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Case Study

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PHARMACO-PROSTHETIC MANAGEMENT OF FLABBY EDENTULOUS RIDGE USING SCLEROSING AGENT- A CASE REPORT

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ABSTRACT

A fibrous which is also called as hyperplastic ridge is a superficial area of mobile soft tissue affecting the maxillary or mandibular alveolar ridges. It develops when alveolar bone gets replaced by hyperplastic soft tissue and is a common finding particularly in the upper anterior region that is seen in long term denture wearers. Masticatory forces often displace this mobile denture-bearing tissue, which leads to altered denture positioning and loss of peripheral seal. Forces exerted during the act of impression making results in distortion of the mobile tissue. Denture fabrication on flabby tissue is a challenging task for a clinician. Unless it is managed appropriately, such 'flabby ridges' adversely affect the support, retention and stability of complete dentures. This case report describes simple and more satisfactory solution to the hypermobile residual ridges using sclerotherapy. The use of sclerosing injection increases the firmness and reduces the mobility of the existing soft tissue.

KEYWORDS: Flabby ridge, Non-surgical technique, Sclerosing solution, Ridge sclerosis, Complete Denture.

INTRODUCTION

Flabby tissues present a challenging clinical scenario for the clinician to ensure a well-fitting prosthesis. Flabby ridge also called as fibrous ridge or displaceable ridge is mobile soft tissue present on the superficial aspect of the alveolar ridge. Flabby ridge is predominantly seen in the upper anterior region and is commonly associated with features of combination syndrome as mentioned by Kelly in 1972.[1]

Earlier studies show that prevalence of flabby ridges vary in either arch, with edentulous maxillae prevalence being 24% and edentate mandibles 5%.[2,3] Another reason for flabby tissue is unplanned and uncontrolled dental extraction.[4]

In the presence of displaceable ridge, fabrication of a stable denture becomes an arduous challenge. 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.[5]

The various options available for management of flabby ridge include surgery, an implant retained fixed or removable prostheses and conventional management.[6]

A simple and more satisfactory solution to the problem of hypermobile residual ridges lies in the development of a method for increasing the firmness and reducing the mobility of the existing soft tissue. The use of sclerosing solutions to produce fibrosis in conditions such as capsular laxity of temporomandibular joints and in the treatment of vascular lesions suggest the possibility of using sclerosing agents for fibrous edentulous ridge. The sclerosing procedure can be used in both the maxillary and mandibular edentulous arches. It is ideal for patients whose ridge tissues are excessively mobile.[7]

This article presents a case report for the prosthodontic rehabilitation of a patient with a flabby ridge using injection of Sclerosing solution.

Etiological factors for flabby ridges

Etiological factors include

- Long term denture wear without maintenance
- Trauma from denture base,
- Ill-fitting dentures,
- Malocclusion,
- Poor systemic health,
- Unplanned extractions,

- Ridge resorption,
- Aberrant forces on prosthesis,
- Combination syndrome.

The treatment plan should start eliminating the etiological factor. This can include a conservative approach using mouthwash, nutritional supplements, correcting pressure areas, soft tissue massage, withdraw dentures for at least 8 hours a day addressing occlusal disharmonies through clinical remounting and restoring the vertical dimension. If the condition persists after conservative management, other methods are employed for treatment, such as special impression techniques, conventional prosthodontics without surgical intervention, surgical removal of fibrous tissue, Pharmacological management, and implant-fixed or removable prosthesis.

Indications for ridge sclerosis

1) The sclerosing procedure can be used in both the maxillary and mandibular edentulous arches.
2) It is ideal for patients whose ridge contours are satisfactory but whose ridge tissues are excessively mobile.
3) It can be used also when there are irregular masses of hyperplastic tissue on the labial aspectof the ridge or in the buccal vestibules, provided that this excess tissue is excised first and the area is permitted to heal.
4) Even if there is an extensive amount of hyperplastic tissue to be removed, and a vestibuloplasty is necessary to restore the depth of the mucogingival fold, the sclerosing procedure can still be used as an adjunct for maintaining maximum ridge height when there isa minimal amount of underlying bone.[7]

CASE REPORT

A 59-year-old female patient reported to department of prosthodontics and complained of difficulty in chewing with her present denture. The patient had a history of wearing maxillaryand mandibular complete dentures for 15 years. On examination, Maxillary and Mandibular ridge was highly resorbed and flattened (Radiographic examination showed severe maxillary and mandibular bone loss) (Figure 1). Flabby tissue in the maxillary anterior region was found extending from canine-to-canine region (Figure 2). The tissue was blanched on pressure application (Figure 3). Fabrication of new complete denture was planned for the patient with injection of sclerosing agent.

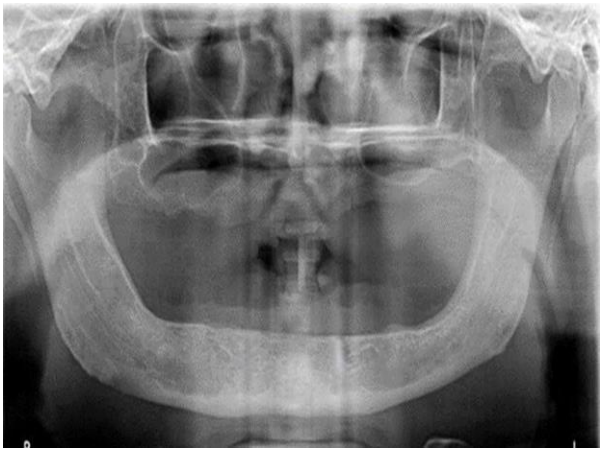

Fig. 1: Panoramic radiograph showing resorbed maxillary and mandibular ridge.

Fig. 2: Intra-oral view of maxillary and mandibular ridge with flabby area in the maxillary anterior region.

Fig. 3: Flabby ridge blanches when pressure is applied.

Injection Technique

1) The sclerosing injection was injected over the soft tissue of the residual alveolar ridge underinfiltration anesthesia, using 1 ml of sodium tetradecyl sulphate as the sclerosing solution (Figure 4).

Fig. 4: Sclerosing Injection.

2) The amount used ranges from 2 to 4 c.c., depending upon the extent of the area involved.

3) The injection site planned was 12 and 22 region of maxilla and initial injection was given atthe base of the ridge, just above the periosteum, with a 22 gauge needle (Figure 5).

Fig. 5: The sclerosing agent injected directly into the hypermobile edentulous ridge.

4) The needle was inserted at the midline of the labial aspect of the ridge and directed posterolaterally and the solution was deposited as the needle was withdrawn.
5) The number of punctures should be kept to a minimum since they may allow the solution to leak out of the tissues.
6) When the one side was completed, the needle was inserted wrt 22 region in the opposite direction through the original midline opening to inject the other half of the ridge (Figure 6).

Fig 6: The sclerosing agent injected directly into the other side of edentulous ridge.

7) A series of injections was made from the labial and buccal aspects of the ridge and subsequently result in binding of the overlying alveolar soft tissue to the periosteum and thereby reduce its mobility.
8) After 2weeks patient recalled for review, but tissues did not become sufficiently firm. So, reinjection of sclerosing agent was planned. The reinjection was carried out in the region of 13and 23 in the same way initial injection was carried out (Figure 7).

Fig 7: The sclerosing agent reinjected directly into the hypermobile edentulous ridge.

9) Patient recalled after 2 weeks again for review, a slough of tissue and inflammatory response to sclerosing solution was noted but has not been detrimental in treatment (Figure 8).

Fig 8: Tissue slough noted in maxillary anterior ridge.

10) Sloughy tissue was removed by scar revision under LA. Post-surgical instructions given.
11) Patient reported back for postsurgical review after 1week, healing of the tissue was satisfactory (Figure 9).
12) After one month of slough removal, the tissue appeared clinically normal whether or not there was any tissue slough. The hypermobile ridge became firm and relatively immobile. (Figure 10).

Fig 9: Healing of the slough tissue noted.

Fig 10: Tissue appeared clinically normal.

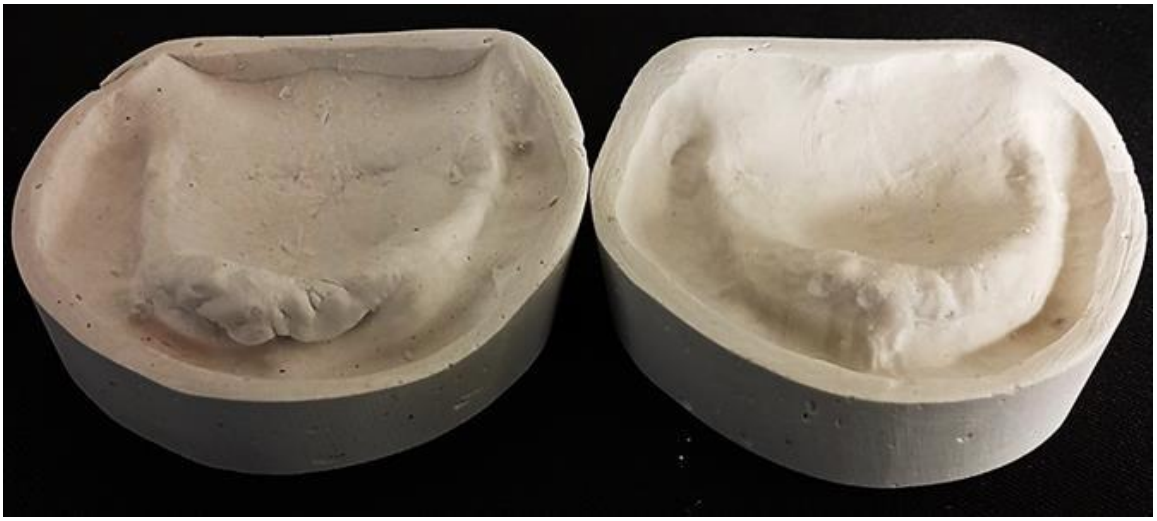

Fig. 11: Cast showing changes in tissue before and after the sclerosing procedure.

Postoperative care

Postoperatively, the patient usually has mild pain for 8 to 12 hours. This can be readily controlled with an analgesic drug given every 4 hours. There is frequently a moderate amount of swelling, particularly when the maxillary ridge has been injected. Since the extent of the fibrosis produced is related to the degree of inflammatory response evoked by the sclerosing agent, such swelling indicates a favourable reaction. This should be explained to the patient so that she does not become alarmed. The swelling usually reaches its maximum in 24 hours andbegins to subside in 72 hours. No attempt is made to limit the swelling with cold applications. Occasionally, some small areas of "pressure necrosis" will develop but these present no serious difficulties and they only increase the amount of tissue fibrosis, which is

actually a desirable effect. The patient must not wear his old denture, since it would cause tissue movement and prevent the fixation of the ridge. After 4 to 6 weeks, there usually is adequate rigidity to permit the construction of new dentures. This post treatment waiting period is no different from that which ideally should follow surgical management of these tissues. In only two patients has it been necessary to reinject because the tissues did not become sufficiently firm.[8]

Complete denture fabrication procedure

rimary impression of maxillary and mandibular arch was made with irreversible hydrocolloid impression material (3M ESPE) (Figure 11) and primary casts were made. A full spacer with tissue stops, as described by Boucher, was adapted onto the maxillary and mandibular cast followed by a custom tray fabrication. Border moulding of maxillary and mandibular arch wasperformed with low fusing impression compound (DPI Pinnacle tracing sticks, Bombay trading corporation Ltd.) and wash impression was made with regular body reprosil hydrophilic vinyl polysiloxane impression material (Denstsply, Dentspro India Pvt. Ltd.)(Figure 12). Maxillary and mandibular master casts were poured from the impressions. Jaw relation and wax try in was done (Figure 13). The denture was then fabricated conventionally, and regular follow-up visits showed no relapse or recurrence of flabby tissue even after one year. The patient is currently wearing the complete denture satisfactorily (Figure 14).

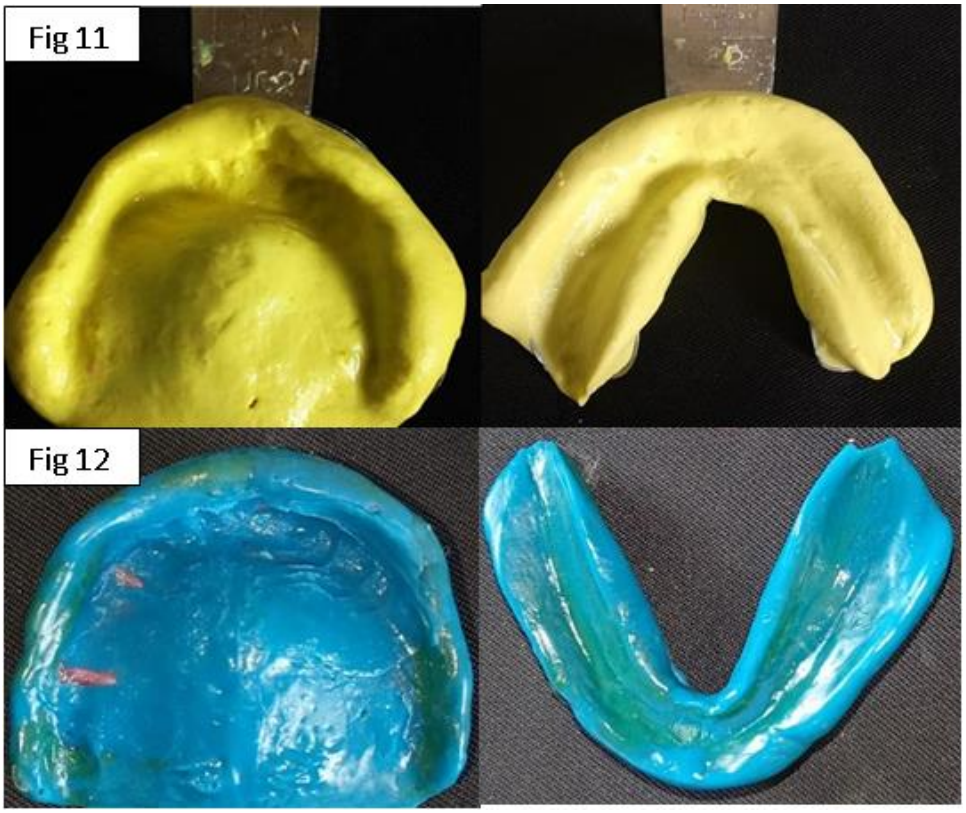

Fig 11: Irreversible hydrocolloid impression of maxillary arch & mandibular arch.

Fig 12: Wash impression of maxillary arch made with regular body Reprosil HydrophilicVinyl Polysiloxane impression material.

Fig 13: Wax Try in.

Fig 14: Denture Insertion.

Fig 14: Denture Insertion.

Fig. 15: Pre operative and post operative profile photograph.

DISCUSSION

Hypermobile tissue overlying the residual alveolar ridge has long been a problem for patients who must wear complete dentures. Although the etiology of this condition cannot be defined specifically, some of the factors that may contribute to the tissue atrophy and bone resorption have been discussed. The clinical management of this condition may be approached as a prosthodontic or a combined surgical or non- surgical prosthodontic technique.

The compression of flabby ridges during conventional impression techniques can lead to instability, loss of denture retention, and dislodgement due to the elastic recoil of the fibrous soft tissue during function.[9] While individualized treatment strategies are often required for cases involving flabby ridges, a comprehensive change in the overall treatment plan is crucial. Upon reviewing the existing literature, it becomes evident that the majority of modifications in the conservative management of flabby ridges revolve around impression techniques and materials. In addition to the ongoing debate between mucostatic and selective impression techniques, the literature also highlights the use of modified or alternative techniques and the application of different materials.[10] Various methods such as spacers or perforations[11], sectional trays, or split trays[12] have also been reported. There is currently no evidence to support the superiority of one particular technique over others in providing a stable and retentive denture on flabby ridges.[9]

In the moderate-to-severe hyper- mobile ridge, surgical improvement of the denture-bearing area must be considered. If the hypermobile tissue can be surgically removed and an adequate foundation remains for complete denture fabrication, this is the treatment of choice. If surgical removal of this results in a flat basal seat with no residual alveolar process and with reflecting soft tissue attachments approaching the crest of the ridge, perhaps sclerosing of the redundant tissue should be considered.[13]

Desjardins and Tollman (1974) popularized the idea of injecting sclerosing agent to make a hypermobile tissue firm. Injection of tissue with a sclerosing agent is not a new procedure. It has been used in a variety of cases including hemangiomas, hernias, hydroceles, varicose veins,and hemorrhoids.[8]

Sclerosing agents can be classified into the following groups: (1) hypertonic solutions, (2) protoplasmic solutions, such as quinine and phenol, (3) surface-active soap solutions, such as sodium morrhuate, and (4) synthetic surface-active solutions such as sodium tetradecyl sulfate. These solutions do not diffuse readily into tissues; therefore, careful control of amount and placement can localize their action.

A variety of techniques have been suggested to manage the difficulty of making a denture to rest on a flabby ridge. It has been stated that while the flabby ridge may provide poor retention for a denture, it is better than no ridge as could occur following surgical excision of the flabbytissues.

This case report discusses the sclerosing injection technique to increase the firmness and reducethe mobility of flabby tissue. Before, starting the treatment, the patient's physician was consulted for any modification in the treatment plan. An informed consent by the caregiver was obtained. Synthetic surface-active solution sodium tetradecyl sulphate was planned to inject to the flabby tissues. Intraoral sclerosing procedure was carried out under local anesthesia, as outlined by Laskin[7] at the base of the ridge just above the periosteum. A series of injections were injected on both sides of the Maxillary arch from canine to canine on labial aspect. Postoperatively patient had mild pain and swelling in response to the sclerosing solution. Patient was advised to take analgesics to control the discomfort. Since the flabby tissue did not become sufficiently firm after 4weeks, in the sameway reinjection was carried out not on the similar site injected earlier. After reinjection of sclerosing solution, slough of tissue was noted in the 21

region but this has not been detrimental in treatment. So sloughy tissue was removedusing scar revision under LA and post surgical instructions were given. At one month after slough removal, the tissue appeared clinically normal, firm and relatively immobile. Then thecomplete denture was fabricated by using conventional method. On evaluation over 1 year, it was found that the patient very well adapted and was comfortable with the prosthesis. The patient was also satisfied with the restoration of function and aesthetics. Sclerotherapy favours the health of oral tissues along with providing denture stability.

Although it shows disadvantages like anaphylactic reactions, patient discomfort, loss of firmness and technique sensitivity but patients who were treated with sclerosing material appear to indicate promise for sclerosis as an alternative method for treating the hypermobile ridge crest.

This technique is not suggested as a panacea to eliminate the problems of patients and prosthodontists in confronting this clinical state. However, the sclerosing technique should be kept in mind as an adjunct to prosthodontic and surgical management of the hypermobile ridgein selected patients.[8]

CONCLUSION

A flabby ridge has been a daunting task for the prosthodontist to achieve a stable as well as a retentive final prosthesis. Treatment choice depends on the patient's willingness, oral condition, and preference for a fixed or removable prosthesis. Conventional techniques may result in distorted impressions, leading to instability and poor prosthesis retention. Surgical excision and dental implant therapy are alternatives in such cases, but may not be feasible in those patients because of medical illness or expensiveness of treatment. A nonsurgical technique for sclerosing of the hypermobile edentulous ridge has the advantage of maintaining alveolar height and avoiding the secondary vestibuloplasty needed when such tissue is surgically excised.

The presented case report gives dental professionals insight on how to proceed with treatment according to flabby ridge classification and the feasibility and applicability of different methods for a desirable treatment prognosis. It also gives crucial insight for follow-up, outcomes, and managing relapses. It would help clinicians manage analogous occurrences withutmost precision.

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