



Interdisciplinary Approach for Treating Denture Irritation Tissue Hyperplasia – A Clinical Case Report

Dr. Akanksha Katkade¹, Dr. Janhavi Purohit², Dr. Vilas Rajguru³, Dr. Kishor Mahale⁴, Dr. Smita Khalikar⁵

1. 3rd year PG, Department of Prosthodontics
2. 3rd year PG, Department of Periodontics
3. Assoc. Professor, Department of Prosthodontics
4. HOD & Professor, Department of Prosthodontics
5. Professor, Department of Prosthodontics

(Received: 07 January 2024

Revised: 12 February 2024

Accepted: 06 March 2024)

KEYWORDS

Epulis
fissuratum, liquid
supported
denture,
characterization,
diode
laser

ABSTRACT:

Introduction: Epulis fissuratum or denture induced hyperplasia is one of the most common results of ill-fitting denture or denture abuse represents as tumor like reactive lesion of oral mucosa. This condition more commonly seen in females and have predilection for maxillary arch. It can be treated by surgical excision followed by complete healing and fabrication of new well-fitting liquid supported characterized complete denture prosthesis. This case report represents Prosthodontics-Periodontics interdisciplinary approach for treating tissue hyperplasia in both arches caused due to irritation from existing ill-fitting complete denture in 65-years old male patient.

1. Introduction

Epulis fissuratum is type of hyperplasia that develops in association with ill-fitting denture. It is benign tumor like reactive lesion caused by chronic trauma of low intensity from denture borders. The lesion appears as single or multiple folds of hyperplastic tissue often with normal color and soft to firm consistency (1). It also may cause carcinoma if not treated for longer period. Elimination of causative agent can cause reduction of size of lesion however surgical excision of the lesion & proper prosthetic restoration is definitive treatment (2).

Case report

A 65 years old male patient reported to department of prosthodontics with a chief complaint of irritation due to existing dentures resulted into soft tissue overgrowth in both labial vestibules. Intra-oral examination showed proliferative growth in maxillary and mandibular labial sulci in anterior region and flabby tissue over maxillary and mandibular ridges. Old worn-out dentures (fig.1) with sharp borders were taken away from the patient to discontinue their use and patient was referred to Dept of Periodontics for the treatment of abused tissue.

On maxillary arch, the growth was lobulated and

erythematous. No evidence of bleeding or pus discharge was there. On palpation, the growth was non-tender, soft to firm in consistency, surface was irregular, and margins were well defined with pedunculated base. The growth was 15*11 mm extending from labial sulcus towards the 2 cm from the vermilion border of lip. (fig.2) On mandibular arch, growth was smooth and confined to the flanges of denture. The growth was non-tender, soft with well-defined margin. The size was around 20*14mm (fig 3). Both the ridges were flabby. Correlating with the history & clinical features, provisional diagnosis of epulis fissuratum was given and differential diagnosis of squamous papilloma was given. At the first appointment, dentures were taken away from patient to discontinue their use for three weeks to assess the improvement in lesion size. The lesion was evaluated after 21 days, since there was no significant improvement in the size of the lesion; we decided to excise the tissue.



Fig 1 showing old worn out ill-fitting denture having sharp edges



Fig. 2 showing maxillary lesion



Fig.3 showing mandibular lesion

SURGICAL PHASE –

1. After taking consent from the patient, the case was managed by excision using laser.
2. Surgery was performed in the Department of Periodontics using diode laser with wavelength of 810 nm.
3. After giving local anaesthesia of Lidocaine 2% with adrenaline 1:20,000, appropriate program and tip was selected for the lesion excision.
4. The lesion was excised, deepening as little as possible in the healthy connective tissue.
5. After the excision, it was irrigated abundantly with normal saline solution and the wound was left to heal by secondary intention. (Fig.4)
6. The excised lesion was sent for histological evaluation. The histopathological report confirmed the diagnosis of Epulis Fissuratum showing the features such as hyper-keratinised stratified squamous epithelium with flattened ridge ridges, atrophic epithelium in few areas of the section, the underlying connective tissue showing numerous dense bundles of hyalinized collagen fibers along with patchy chronic inflammatory cell infiltrate and few endothelial lined blood vessels with extravasated RBCs & Fibres.
7. Post-operative instructions were given. Analgesic and anti-inflammatory drugs were prescribed.
8. Patient was recalled after 14 days.
9. After 6 weeks, the prosthetic phase was started.



Fig.4 showing surgical excision of lesion using diode laser



PROSTHETIC PHASE-

1. The postoperative protocol and a hygiene-dietary advice have been presented to the patient.
2. After a period of one month, time necessary for initial tissue consolidation, the procedure for making a new pair of removable complete dentures began.(fig. 5)
3. Preliminary impressions (fig. 6) made using irreversible hydrocolloid impression material for both arches and casts poured using dental plaster.
4. Final impressions made using modified Zafrulla Khan's Window Technique for maxillary arch.



Fig.5 showing healed ridges after 1 month post-operative

A) Maxillary arch-

- Modified double spacer design (T- Shaped spacer) made and custom tray fabricated.(fig.7)
- After border molding was done, ZOE impression paste used to make wash impression.
- Flabby Tissue marked intraorally using indelible pencil, then tray reseated intra-orally and markings transferred onto the tray. The window trimmed off from the tray.
- Tray reseated again intra-orally and held firmly and then
- Addition silicone light body injected all over the flabby tissue.
- Then plaster and gauge backing used to support and hold the light body impression material in position.

B) Mandibular arch-

- Modified double spacer design made and custom tray fabricated.(fig.7)
- After border molding done, wash impression made Using light body Condensation Silicone using light pressure. (Fig. 8)



Fig.6 showing preliminary impressions



Fig. 7 showing double spacer adapted on cast

5. Then final casts poured using Type 3 dental stone.
6. Maxillomandibular relationship recorded and teeth arrangement done.
7. Waxed up denture trial done. (Fig.9)
8. Liquid supported Characterized Denture Fabrication done.
- Final Casts were duplicated using duplicating silicone material.
- Thermoplastic sheet of 2 mm adapted over duplicated cast 1 mm short of the sulcus & adapted sheet kept short of the PPSA for maxilla & buccal shelf area of ~~maxilla~~ (Fig.10)
- Then the processing done in conventional way using this adapted sheet and internal stains used to characterize the denture.
- Dentures are properly finished and polished and delivered to the patient.
- After 15 days, the first sheet removed and 2nd sheet of 1mm adapted over original cast and sealed using self-cure acrylic resin.
- The created space between the denture base



and the sheet is filled using Glycerine and sealed.(Fig.11,12)

9. Denture insertion done and all post-operative instructions given to patient.
10. Periodic follow up at 1 day, 1 month, 3 months and 6 months carried out.
11. Patient using denture with great satisfaction, no irritation or ulceration reported. (Fig. 13)



Fig. 8 showing final impression



Fig. 9 showing jaw relation & try-in



Fig. 10 showing Thermoplastic sheet adapted to the impression surface of dentures



Fig.11 showing that previous 1.5mm sheet was removed & 1.0mm sheet was adapted & glycerine injected into space.

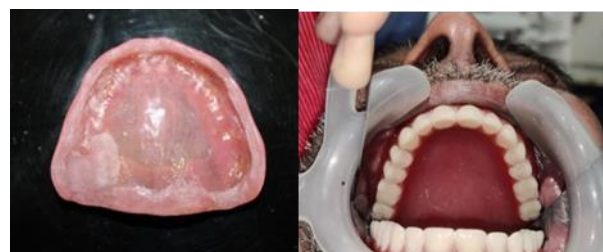


Fig.12 showing tissue surface of liquid supported maxillary denture with 1.0 mm thick biostar sheath and filled with glycerine

DISCUSSION-

Injury to oral tissue by ill-fitting denture is one of the causes of denture-induced hyperplasia (3). It has a female predilection (4). Firoozmand et al reported that 78% of females had denture-induced hyperplasia which is mostly seen in maxilla. The size of the lesion may be as small as few millimetres to massive lesion involving the entire vestibule. It is usually asymptomatic but sometimes severe inflammation and ulceration can occur (5). The reported case also had lesion in maxilla of a male patient. Denture-induced hyperplasia may be the result of ill-fitting dentures, poor oral hygiene, wearing dentures all day and all night, smoking, age-related changes, and systemic conditions. Irritation and trauma to the palatal salivary glands and inappropriate relief chambers in dentures are also considered as etiological factors. In our reported case ill-fitting denture and poor oral hygiene were the causes.



Denture-induced hyperplasia may be treated conservatively or surgically. In the early stages of fibrous hyperplasia, when fibrosis is minimal, nonsurgical treatment with a denture in combination with a soft liner is frequently sufficient for reduction or elimination of this tissue. When the lesion is completely healed the acrylic flange may be relined and redesigned to avoid any further trauma to the mucosa. When the condition has been present for some time and significant fibrosis exists within the hyperplastic tissue, this will not respond to nonsurgical treatment (6). Excision of hyperplastic tissue is the treatment of choice in such cases. Since the lesion was large it was treated with surgical excision followed by fabrication of new denture and the patient was educated on the need to maintain the oral hygiene.

Various techniques have been used successfully for treatment of inflammatory fibrous hyperplasia which includes scalpel, laser, electrocautery and cryosurgery. Diode laser is being one of the most used for this task as it provides various advantages. Some of these advantages are less intraoperative bleeding and therefore better visibility during surgery, less inflammation of the area, better coagulation, no scarring, and no need of suture, reduction of surgical time and minor or even the absence of surgical and postoperative pain. In addition, it provides an instant disinfection of the surgical wound. In addition, the diode laser has been shown to produce less collateral thermal damage at the edges of the lesion, so the degree of injury on the treated area is less compared to the diode laser and therefore the recovery is faster. As described in the case report, the use of the diode laser can provide a truly effective treatment in the excision of the epulis fissuratum, without any surgical or postoperative complications, very mild post-operative discomfort and an excellent healing as observed in the re-evaluation. [7]

A surgical splint or denture lined with soft tissue conditioner is inserted and worn continuously for the first 5-7 days with removal only for oral saline rinses. Secondary epithelialization usually takes place and denture impressions can be made within 4 weeks. Laser excision of large epulis allows complete removal without excessive scarring or bleeding. A denture relined with soft liner can provide for additional postoperative comfort, the liquid supported denture will be more comforting for the patient. The hyperplastic tissue usually represents only the result of an

inflammatory process; however, other pathologic conditions may exist. It is therefore imperative that representative tissue samples should always be submitted for pathologic examination after removal (8).

Liquid supported denture is based on the theory that when no forces are applied, the foil assumes the form in which it was pre-shaped during the processing phase. The liner acts as elastic "tissue conditioner" by which the original contours, when the impression was made, are being preserved. If masticatory loads are applied, the foil can adapt to the modified form of the mucosa because of the hydrodynamic plasticity of the supporting liquid beneath the foil. In this situation, the liner acts as a "soft liner." Proper selection of the viscosity of the liquid ensures the desired inertia of the movements and thus stability. [9, 10, 11].

There are following advantage of liquid supported denture. [12]

- Preservation of residual ridge by optimal distribution of forces.
- Better retention, stability, support and comfort due to close adaptation.
- Optimized atmospheric pressure, adhesion, cohesion and mechanical interlocking in undercuts.
- Improved patient tolerance because of great comfort due to smooth flexible surfaces.
- Prevention of chronic soreness from rigid denture bases.

Precautions

- Thickness of denture base should be at least 3 mm.
- Seal should be perfect and should be checked for micro leakage.
- Denture care instructions should be given to the patient.
- In case the liquid leaks out, the patient should inform the dentist and the denture should be refilled.
- Repair is possible if the sheet gets ruptured and can be replaced over preserved stone cast.

To prevent the liquid from leakage, a dense foil must be used. This dense surface texture has another advantage because it protects the denture from contamination of *Candida albicans* and other micro-organisms, thus protecting the mucosa from bacterial or biochemical



irritation, often observed with the existing materials.[13] In this case, polyethylene thermoplastic clear sheet (Bio-star vacuum forming machine, Scheu-dental, Germany) was used because of its softness, flexibility and biocompatibility. Glycerine was used because it is colourless, Odourless, viscous, and biocompatible. [14] The adhesive used is n- butyle-2 cyanoacrylate, which is used in surgery as an alternative to suturing and as a protective covering over ulcers etc. The internal characterization of dentures done using the pigments for enhancing esthetics of the patient.



Fig.13 showing pre-op & post-op pictures of patient

Conclusion-

Denture induced hyperplasia and flabby ridges pose a prosthodontic challenge for the achievement of stable and retentive dental prostheses. Surgical removal of the hyperplastic fibrous tissue and implant retained prostheses may not be possible to be used in all cases. After surgical removal of redundant tissue, considering conventional prosthodontics, the use of liquid supported characterized denture can further improve the patient's acceptance due to more uniform distribution of forces and due to the improved comfort level.

References-

1. Kafas P, Upile T, Stavrianos C, Angouridakis N, Jerjes W. Mucogingival overgrowth in a geriatric patient. *Dermatol Online J* 2010; 16:7.
2. Canger EM, Celenk P, Kayipmaz S. Denture-related hyperplasia: A clinical study of a Turkish population group. *Braz Dent J* 2009; 20:243-8.
3. Bhasker RM, Davenport JC, Thomson JM. *Prosthetic treatment of the edentulous patients*. 5th ed. UK: Willy-Blackwell; 2001.
4. Espinoza I, Rojas R, Aranda W, Gamonal J. Prevalance of oral mucosal lesions in elderly people in Santiago Chile. *J Oral Pathol Med* 2003; 32:571-5.
5. Firoosmand LM, Almeida JD, Cabral LA. Study of denture-induced fibrous hyperplasia cases diagnosed from 1979-2001. *Quintessence Int* 2005; 36:825-9.
6. Omal PM, Mathew SA. Denture-induced extensive fibrous inflammatory hyperplasia (Epulis fissuratum). *Kerala Dent J* 2010; 3:154-5.
7. Cano-Durán, Jorge & Concepción, Daniel & Cardelles, Juan Francisco & Saez-Alcaide, Luis & Paredes-Rodríguez, Víctor & López-Quiles, Juan. (2017). Employment of Diode Laser in the Treatment of Epulis Fissuratum. Case Report. *IOSR Journal of Dental and Medical Sciences*. 16. 112-115. 10.9790/0853-160501112115.
8. Bhusal D, Joshi S. Comprehensive complete denture rehabilitation, a way to achieve recovery of abused tissue: A case report. *J Nepal Dent Assoc* 2010; 11:59-6.
9. Davidson CL, Boere G. Liquid-supported dentures. Part I: Theoretical and technical considerations. *J Prosthet Dent* 1990; 63:303-6.
10. Chase WW. Tissue conditioning using dynamic adaptive stress. *J Prosthet Dent* 1961; 11:804-15.
11. Ward JE. Effect of time lapse between mixing and loading on the flow of tissue conditioning materials. *J Prosthet Dent* 1978; 40:499-508.
12. Boere G, de Koomen H, Davidson CL. Liquid-supported dentures. Part II: Clinical study, a preliminary report. *J Prosthet Dent* 1990; 63:434-6.
13. Razek M, Mohamed Z. Influence of tissue-conditioning materials on the oral bacteriologic status of complete denture wearers. *J Prosthet Dent* 1980; 44:137-42.
14. Keni NN, Aras MA, Chitre V. Management of flabby ridges using liquid supported denture: A case report. *J Adv Prosthodont* 2011; 3:43-6.