

---

## PROSTHODONTIC SOLUTION OF FLABBY RIDGES USING WINDOW IMPRESSION TECHNIQUE

**Natasha Stavreva**

Faculty of Dentistry-Skopje, Department of Prosthodontics, University “St. Cyril and Methodius”-  
Skopje, N. Macedonia, natasha\_stavreva@yahoo.com

**Natasha Toseska Spasova**

Faculty of Dentistry-Skopje, Department of Orthodontics, University “St. Cyril and Methodius”- Skopje,  
N. Macedonia

**Abstract:** Fabrication of any dental prosthesis over the compromised residual alveolar ridge is challenging for any prosthodontist. A fibrous or flabby ridge is an easily displaced soft tissue that is not supported by alveolar bone. It is very often located in the anterior maxilla. This condition does not provide good support and stability for the denture. Several impression techniques have been proposed for recording flabby ridges with minimum amount of tissue displacement. This paper presents a case with window impression technique which used a custom tray with window over flabby tissues and an impression material to minimize distortion of tissue while making the impression. This impression technique avoids side effects of flabby ridges and with its use we can make a complete denture with supported retention and stability.

**Keywords:** flabby ridges, complete denture, window impression technique

### 1. INTRODUCTION

A fibrous or flabby ridge is a superficial area of mobile soft tissue affecting the maxillary or mandibular alveolar ridges. It can develop when hyperplastic soft tissue replaces the alveolar bone and is a common finding particularly in the upper anterior region of long term denture wearers.

The available literatures indicate that the prevalence of flabby ridges occurs up to 24% of edentulous maxilla and in 5% of edentulous mandible. [1,2]

Masticatory forces can displace this mobile denture-bearing tissue, leading to altered denture positioning and loss of peripheral seal.

Flabby tissue is a common finding in long-term denture wearers indicating a hyperplastic growth of mucosa that replaces alveolar bone. [3] This hypermobile growth of maxillary and mandibular ridges affects the wearing of prosthesis by the patient. Ill-fitting dentures cause a constant trauma to the underlying tissues resulting flabby ridges. [4] Ellsworth Kelly reported that mandibular anterior teeth cause trauma to maxillary anterior ridge as all occlusal forces are directed on to this area. This results in loss of bone from the anterior maxilla with subsequent fibrous tissue hyperplasia. The mucosa is highly movable and loosely attached to underlying periosteum of the bone. This flabbiness, comprised of loose fibrous and dense collagenized connective tissue, is usually seen in anterior region of an edentulous mouth. [1,5-7]

Construction of dentures over flabby foundation poses a great challenge to a prosthodontist while rehabilitating patients with flabby ridges. So many therapies that are suggested in such cases include surgical excision of flabby mass, implant-supported dentures or conventional prosthesis without surgery. [3]

Displacement of flabby tissues during impression making step is always a concern while fabricating complete denture. Hypermobile tissues which are displaced during impression making tend to return to their undistorted form, making fit of prosthesis difficult for patient.

According to MacEntee, support for the complete dentures is significantly compromised if the flabby ridge has more than 2 mm displacement under pressure. [8] 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. [9] Surgical methods include removal of flabby ridge using scalpel surgery or by injecting a sclerosing agent prior to fabrication of complete denture. [10] In addition, surgical ridge augmentation is also proposed in the management of flabby ridges. [8-11] 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. [12] 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. [10,12]

Several impression techniques are proposed in the literature for recording flabby ridges with the minimum amount of tissue displacement. [13] 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). [9] There has been a lot of controversy about the most suitable impression technique for flabby ridges, and recording tissues at rest is repeatedly found in the literature and has gained acceptance by many clinicians. 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. In researches of Abirami and Singh et al. are presented impression techniques using two different impression materials in a custom tray. [14,15]

Kumar et al. and Tanvir et al. explain in their work that two separate impression materials such as zinc oxide eugenol impression paste for the normal tissues and impression plaster/low viscosity elastomeric for the flabby tissues are used in the window technique. [16-17] Impression plaster is a mucostatic impression material and produces little or no pressure, but it is difficult to handle and to pour also it offers little advantage over low viscosity polyvinyl siloxane materials. [3] Light body polyvinyl siloxane is also a mucostatic material. It is dimensionally most stable, elastic material and records undercuts.

This article presents case report for prosthodontic rehabilitation of patient with flabby ridges with window impression technique.

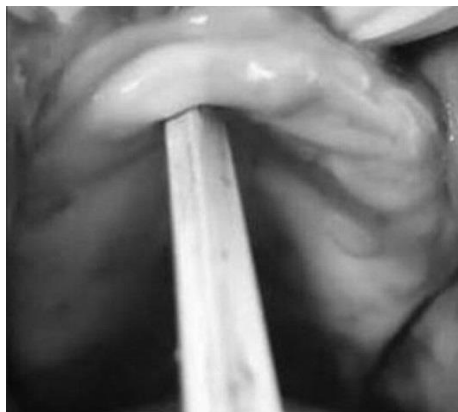
## 2. CASE REPORT

A 60-year-old female patient visited the Department of Prosthodontics at University Dental Clinique with complaints of bad complete dentures. She had been edentulous since last 10 years and had a set of complete dentures (Fig. 1)



*Fig. 1. Old set of complete dentures*

Existing dentures were ill-fitting when checked intraorally. She reported difficulty in speaking as well in eating the food with the existing set of dentures. History of any past medical or systemic illness was absent as discussed with the patient. On intraoral examination, an area of flabby tissue was observed in the maxillary anterior region that was extending from the canine region from one side to the other. (Fig. 2)

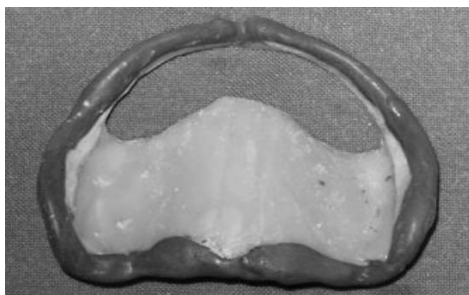


*Fig. 2. Flabby tissue in the maxillary anterior region*

Treatment options like implant-supported dentures, preprosthetic surgical excision of flabby tissue, etc., were given to the patient. But, the patient denied for the options explained to her and was more interested for the conventional approach of denture construction. Therefore, other options were ruled out and the final treatment plan included the use of window impression technique for the maxillary arch.

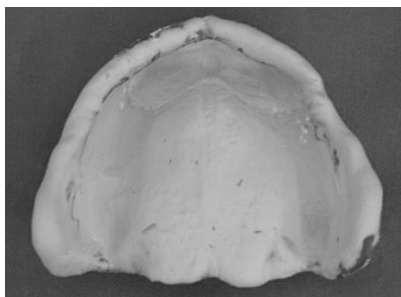
### 3. TECHNIQUE REPORT

A preliminary impression of the maxillary edentulous arch was made using an irreversible hydrocolloid impression material and was poured in dental plaster to obtain a primary cast. Extension of flabby area was marked with the help of marking pencil on the maxillary primary cast. After that, proper wax spacer was adapted such that there were four tissue-stops to stabilize the tray in maxillary arch. Over it, a special tray was fabricated using auto-polymerizing acrylic resin and the borders were reduced to 2 mm short of the sulcus. Border moulding was performed with the help of low-fusing impression compound. Window was prepared in the custom tray in the area of flabby tissue. (Fig.3)



*Fig. 3. Border molded special tray with open window at the flabby area*

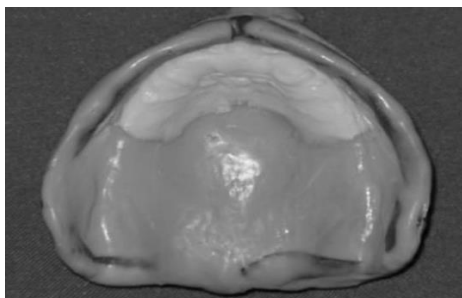
This was done using round and fissured bur. After this, the spacer was removed and the definitive impression was made in zinc oxide eugenol impression paste. The excess material over the window cut off with sharp scalpel blade and the flabby area was recorded using an impression plaster. (Fig. 4)



*Fig. 4. Completed definitive impression with flabby area recorded in impression plaster*

Impression plaster was applied with a painting brush in proper consistency so that it wouldn't run out of the area. The impression plaster should be stiff enough to be applied with a brush. Apply a separating medium over the plaster part of the impression before pouring it.

If elastomeric impression material is available, then tray adhesive can be applied on the borders and on the tissue surface of the tray. Allow the tray adhesive to dry for 10 minutes before loading the tray with elastomeric material to obtain a chemical bond between the tray and the material. The definitive impression can be made with monophasic polyvinyl siloxane impression material and the excess over the window opening can be trimmed away with sharp scalpel blade. The flabby area can be recorded with light body polyvinyl siloxane. This can be injected with syringe on to the flabby area exposed through the window made in the special tray. (Fig. 5)



*Fig. 5. Completed definitive impression with flabby area recorded in light viscosity elastomeric impression material*

After adequate disinfection of the impressions and beading/boxing procedures, impression can be poured in type III dental stone to obtain the master cast.

#### 4. DISCUSSION

Flabby ridges can be successfully treated with proper prosthodontic approach, either alone or in interdisciplinary combination with surgery. Surgical removal of flabby tissue is possible if there is adequate bone height. However, it results in short sulcus depth that further needs a small surgical intervention i.e. vestibuloplasty. This can be corrected with ridge augmentation, but again it causes either resorption or rejection of graft. Sclerosing agents such as sodium morrhuate have been advocated to be injected in such flabby tissues making it firm and fibrosed. Side effects like anaphylactic reactions, patient discomfort, loss of firmness are some of the reported symptoms of sclerosing agents. [18]

Conventional impression techniques used to record such flabby tissues often results in unretentive and unstable dentures. Creating holes/ windows or wax reliefs decreases the hydraulic pressure while impressing flabby areas, thus minimizing the distortion/ displacement of hypermobile tissues.

This case report discusses the window impression technique to minimally displace the flabby tissue recording it in its undistorted form. This favors the health of oral tissues along with providing adequate retention, stability and support for the prosthesis. [19]

#### 5. CONCLUSION

Flabby tissue poses a difficult situation while rehabilitation of completely edentulous patients. Surgical excision and dental implant therapy are alternatives in such cases, but may not be feasible in some patients because of medical illness or expensiveness of treatment. Implementation of some modifications in current impression techniques and newly introduced materials with improved physical and handling properties, flabby ridges can be treated effectively without any additional visits of patients in clinical practice.

#### REFERENCES

- Abirami, G. (2016). Residual ridge resorption in complete denture wearers. *Journal of Pharmaceutical Sciences and Research*. 1;8(6):565. –508.
- Allen, F. (2005). Management of flabby ridge in complete denture construction. *Dent. Update* 32, 524–528.
- Bansal, R., Kumar, M., Garg, R., Saini, R., Kaushala, S. (2014). Prosthodontic rehabilitation of patient with flabby ridges with different impression techniques. *Indian J. Dent.* 5, 110–113.
- Basker, R.M., Davenport, J.C. (2002). *Prosthetic treatment of the edentulous patient*. 4th ed. Blackwell; Oxford; p. 286-9.
- Bindhoo, Y.A., Thirumurthy, V.R., Kurien, A. (2012). Complete mucostatic impression: a new attempt. *J. Prosthodont.* 21, 209–214.
- Carlsson, G.E. (1998). Clinical morbidity and sequelae of treatment with complete dentures. *J Prosthet Dent*, 79:17-23.
- Crawford, R.W., Walmsley, A.D. (2005). A review of prosthodontic management of fibrous ridges. *Br Dent J*,199:715-9.
- Kelly, E. (1972). Changes caused by a mandibular removable partial denture opposing a maxillary complete denture. *J Prosthet Dent*, 27:140-0.
- Kumar, T.A., Naeem, A., Verma, A.K., Mariyam, A., Krishna, D., Kumar, P.K. (2016) Residual ridge resorption: The unstoppable. *Inter J. App Res*, 2(2):169-71.

- Lynch, C.D., Allen, P.F. (2006). Management of the flabby ridge: using contemporary materials to solve an old problem. *Br. Dent. J.* 200, 258–261.
- Lynch, C.D., Allen, P.F. (2004). The ‘combination syndrome’ revisited. *Dent. Update* 31, 410-2, 415-6, 419-20.
- Magnusson, B.C., Engstrom, H., Kahnberg, K.E. (1986). Metaplastic formation of bone and chondroid in flabby ridges. *Br J Oral Maxillofac Surg*, 24:300-5.
- Pai, U.Y., Reddy, V.S., Hosi, R.N. (2014). A single step impression technique of flabby ridges using monophasic polyvinylsiloxane material: a case report. *Case Rep. Dent.*
- Prasad, D.K., Mehra, D., Prasad, D.A. (2014) Prosthodontic management of compromised ridges and situations. *Nitte University J. Hea Sci*, 4(1):141.
- Singh, O.P., Kaur, R., Nanda, S.M., Sethi, E. (2016). Residual ridge resorption: A major oral disease entity in relation to bone density. *Indian Journal of Oral Sciences*. 1;7(1):3.
- Singh, G., Quadri, S., Kapoor, B., Rathi, S. (2018) Effect of nutrition in edentulous geriatric patients. *Journal of Oral Research and Review*, 10(1).
- Tanvir, H., Kumar, N., Singh, K., Kapoor, V. (2017) An innovative wire impression technique of highly resorbed mandibular ridge. *Periodont Prosthodont*, 1-3.
- Xie Q., Nahri T.O., Nevalainen J.M. et al. (1997). Oral status and prosthetic factors related to residual ridge resorption in elderly subjects. *Int J Prosthodont*, 55:306-13.
- Zarb, G.A., Bolender, C.L., Carlsson, G.E. (1997). *Boucher's prosthodontic treatment for edentulous patients*. 11th ed. London; ST. Louis; Mosby, p.36.