified window technique for the impression of anterior maxillary flabby tissues for improved and controlled application of polyvinylsiloxane impression material that are routinely available in dental practice.

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1. Introduction

The objective of complete denture prosthodontics is restoring esthetics, comfort and function by replacement of missing dental and alveolar structures using a stable prosthesis. Preferably, the residual ridge is overlaid with 1.5–2 mm thickness of the masticatory mucosa for adequate soft tissue support for the denture (Desjardins and Tolman, 1974). Flabby ridge can be defined as a mobile soft tissue which is located on the

superficial aspect of the alveolar ridge (Pai et al., 2014). Flabby ridge can also be called a displaceable ridge or a fibrous ridge. Studies have reported, approximately 5% of the edentate mandibles and 24% of the edentate maxillae to have flabby ridges (Lynch and Allen, 2006; Carlsson, 1998; Xie et al., 1997). Flabby ridges mainly arise when an edentulous ridge opposes natural teeth and is considered a feature of the combination syndrome when occurs in the anterior part of maxilla (Lynch and Allen, 2004; Kelly, 1972). In the presence of displaceable ridge, fabrication of a stable denture becomes an arduous challenge. Flabby ridges get easily displaced under occlusal forces owing to poor support, resulting in compromised denture retention as a consequence of loss of peripheral seal (Pai et al., 2014). According to MacEntee, support for the complete dentures is significantly compromised if the flabby ridge has more than 2 mm displacement under pressure

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Peer review under responsibility of King Saud University.



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<https://doi.org/10.1016/j.sdentj.2017.10.004>

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(Bindhoo et al., 2012; MacEntee, 1996). Retention, support and stability of complete dentures is compromised by flabby ridges unless the tissue is appropriately managed and manipulated by special impression techniques.

Multiple techniques for the management of flabby ridges have been proposed (Lynch and Allen, 2006). Surgical methods include removal of flabby ridge using scalpel surgery or by injecting a sclerosing agent prior to fabrication of complete denture (Pai et al., 2014). In addition, surgical ridge augmentation is also proposed in the management of flabby ridges (Desjardins and Tolman, 1974; Pai et al., 2014; Lynch and Allen, 2006; Carlsson, 1998; Xie et al., 1997; Lynch and Allen, 2004; Kelly, 1972; Bindhoo et al., 2012; MacEntee, 1996). However, surgical removal of the flabby tissue increases the bulk of denture material and eliminates stress absorbing soft tissues, leading to trauma of the underlying tissues (Crawford and Walmsley, 2005). Furthermore, conventional prosthodontic methods such as, special impression techniques and balancing of occlusal loads are more frequently employed in the management of dentures with flabby ridges (Pai et al., 2014; Crawford and Walmsley, 2005; Liddlelow, 1964).

Several impression techniques are proposed in the literature for recording flabby ridges with the minimum amount of tissue displacement (Bansal et al., 2014). These techniques include, muco-compressive (displacive, entire denture bearing tissues are displaced), muco-static (non-displacive, denture bearing tissues are not displaced) and selective pressure impression (denture bearing tissues are selectively displaced) (Lynch and Allen, 2006; Appelbaum and Rivetti, 1985; McCord and Grant, 2000). There has been a lot of controversy about the most suitable impression technique for flabby ridges (MacEntee, 1996), and recording tissues at rest is repeatedly found in the literature and has gained acceptance by many clinicians (MacEntee, 1996; Boucher, 1951; Klein and Broner, 1985; Hyde et al., 2008; Devan, 2005; Zinner and Sherman, 1981). When utilizing this concept (mucostatic impression technique), double spacers, multiple relief holes, or a window tray technique has been used where the flabby tissue is located (MacEntee, 1996; Boucher, 1951; Klein and Broner, 1985; Hyde et al., 2008; Devan, 2005; Zinner and Sherman, 1981). Magnusson et al., (Xie et al., 1997) presented an impression technique using two different impression materials in a custom tray. Materials applied included impression plaster on the flabby ridge and zinc oxide and eugenol over healthy tissues (Magnusson et al., 1986). Similar technique was also reported by Liddlelow (Bansal et al., 2014). In another study by Osborne, two different impression materials using two separate custom trays were utilized (Osborne, 1964). Moreover, a technique using impression compound in custom tray followed by a wash impression using zinc-oxide-eugenol was described by Watt and McGregor (Watt et al., 1986). They claimed, it would reduce the movement of denture base under occlusal loads. This technique was recently reevaluated with the use of polyvinylsiloxane (PVS) impression materials by Lynch and Allen (2003). Earlier, a window impression technique was proposed by Watson, to minimize the movement of flabby ridge during function. They created a window in the custom tray over the flabby tissues anteriorly, and used the impression plaster for the flabby ridge and zinc-oxide-eugenol impression paste for the healthy denture bearing area (Watson, 1970). However a possible limitation of window technique is failure to control and uniform application of impres-

sion material. The purpose of this technique paper is to present a modified window technique for flabby tissues with better material control and application of PVS impression material.

2. Technique report

A 65 year old male patient reported to the prosthodontic clinic at School of Dentistry, with a complain of ill-fitting maxillary complete denture from a year. On intra-oral examination, an edentulous maxillary arch with severely displaceable anterior flabby ridge was observed (Fig. 1). It was planned to provide the patient with a new maxillary conventional complete denture. A special window impression technique using PVS material for the definitive impression was considered. The technique is as follows,

- 1- A Primary impression was made with alginate (Zelgan, Dentsply) material using edentulous stock trays.
- 2- A maxillary cast was poured and the flabby ridge area was marked, (Dental stone, Type III, Kulzer) followed by fabrication of custom tray [spaced (2 mm), tissue stops] (Triad, Tru tray, Denstsply) with two posterior handles (Fig. 2).



Fig. 1 Intraoral image of the maxillary flabby ridge.



Fig. 2 A custom tray was fabricated on the maxillary cast with two posterior handles with.

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