

## CASE REPORT

### MANAGEMENT OF PONTIC INDUCED REACTIVE HYPERPLASTIC GINGIVAL ENLARGEMENT - A CLINICAL REPORT

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#### ABSTRACT

Improper design involving the intaglio surfaces of the pontics can lead to food impaction, plaque accumulation and a subsequent severe inflammatory tissue response. Proper choice of pontic material and design is a crucial determinant ensuring clinical success of fixed partial dentures. This article elucidates restorative and comprehensive management of pontic induced hyperplastic gingival enlargement.

#### Keywords:

Pontics,  
Acrylic,  
Hyperplastic Gingiva,  
Modified Ridge Lap,  
Saddle Laser.

#### INTRODUCTION

Pontic design is of paramount importance in maintaining esthetics and function in patients rehabilitated with fixed partial dentures. Several parameters including color, size and shape are involved in the selection of proper pontic design replacing the lost natural teeth. Amongst these factors the shape of the pontic is vital for the health of the underlying supporting mucosa. Unlike the natural teeth the pontics are devoid of root surface and supporting periodontal ligament. Hence, meticulous attention should be maintained in designing the intaglio surface of the pontics to restore function. Improper pontic design and poor maintenance may lead to food impaction, tissue irritation and diffuse hyperplastic growth of gingival and mucosal tissues termed as epulides or epulis like lesions (Coelho *et al*). Food impaction is compounded by subsequent plaque and calculus deposition and the underlying soft tissue and osseous health can be severely compromised (Macedo *et al* 2001). This article describes comprehensive management of pontic induced epulides.

#### CASE REPORT

A female patient, aged 23 years reported to the hospital with chief complaint of bleeding from the gums and soft tissue growth in the lower anterior region for the past one month.

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History revealed patient underwent fixed partial denture treatment to replace the missing central and lateral incisors lost due to trauma two months before. The growth initially started as a small enlargement and progressively increased in size and bled profusely while brushing.



Fig. 1. Clinical appearance of reactive hyperplastic gingival

(Macedo *et al*) Clinical examination revealed the presence of six unit acrylic fixed partial denture from canine to canine in the mandibular arch. A diffuse soft tissue inflammatory enlargement was found around the gingiva and the mucosal soft tissues around the pontic. The growth exhibited a soft to medium consistency, mild tenderness on palpation and bleeding on probing (Anneroth *et al.*, 1983). Radiographic evaluation demonstrated mild bone loss around the canines.

The patient was anaesthetised with a bilateral sub mental nerve block and the FPD retainers were sectioned with a diamond bur and removed with a crown remover (Corona Flex, Kavo, US.).



**Fig. 2. Acrylic FPD sectioned for removal**

The removed FPD was inspected and the pontic design used was a saddle and the intaglio surface of the saddle pontic showed marked deposition of calculus and food debris.



**Fig 3. Appearance of intaglio surface of acrylic FPD with saddle pontic design**

The underlying mucosa was severely inflamed and exhibited diffuse hyper plastic growth along the entire surface of the residual alveolar ridge with tenderness.



**Fig. 4. Mucosal appearance following removal of acrylic FPD**

The cement remnants were removed and thorough sub gingival scaling and root planning were done. The patient was prescribed non steroidal anti inflammatory drugs Aceclofenac & Paracetamol (Zerodol-P, IPCA Laboratories Ltd., India), reduce pain and inflammation and metronidazole gel (Metrogyl gel, Lekar Pharma, India) for local application and chlorhexidine mouth wash 0.12 % (Hexidine-ICPA HEALTH PRODUCTS, India) was prescribed twice daily for a period of one week.

The patient was observed for one week following application of dentin bonding agent (Gluma Bond5 Heraeus Kulzer, Hanau, Germany) over the prepared abutments to control sensitivity. The inflammation in the epulides subsided substantially over a period of seven days and the tissues gained firmness in consistency and assumed a nodular pattern.



**Fig. 5. Regression of lesion after removal of FPD**

The patient was subjected to surgical excision of hyper plastic nodule with diode laser mucosal excision using NdYAg laser (Zolar Photon, Ontario, Canada). (Kumar *et al*).



**Fig. 6. Presentation of the site after mucosal excision with NdYAg Laser**

The surgical healing was very satisfactory and the existing feather edged margins in the abutments were refined and shoulder margins were established and all ceramic retainers were planned.



**Fig. 7. Temporisation**



The residual alveolar ridge was exhibiting Sieberts class II type of resorption and modified ridge lap design of pontic was chosen for the fixed prosthesis. This design involves a passive and a minimal tissue contact with concavo-convex lingual intaglio surface.



Fig. 8. Modified abutments with Cord packing



Fig. 9. Final impression

Impressions were made with putty (Elite HD+Zhermack,Italy) wash technique following cord packing.(Ultrapak,Prime dental products Pvt.Ltd.,India).



Fig. 10. Metal try in



Fig. 11. Final prosthesis

Casts were poured with Type IV dental stone(Ultra Rock,Kalabhai Karson Pvt.Ltd.,India) and a metal ceramic restoration with NiCr alloy was fabricated following the application of tooth and gingival pigmented porcelain, tried in the patient and cemented with type I glass ionomer. (HY-BOND Glass ionomer CX, SHOFU INC, Kyoto Japan).



Fig. 12.Final prosthesis intra orally placed

The patient was recalled subsequently and followed for a period of three months and the soft tissues around the gingiva of the abutments and the mucosa overlying the residual alveolar ridge over which the pontic rested remained in good health. The patient expressed complete satisfaction with the prosthesis.

**DISCUSSION**

Pontic designs plays a major role in maintaining the adjoining gingival and underlying mucosal health. The commonly used pontic design in the anterior teeth are ridge lap and modified ridge lap designs (Daniels *et al.* 1997). These are the most tissue compatible pontic designs available, however a conical or ovate pontic can be designed to maintain the gingival architecture immediate post extraction. A saddle design in which the intaglio surface envelopes both the buccal and lingual side of the residual alveolar ridge was used in the earlier periods and was used in the current scenario for this patient by the previous clinician.

The major limitation of this saddle design is maintenance of oral hygiene in the tissue surface. Owing to the convex nature of this pontic design the bristles of the tooth brush were impaired from a comprehensive cleansing action which leads to plaque deposition, calculus formation and subsequently lead to soft tissue irritation, hyper plastic growth with inflammatory changes (Aydin *et al.* 2013). The commonly used methods of oral hygiene maintenance include flossing and special pontic cleansers. The lower anterior region is more vulnerable to calculus formation due to the opening of the salivary ducts of the submandibular and sublingual glands.

Modified ridge lap along with good esthetics provide a gentle contact with the mucosa with minimum pressure and the design enables self cleansability and easy access to the bristles during brushing. Gingival hyperplasia is commonly associated with ill fitting prosthesis, orthodontic wires and other forms of chronic irritation (Bellamine *et al.* 2012). The frequent hyperplastic lesions involving gingiva include peripheral ossifying fibroma, fibroma/fibrosis, giant cell lesion and granuloma pyogenicum, hyperplastic squamous epithelium, granulation tissue and peripheral odontogenic fibromas respectively.

Hyperplastic tissue can be managed through surgical excision, laser and cryosurgery. Excision using laser is versatile, fast, and promotes rapid healing and also controls bleeding effectively during the surgical procedure (Mattson *et al.* 1998 and Kumar *et al.*, 2007). Materials used for the fabrication of pontics play a vital role in maintaining the health of the underlying mucosa. The commonly used materials for pontics are resins, metals and their alloys, porcelain fused to metal and all ceramics. The resin materials have good esthetics but undergo mild distortion in shape by imbibing fluid from saliva, gingival crevicular fluid and thus expands in all dimensions (Rahal *et al.* 2004). If resin is used as a pontic with a saddle design this can invoke sorption of fluid which in turn compresses the soft tissues and propagate an inflammatory response.

The coefficient of thermal expansion of resin also causes expansion and contraction of pontics which can compress the tissues. The resins are also liable to monomer leaching and internal and external porosities which may harbor microbes and subsequently damage the underlying tissues (Huang *et al.* 2001). The resin surface may exhibit progressive surface roughness due to chemical and physical assault from various types of beverages and carbonated drinks. The resultant rough surface attracts more plaque which leads to harmful effects over the soft tissues. Metals may undergo electrolytic and stress corrosion which alters the surface characteristics making them rough and vulnerable to plaque deposition and metals can sometimes evoke an allergic response. Ceramics are considered the most biocompatible due to the neutral surface charges which prevents the adhesion of plaque and ceramics are inert and not subjected to most forms of corrosion (Pihlaja *et al.* 2014). The ceramic surfaces are highly glazed which also prevents adhesion of plaque and leaves no by products by microbial degradation. Hence ceramic materials should be the choice of pontics in clinical situations which require management of fixed partial dentures.

### Conclusion

Improper design and poor choice of material used for the pontics invoke severe soft tissue inflammatory changes in the adjoining and underlying mucosa which can result in peri abutment bone loss and residual ridge resorption.

Properly planned pontic design, choice of a more biocompatible material for pontics and good maintenance of hygiene around the fixed prosthesis will enhance gingival and periodontal health and will ensure clinical success of the prosthesis.

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