



Management of the Flabby Ridge: A Beleaguer for the Prosthodontist!

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Editorial

Flabby ridge is defined as a hyperplastic and movable soft tissue, which becomes displaceable due to deposition of the fibrous tissue. Primarily, flabby ridge occurs due to replacement of alveolar bone by a superficial area of mobile soft tissue. Flabby ridge is also known by other names like an excessively movable, displaceable, and fibrous ridge. It commonly affects upper (maxillary) and lower (mandibular) anterior edentulous region but is frequently associated with the upper (maxillary) anterior region. The prevalence of flabby ridge is found to be 24% in the edentulous maxilla and 4% in the edentulous mandible [1-4].

A number of reasons are linked to the development of the flabby ridges. Historically, flabby ridge in the upper anterior region was a feature of 'combination syndrome' as identified by Kelly in the year 1972. Patients with a totally edentulous maxillary arch opposing a distal extension situation in the mandibular arch are more likely to experience the flabby ridge. It can occur in patients not removing the dentures overnight i.e. long-term denture wearers [5]. It can also happen because of uncontrolled or unplanned tooth extractions. In literature, flabby ridges have also been found associated with an atrophic or a knife-edge ridge.

Histologically, the flabby or the fibrous tissue is composed of mucosal hyperplasia along with loosely arranged fibrous and dense collagen connective tissue.

Various therapeutic approaches are used to address the flabby ridges. This could encompass both surgical and non-surgical treatments. The surgical modality requires surgical removal

of the flabby tissue using a scalpel also known as surgical debulking prior to the prosthodontic therapy. Another option is to inject a sclerosing agent into the underlying soft tissue prior to prosthodontic operation to make it firm. The removal of the flabby ridge eliminates the vestibular area with a firm residual ridge but with an ultimate reduction in the stability of the complete denture (CD) [6-10]. The ridge augmentation procedures using bone grafts, platelet rich fibrin (PRF) procedures etc. can be undertaken but the prognosis of such procedures is still questionable. Apart from the surgical modality, implant retained fixed or removable prosthesis can be practiced as a treatment modality for patients with flabby tissues. In general, the availability of the bone is less in such situations. Both surgical as well as the implant procedures are not the favourable treatment options due to a number of reasons. This includes patient's age, medical status; will to undergo the surgical treatment, risk of surgical complications, dental implant failures, predictability of the treatment, time involved in completion of the procedure, inconvenience, discomfort, and economics involved [11,12]. Moreover, the surgical removal also increases the overall bulk of the conventional material used for the construction of a complete denture. Surgical removal also tends to reduce the thickness of the underlying mucosa which is stress absorbing further leading to trauma to the underlying tissues. This makes conservative management as the choice of treatment. The non-surgical modality also known as the prosthodontic modality involves the conventional prosthodontics without the surgical intervention. As per the prosthodontist's modality, it is truly said that a poor ridge is better than no ridge. This involves fabrication of a complete denture over the flabby ridge using different impression materials and

techniques. Apart from the various impression approaches, balanced occlusion should be the choice of occlusal scheme in managing the cases with flabby tissues [13].

Conventionally, impression making leads to generation of various forces, which further leads to displaceable or mobile tissues. This can be problematic in the unconventional situations of a flabby tissue overlying a normal denture bearing area; particularly, when the conventional impression making protocol is followed. In such situations, the flabby tissue is compressed leading to a rebound phenomenon & ultimate dislodgement of the denture [14,15].

A variety of impression techniques and materials have been discussed in the literature. The main aim of any impression material or technique is to record the flabby tissue in a way to take adequate support from the tissue and at the same time not displacing it.

While considering the various impression techniques to record the flabby ridges, it becomes significant to know that one of the classification for impressions in conventional CD remains the same as in unconventional cases like the flabby ridges i.e. mucocompressive, mucostatic, and selective pressure impression. Mucocompressive technique involves recording the tissues under compression. This will lead to fabrication of final CD ultimately compressing the underlying soft tissues resulting in an unstable & non-retentive denture. To overcome such limitations, the use of mucostatic or minimally displacive impression technique was proposed. This technique helps to record the tissues in close adaptation or rest leading to fabrication of final CD with close adaptation to the underlying soft tissues at rest. Theoretically, the mucostatic impression technique is more retentive as compared to the mucocompressive impression technique. In routine practices, the 'selective pressure' technique is commonly followed and taken into consideration for the effective management of the flabby ridges.

Liddelow advocated the use of two custom trays with two different impression materials i.e. plaster for the flabby ridge and zinc oxide eugenol impression paste for the normal tissues. Osborne advocated the palatal splinting technique. The technique involved the use of two different impression materials and impression trays to record both the flabby as well as the normal tissue. Watson described the 'window impression technique' in which a window or opening is created in the custom tray to record the flabby tissues. Zinc oxide eugenol impression paste is used to record the normal tissues in a mucocompressive fashion followed by painting the flabby tissues with a low viscosity mix of 'plaster of Paris' and ultimately removal of the entire impression.

Watt and McGregor reported a technique where impression

compound is used as a material of choice on a modified custom tray for compressing the normal tissues. Wash impression with zinc oxide eugenol impression paste is made over this manipulated impression to record the flabby ridge. Lynch and Allen revisited this technique by using polyvinylsiloxane (PVS) impression material. Magnusson et al. described a technique using two different impression materials i.e. zinc oxide eugenol impression paste for the normal tissues and impression plaster for the flabby tissues. Crawford et al. described a two-tray impression technique involving fabrication of two trays and impression making using two different materials and then orienting them intraorally. Zafrullah Khan came with the idea of using single custom made impression tray with window at the flabby areas and taking impression of the flabby tissue using impression plaster. William H Filler described a technique using two trays. The first tray is fabricated over which the second tray is keyed. A low viscosity or light body impression material is used as a corrective wash material in the first tray. Hobkirk technique involved a single custom tray. Border moulding is done in the conventional manner followed by definitive impression with a heavy bodied addition silicone impression material. Wash impression is made with a low viscosity or light body impression material over the flabby areas. Jone D Walter advocated the use of zinc oxide eugenol impression paste for recording the normal denture bearing areas and the undisplaced fibres of tissue with impression plaster. Allan Mack 'Splint Method' technique was taken into account in case of the tissues being excessively and exceptionally flabby. A custom tray with heavy relief over the flabby tissue is fabricated. This is followed by manipulation and application of plaster in a thickness of about 3 mm over the flabby area and allowed to set. A second mix of plaster is then used to fill the second tray and the impression is made. The first or the initial coating of the plaster over the flabby areas thus acts as a 'splint' and is removed with the second impression. Some authors also advocated a functional impression technique using modified fluid wax. The purpose of using fluid wax is to capture the primary and the secondary load bearing areas without distortion of the residual ridge. Shum proposed a modified impression technique for management of excessive movable tissue. Labban N enumerated a modified window technique along with polyvinyl siloxane impression material for the management of the flabby tissues.

Recently, Ștefănescu CL, et al. [16] proposed a classification system based on its various locations and structures. Depending on location, the classification is upper frontal edentulous ridge (very often), upper fronto-lateral edentulous ridge (often), and maxillary tuberosity (rare), lower frontal edentulous ridge (very often), lower fronto-lateral edentulous ridge (rare), and retromolar pad (often). Based on the structure, the classification is hyperplastic, keratinized, with high antero-posterior and supero-inferior

thickness; atrophic, thin, small antero-posterior thickness and increased supero-inferior length; apparently histological normal appearance at inspection, but with increased mobility in all directions.

A flabby ridge has been a daunting task for the prosthodontist to achieve a stable as well as a retentive final prosthesis. It depends on the choice of impression material, impression technique, and the ideal occlusal scheme for prosthodontic rehabilitation of patients with flabby ridge. In literature, none of the impression technique or material is better over the other and subsequently there have been various controversies about the most suited impression technique for the management of the flabby ridges. However, fortunately, with the inclusion of the digital modalities i.e. CAD-CAM technology or digital dentures, the issues related to the proper recording of the flabby mucosa may become history. A combination of the mucostatic impression technique, double spacer, and multiple relief holes over the flabby ridge area has also been discussed in literature. It is true to say that the prosthodontic management of the flabby ridge is an arduous & herculean task rather a beleaguer for the prosthodontist.

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