

Management of the Flabby Ridge Using a Special Impression Technique

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ABSTRACT

The flabby ridge is commonly observed in the anterior region of the maxillary arch in fully edentulous patients. It is characterised by non-adherent hypertrophic mucosal lesions overlying the underlying bone, often with excessive bone resorption. Management of the flabby ridge is essential prior to the placement of a definitive prosthesis, whether by surgical resection or the use of specific prosthetic methods. This management aims to ensure stability and optimal retention of the prosthesis.

In order to determine the type of intervention to be chosen, a thorough interview and clinical examination are carried out. Several parameters are considered, such as the volume of the flabby ridge, the degree of underlying bone resorption, the type of prosthetic rehabilitation planned and the presence of any contraindications to surgery. These factors will guide the decision on the most appropriate treatment.

In this article, we focus on a non-surgical approach to the management of the flabby ridge, which involves the selection of a specific type of impression. This impression technique aims to record the ridge in its static state, without compression or displacement, while ensuring precise muco-dynamic recording of the adjacent tissues.

Introduction

In the context of prosthetic rehabilitation of edentulous patients, maintaining the integrity of the osteomucosal support surface is essential to ensure the stability of the future removable prosthesis. Therefore, a quantitative and qualitative evaluation of the osseous and mucosal components is necessary [1,2].

The tissues lining the prosthetic support surface are influenced by several factors. First, trauma from poorly designed, ill-fitting or worn prostheses negatively affects the degree of bone resorption and promotes the development of tissue hyperplasia. In addition, physiological bone resorption, the natural ageing process and changes due to systemic diseases can also lead to changes in the supporting tissues [3].

Placing a prosthesis on altered or deformed tissue usually leads to treatment failure. This results in an unstable and non-retentive

prosthesis, which can accelerate bone resorption and worsen the initial situation. Due to all these factors, it is essential to restore a healthy fibromuscular state. This is a prerequisite for the success and proper integration of the prosthesis [1].

Various mucosal lesions can be observed in an edentulous arch and these lesions can affect the prosthetic prognosis. These include subprosthetic stomatitis, lichen planus, angular cheilitis, denture-induced fibrous hyperplasia and the floating ridge [4].

In dentistry, floating ridges are defined as irreversible hyperplastic mucosal lesions caused by bone resorption. In fully edentulous individuals, these floating ridges are mainly located in the anterior maxilla [5]. Studies have reported that approximately 5% of edentulous mandibles and 24% of edentulous maxillae have floating ridges [6]. Flabby ridges can also be termed displaceable ridges or fibrous ridges. These mucosal lesions are often associated

with a syndrome known as the "combined syndrome" or "anterior hyperfunction syndrome" described by Kelly in 1972 [7]. This syndrome has been observed in patients with complete maxillary edentulism restored by an old removable prosthesis, combined with untreated bilateral posterior mandibular edentulism.

Clinical Case

Mrs. R.A., a 60-year-old woman, presented to the Removable Prosthesis Service at the Dental Consultation and Treatment Center in Casablanca to replace her existing dental prosthesis. During the interview, she reported a history of well-controlled diabetes.

The clinical examination revealed a completely edentulous maxillary arch (Figure 1) with an anterior flabby ridge characterised by bone loss and instability of the surrounding tissues. Generalised inflammation was also present, probably due to poor prosthetic hygiene and poor prosthetic fit. The patient was wearing an old prosthesis, more than 10 years old, which showed signs of advanced wear.



Figure 1: Intraoral view of the maxillary flabby ridge.



Figure 2: Pre-existing prosthesis.

Examination of the existing denture revealed several problems (Figure 2). The resin material showed signs of porosity, causing irritation to the surrounding tissues. In addition, the prosthetic teeth showed obvious signs of severe abrasion, which negatively affected masticatory efficiency. An underestimation of the vertical dimension was also observed, leading to occlusal imbalance and patient discomfort. However, examination of the

temporomandibular joints did not reveal any specific abnormalities. Examination of the mandibular arch revealed bilateral posterior edentulism with deep bone resorption around the remaining anterior teeth (Figure 3).



Figure 3: Panoramic radiography.

The patient has expressed reluctance to consider surgical treatment. This preference must be respected and taken into account in the proposed treatment plan. After extraction of the remaining non-preserved mandibular teeth, our therapeutic decision was to opt for a total removable prosthesis. Due to the presence of the maxillary flabby ridge, we decided to use a special impression technique, which will be described in more detail in this article.

Based on the clinical signs observed, we diagnosed the presence of subprosthetic stomatitis, which explained the inflammation observed. Our treatment plan began with tissue preparation using a conditioning resin. Additionally, the existing prosthesis, after corrections, was used as a support for this pre-prosthetic step (Figure 4).



Figure 4: Existing prosthesis with conditioning resin.

The conditioning resin was replaced periodically until the inflammation was completely healed and there were no signs of inflammation. After this pre-prosthetic phase, we proceeded with the definitive steps in the design of the complete removable prosthesis. For the primary maxillary impression, we used an alginate material with a standard tray. What is unique in this case

is that the impression material must have a fluid consistency to minimise compression and displacement of the floating ridge [8].

Once the model was finished, we marked the contours of the flabby ridge and demanded the fabrication of a fenestrated individual tray in relation to this specific area (Figure 5).

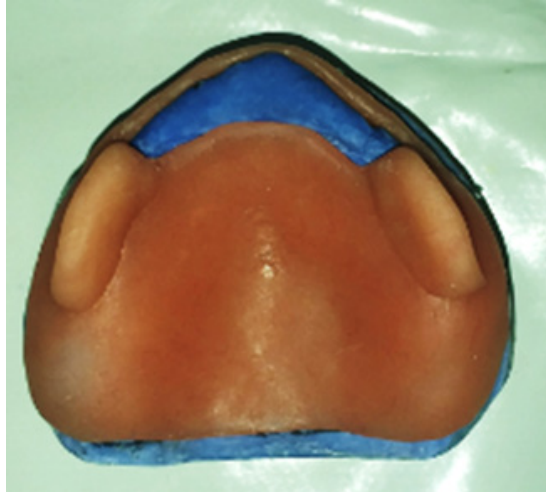


Figure 5: Individual impression tray with window.

For the anatomic-functional secondary maxillary impression, the technique began in a conventional manner with adjustment and remargining with Kerr paste, respecting the HERBST tests. However, before taking the central impression, we covered the window of the individual custom tray with wax to prevent material leakage (Figures 6 a,b). The impression was then taken in the conventional manner using a zinc oxide impression paste.

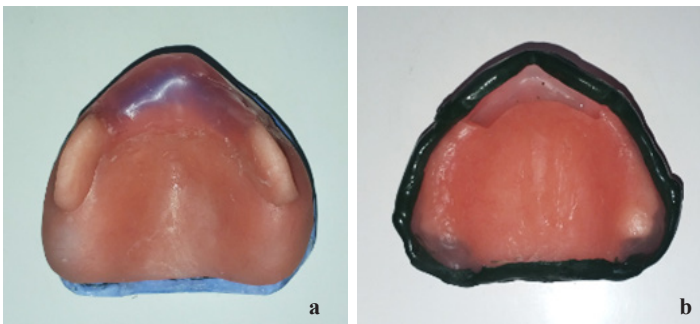


Figure 6: Cover the window of the individual impression tray with wax.

After removal from the mouth, the custom tray was re-fenestrated in relation to the floating ridge by removing the wax and impression material but preserving the peripheral registration (Figures 7 a,b).

The custom tray was reinserted into the mouth, ensuring that all hyperplastic tissue was relieved. A low viscosity material (polysulfide) was then injected into the relieved area. After setting, the custom tray was carefully removed (Figures 8 a,b).

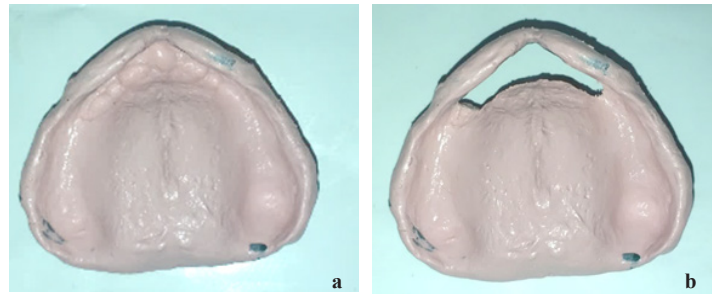


Figure 7 (a,b): The first phase of the secondary impression.

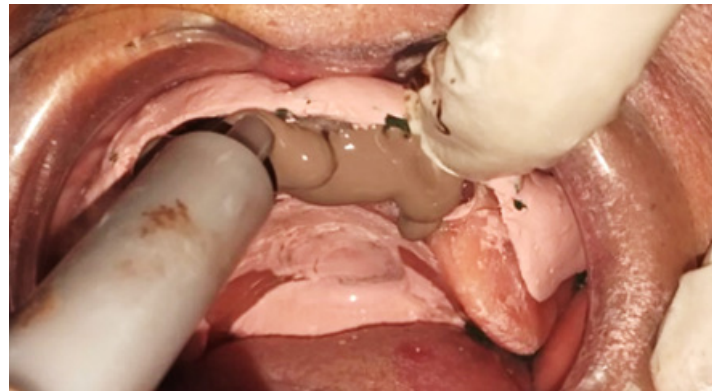


Figure 8a: Injection of impression material facing the flabby ridge.

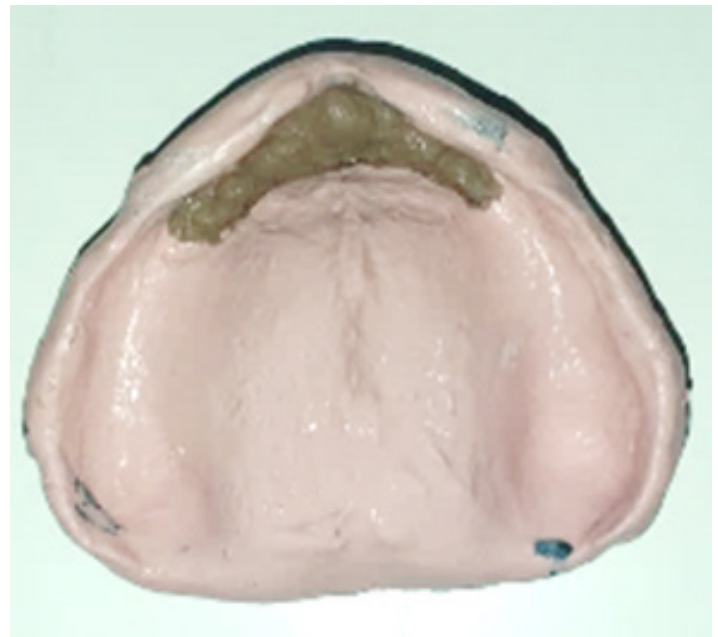


Figure 8b: Final secondary impression.

Mandibular impressions and occlusal parameters were taken conventionally according to the rules for total removable dentures. A follow-up program was established to evaluate the stability, retention and comfort of the prosthesis. The patient was satisfied with the results (Figures 9 a,a'.b,b') and no signs of inflammation or ulceration were observed in relation to the flabby ridge.



Figure 9a,a': Exo-buccal view before prosthesis insertion.
b,b': Exo-buccal view after prosthesis insertion.

Discussion

Prosthetic rehabilitation of complete edentulism can be particularly complex when dealing with a flabby ridge. One of the main challenges is related to the supporting surface. Due to the mobility and instability of the floating ridge, it is difficult to provide a solid and stable base for a well-fitting prosthesis.

Patients often complain of ill-fitting removable dentures and mucosal discomfort. The stability and support of the prosthesis is significantly compromised by the mobility of the underlying soft tissues. In addition, inflammation under the denture is often observed.

Before addressing the floating ridge, it is recommended to treat the subprosthetic inflammation with tissue conditioning. This step helps to reduce the progression of bone resorption by achieving a harmonious distribution of occlusal forces and contributes to the healing of damaged mucosal tissues. If an old prosthesis is used to support tissue conditioning, it must be corrected to eliminate any compression and overextension. However, if the prosthesis cannot be corrected, it is recommended that a temporary prosthesis be made for this purpose. Once this step has been completed, the clinician can address the flabby ridge in two ways: by surgical treatment [9] or by using specific prosthetic techniques.

Surgical treatment is often subtractive and involves the removal of excess fibrous tissue. However, in cases of significant bone resorption, resection of all mobile tissue will result in a flat support surface with flattened ridges, which may compromise future prosthetic rehabilitation.

To overcome this problem, selective pressure impression techniques seem to be an interesting solution. Various impression techniques have been proposed in the literature to record flabby ridges, but their common objective is to obtain a compressive anatomic-functional impression of the healthy supporting surface, while recording the mobile tissues in a static state, without compression or displacement [10].

Slaoui et al. proposed two specific impression techniques. The first technique involves taking a standard secondary impression. After

the material has set, a window is created opposite the flabby ridge and a fluid material is injected directly onto this mobile area [11]. However, a potential limitation of the window technique is the lack of control and uniform application of the impression material.

The second technique involves the use of a special perforated impression tray that is spaced away from the flabby ridge to isolate it from any pressure [12]. A transparent resin impression tray has also been recommended to visualise compressed areas, which will whiten on contact. The impression tray can then be modified either by perforation or by creating a window as previously described [13].

A study conducted by Shin et al. compared three different types of impression trays: trays with conventional relief, trays with spacing at the flabby ridge, and trays with an open window [14]. The impression method using an open window tray was found to be the most effective in minimising mobile ridge movement. However, further studies are needed to compare the different types of impression materials used in this context.

Conclusion

The management of floating ridges is challenging due to the mobility and instability of the supporting tissues. Selective pressure impression techniques, including the use of an open-window impression tray, have been shown to be effective in minimising movement of the mobile ridges. However, further studies are needed to compare different approaches and provide patients with a better quality of life through well-fitting and stable dentures.

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