

## Making the Unstable Stable-A Case Series of Management of the Flabby Ridge

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**Abstract:** The presence of flabby and displaceable denture-bearing tissues often presents a difficulty while making complete dentures. Unless managed appropriately, such 'flabby ridges' adversely affect the retention, stability and support of complete dentures. 'Fibrous' or 'flabby' alveolar ridges poses significant problems for the provision of retentive and stable dental prostheses for affected individuals. In particular, problems arise during impression making, when forces cause the mobile denture bearing tissues to become distorted. Many impression techniques have been proposed to overcome this difficulty. While these vary in approach, similar in their complexity and are often quite time-consuming to perform. This clinical report describes the Prosthodontic management of a patient with flabby ridge.

**Keywords** - complete denture, flabby ridge, impression technique

### I. Introduction

A 'fibrous' or 'flabby' ridge is an area of mobile soft tissue affecting the maxillary or mandibular alveolar ridges<sup>1</sup>. It develops when hyperplastic soft tissue replaces the alveolar bone and is a common finding, particularly in the upper anterior region of long-term denture wearers. During mastication the force of chewing can displace this mobile denture-bearing tissue, leading to altered denture positioning and loss of peripheral seal. Distortion of the mobile tissue can occur by forces exerted during the act of impression making resulting in poor stability of the denture and both function and appearance can be heavily compromised. Published studies indicate that the prevalence of flabby ridges can vary, occurring in up to 24% of edentulous maxillae and in 5% of edentulous mandibles<sup>5, 6</sup>. In the edentulous patient, it is found in the anterior region more commonly in both arches. It is often related to the degree of bone resorption and in severe cases this can be to the level of the anterior nasal spine. Watson discussed this phenomenon in 1970 and described an impression technique for maxillary fibrous ridge. Further in 1972, Kelly described changes caused by a mandibular removable partial denture opposing complete denture were featured as "combination syndrome

### II. Pathology

'Fibrous' or 'flabby' ridge develops when hyperplastic soft tissue replaces the alveolar bone due to its resorption and is a common finding in the upper anterior region of long-term denture wearers. . Microscopic features flabby ridges are composed of mucosal hyperplasia and loosely arranged fibrous connective tissue as well as dense collagenase connective tissue. In soft tissue, varying amounts of metaplastic cartilage and bone have been reported. The underlying connective tissue stroma consists of mature fibrous connective tissue mainly chronic inflammatory cells.

### III. Management

The three main approaches to the management of the flabby ridge are:<sup>4</sup>

- 1 .Surgical removal of fibrous tissue prior to conventional prosthodontics
2. Implant retained prosthesis • Fixed • Removable
- 3 .Conventional prosthodontics without surgical intervention

Many times the surgical intervention was not the choice because either patient was not affirmative or his age and health was not reminiscent of surgery. Implant option was not opted due to financial reason of the patient. .Impression making in case of flabby tissue requires special consideration because force exerted during this act can result in distortion of the mobile tissue. This results in instability affecting both function and appearance.

Several Techniques for Management of Flabby Ridge Are

- a) One part impression technique (Selective perforation tray)
- b) Controlled lateral pressure technique
- c) Palatal splinting using a two-part tray system<sup>2</sup>
- d) Selective composition flaming<sup>2</sup>
- e) Two part impression technique:  
Mucostatic and Mucodisplacive combination<sup>3</sup>

#### IV. Case Report 1

A 65 years old male patient reported to the department of Prosthodontics, Tamil Nadu government dental college and hospital, with a chief complaint of difficulty in chewing with the present denture, which he was wearing since last 7 years. Patient had been edentulous since last 12 years, he lost his lower anterior teeth first followed by upper anterior and then posterior teeth. On clinical examination it was found that his both maxillary and mandibular residual ridge were flabby in nature (Fig 1). The denture was ill-fitting with worn out teeth.



**Fig 1 – flabby tissue**

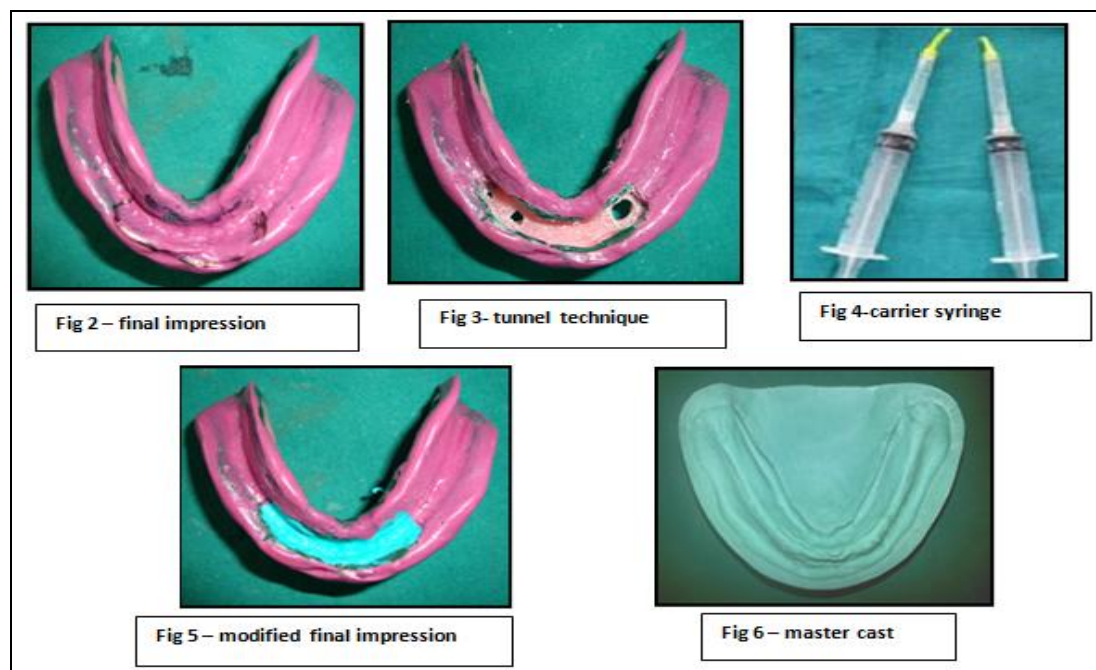
#### Procedure

##### **Innovative tunnel technique for flabby ridge<sup>8</sup>**

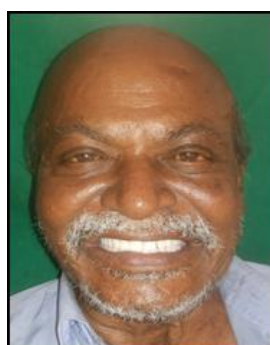
After complete examination the treatment plan decided was a complete denture fabrication, with mucostatic impression technique for mandibular hyperplastic ridge. A primary impression of the mandibular denture bearing area was made with a low viscosity irreversible hydrocolloid material (Alginate, DENTSPLY, India), to ensure minimal distortion of the displaceable tissues. The impression was poured in dental stone, to avoid damage to the cast while fabricating special tray. The displaceable areas were identified on the cast. Three uniform thicknesses of spacer waxes (MARC, Shiva products, India) were placed as a ‘spacer’ over the displaceable areas identified on the cast and one thickness over the remaining non-displaceable area. The special tray was fabricated in the usual manner with self-cure acrylic resin (RR Cold cure, DPI, India), leaving the spacer wax area over the displaceable tissues uncovered with acrylic resin, thus forming a tunnel. At the chair-side, the special tray was corrected intraorally. Border molding was done with low fusing impression compound (Pinnacle tracing sticks, DPI, India) and the master impression was then made in two stages. (Fig: 2)

**Stage I:** The spacer wax over the non-displaceable areas was removed and impression was made with monophasic addition silicone impression paste (aquasil, DENTSPLY, India) of that particular area only

**Stage II:** The spacer wax over the displaceable areas was removed carefully without damaging the first stage final impression. With the special tray placed in the mouth, addition silicone, light body impression paste (aquasil DENTSPLY, India) is injected with help of a custom-made carrier syringe (fig: 4&5) from one side of the tunnel, taking care that it evenly flows to the opposite side (Fig 3). Once set, the impression was removed from the mouth and inspected. Any excess material was removed. The impression was re-inserted to ensure that it was retentive and did not rock when pressure was applied over the displaceable areas.



The impression was cast in dental stone, paying careful attention to preserving the bordered molded sulcus area (fig 6). A heat-cured acrylic transparent baseplate was fabricated to assess the accuracy of fit. Denture fabrication then continued in the usual manner. Following face-bow transfer, the teeth were arranged on a semi-adjustable articulator, achieving balanced articulation, and paying attention to even tooth contact in excursive movements. The dentures were delivered, and at subsequent review appointments the patient reported satisfaction with stability, aesthetics and function. (Fig 7)



## V. Case Report 2

A 70 years old male patient reported to the department of prosthodontics, tamilnadu govt dental college and hospital, Chennai with the chief complaint of ill-fitting denture. On examination, the patient was completely edentulous with an extensive area of flabby ridge on the maxillary anterior region.

The entire mandibular arch was flabby. The alveolar mucosa was appeared to be inflamed, fibrous and displaceable. To treat the abused tissue patient was advised to discontinue the use of old denture for a week. Patient was recalled and examined again. Inflammation was resolved but hyperplastic tissue over the premaxilla region remained the same. For this particular case two part impression technique (window technique) was advocated for maxillary flabby ridge and lateral control pressure technique was advocated for mandibular flabby ridge.

### Procedure

#### 1. Windows technique<sup>7</sup> for maxillary arch

The primary impression of maxillary denture bearing area was made with alginate (alginate, DENTSPLY, India) to minimize distortion and record the flabby tissue in undisplaced manner. The impression was poured in dental stone. Relief wax was given in incisive papilla and the midpalatine raphe area, and a special tray was fabricated with auto-polymerizing acrylic resin and a small handle was attached in flat portion of palate. Border molding was done with green stick compound (pinnacle, DPI, India). Final impression was

made with zinc oxide eugenol then the displaceable tissue was marked intraorally and transferred on the impression the marked area was cut to create a window taking care not to damage the adjacent impression area(Fig:7,8),



The amount of displaceable mucosa was recorded by applying impression plaster over it (Fig: 9). Once set, the impression was removed from the mouth and inspected. Any excess material was removed. The impression was re-inserted to ensure that it was retentive and did not rock when pressure was applied over the displaceable areas. Thus in this way the flabby tissue was recorded by mucostatic technique in undisplaced manner and rest firm tissue is recorded by mucocompressive technique

## 2. **Controlled lateral pressure technique for mandibular arch**<sup>9,10</sup>

This technique was advocated by many authors for use with a fibrous posterior mandibular ridge. They describe a technique in which tracing compound (green stick) is used to record the denture bearing area using a correctly extended special tray (fig 10). A heated instrument is then used to remove the greenstick related to the fibrous crestal tissues and the tray is perforated in this region. Light bodied silicone impression material is then syringed onto the buccal and lingual aspects of the greenstick and the impression gently inserted (fig 12). The excess material is extruded through the perforations and theoretically the fibrous ridge will assume a resting central position having been subjected to even lateral pressures.Placement of multiple relief holes (fig 11) was done to ensure prevention of pressure buildup in the flabby area thereby leading to inadvertent tissue compression.

Denture fabrication then continued in the usual manner. The dentures were delivered, and at subsequent review appointments the patient was satisfied with stability, aesthetics and function (fig 13).



Fig 10 - modified border molding



Fig 11 - multiple relief holes



Fig 12- modified final impression



Fig 13- complete denture insertion

## **VI. Discussion**

There appears to be a consensus in the literature that surgical removal of the fibrous areas often results in a greater prosthodontic challenge<sup>10, 11</sup>. Implant retained prostheses may offer a solution to the problems of stability and retention in fibrous ridge cases. However, they are not without their disadvantages i.e. surgery, treatment time, cost, etc. A conventional prosthodontic solution may avoid these problems associated with surgery. Due to the obvious difficulties in analysis of the success of prostheses constructed using the various impression techniques described, the clinical choice has fallen mainly to personal preference, based on analysis of theoretical principles.

Various techniques have been recommended and there is controversy as to whether a muco displacive technique which compresses the mobile tissue aiming to achieve maximum support from it, or whether a mucostatic technique with the aim of achieving maximum retention should be employed.

## **VII. Conclusion**

Fibrous ridges pose a prosthodontic challenge for the achievement of stable and retentive dental prostheses. Emphasis has moved away from surgical removal of the fibrous tissue. Implant retained prostheses may not be most suitable treatment option for many patients. When considering conventional prosthodontics, there are a variety of impression techniques available to address the problems caused by the unsupported tissue during denture construction, however currently there is a lack of scientific evidence for support of any technique over another. Considerations for selection should include the location and extent of unsupported tissue, as well as the patient's presenting complaint

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