



PONTIC DESIGNS: PHOENIXING GINGIVAL HEALTH

Dentistry

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ABSTRACT

A pontic is an integral part of FPD that takes the role of absent natural teeth, maintains its operations, and occupies the area of the actual crown. The absolute properties taken into application while considering pontic design are health of the periodontium, maintenance of dental health, no food entrapment as well as occlusal harmony. Plaque accumulation involves the initiation of gingival and periodontal diseases and increases the chances of caries activity in association to the FPD. The pontic design should be such that the area can be cleansed by tooth brushing and flossing. The factors affecting pontic designs are the amount of the ridge resorbed, occlusal load and amount of space present for the pontic. "What you focus, determines what you miss" - a lost tooth is always the centre of attraction, so the primary concern should be to replace the lost tooth structure I.

KEYWORDS

Pontic design, FPD, Gingival health, Gingivitis

INTRODUCTION

Pontic is a fundamental part of FPD which occupies the edentulous space created by the actual tooth. The mechanical, aesthetic and biological requirements are considered while evaluating pontic design. The optimal mechanical properties include simplicity, inflexibility, and durability. The aesthetic properties for pontic design involve shade, emergence profile, natural appearance, size and surrounding soft tissues. The ideal biological considerations are health of periodontium, easy oral hygiene maintenance, no food accumulation and occlusal harmony. It has been seen through research that plaque is the main etiology behind gingivitis, periodontitis, and caries. It is more difficult to maintain oral hygiene in patients with FPD which increases plaque accumulation and increase the chances of periodontal problems and caries. Predominantly, plaque is seen in areas in contact with pontic, therefore pontic design with minimal mucosal contact is advise^{2,3}. Pontics can be classified as given below (Fig. 1).

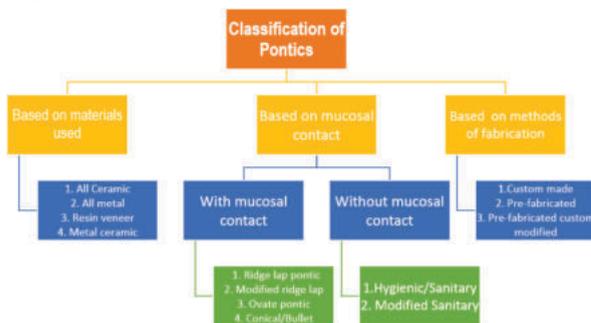


Fig. 1: - Classification of pontics

Some common pontic design

• With mucosal contact

1. Ridge Lap Pontic

This pontic design extends over buccal and lingual surfaces of the alveolar ridge and forms concave contact with it and enhances emergence profile⁴(Fig. 2).



Fig. 2: - Ridge Lap Pontic



Fig. 3: - Modified Ridge Lap Pontic

3. Ovate Pontic

This pontic design is more superior aesthetically. Convex tissue surface lies within alveolar ridge and surface in contact with tissue is rounded. It is indicated in recent extraction site, missing anteriors and flat broad alveolar ridges⁵(Fig. 4).

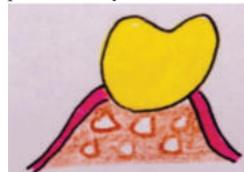


Fig. 4: - Ovate Pontic

4. Conical/ Bullet Pontic

This is indicated in knife-edged alveolar ridges. With just one point of contact at the center of the alveolar ridge, it is as convex as it can be. It provides easy maintenance of oral hygiene³ (Fig, 5).



Fig. 5: - Conical/ Bullet Pontic

• With-out mucosal contact

1. Sanitary /Hygienic Pontic

It is also known as perel pontic which is concave mesio- distally and convex labio-lingually. The gingival surface of the pontic is shaped like a hyper paraboloid, which increases strength of connectors and allows easy cleansing³(Fig. 6).

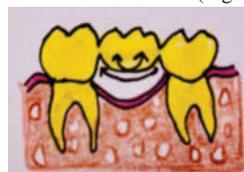


Fig. 6: - Sanitary Pontic

2. Modified Sanitary Pontic

This design involves minimal inflammation. It is convex in both labio-lingual and mesio-distal configuration. The occluso-gingival thickness should be > 3 mm to facilitate cleansing. It is recommended usually in mandibular molars³ (Fig. 7).



Fig. 7: - Modified Sanitary Pontic

• Some other types of pontics

1. Stein pontic

Stein pontic is the variant of modified ridge lap pontic and is proposed for sharp edentulous ridges, exhibiting minimum contact with tissue, and offering fair esthetics. It is contraindicated in wide bucco-lingual edentulous ridges^{1,7,8}[Fig. 8(A)].

2. Trupontic

The center of the lingual surface of the facing of the trupontic has a horizontal tubular slit [Fig. 8(B)].

3. Hollow pontic

The hollow pontics are inexpensive as it decreases the cost of the metal-ceramic pontics. There is also reduction in metal porosity due to less metal in pontic and easier soldering. It is a sandwich of metal-ceramic, therefore provides greater strength and resistance to the tensile force^{1,7,9}[Fig.8(c)].

4. Inzoma pontic

It's a novel strategy in which there was addition of the horizontal ridges. To avoid defect migration, labial ridges are introduced horizontally in anterior inzoma pontic whereas for porcelain support, facial and palatal ridges are built on abutments in inzoma pontic of posterior teeth^{1,7,10}[Fig. 8(D)].

5. Cross-pin and wing

It is a 2-piece pontic device containing distal and mesial retainer. The distal part has wing placed first and mesial portion has pontic placed latter, afterwards tapered pin is positioned into the wing and pontic. It is indicated in cases with absence of single path of insertion^{1,7}[Fig. 8(E)].

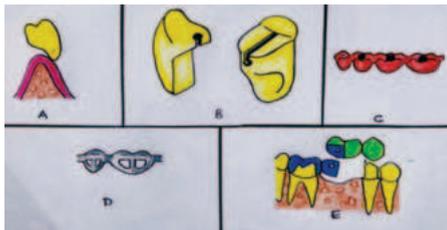


Fig. 8: - (A) Stein Pontic, (B) Trupontic, (C) Hollow Pontic, (D) Inzoma Pontic, (E) Cross-pin and wing pontic

Pontic-Ridge Relationship

Rosenstiel has mentioned a pressure-less contact between pontic and gingival mucosa to prevent ulceration.

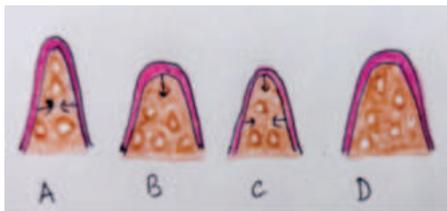


Fig. 9: - Ridge classification

Ridges can be classified acc. to the deformities (Fig. 9): -
Class A: Loss of the facio-lingual tissue with normal height of ridge
Class B: Loss of height of ridge with normal width
Class C: Combination of loss of both the dimension
Class D: Normal ridge⁵

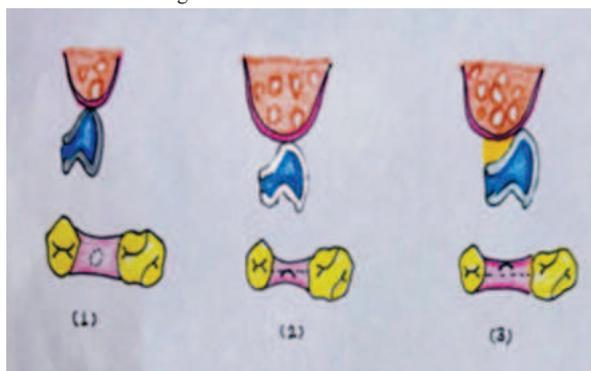


Fig. 10: - (1) Pontic's gingival surface must be ideally fabricated using ceramic for enhanced tissue response. (2) To avoid an adverse tissue response, the surface of pontic should have truly little tissue contact. (3) Tissue contact needs to be associated to the ridge's crest and arranging it more anteriorly shall cause food to pile up.

Gingival and periodontal considerations

Bacterial colonization plays vital role in gingivitis, periodontitis and peri-implantitis which is influenced by immune response of individuals. Factors increasing the risk of morbidity involves the

selection of pontic design with mucosal contact and poor oral hygiene aggravating plaque adhesion. In patients with poor oral hygiene mucositis and gingival inflammation are initial stages progressing to periodontitis and peri-implantitis. It is important for dentist and dental laboratory technician to have technical knowledge, care, planning and communication to reduce the risk of FPD failure. To maintain aesthetics, oral hygiene, mechanical stability and phonetics, it becomes important to pay attention over pontic design and its connection to abutment. The pontic design should be such that it does not pressurizes the alveolar mucosa as it may ulcerate. There are a few factors which influence pontic - alveolar ridge relation which must be considered for pontic designing in FPD which comprises peri-apical pathology, patient's age, periodontal diseases, healing efficiency and trauma from occlusion.⁷

CONCLUSION

The pontic design rather than material used for fabrication plays an important role in inhibiting inflammation. For the longevity of FPD with achievement of soft tissue health, a vigilant oral hygiene maintenance scheme should be assured. For the long-lasting efficiency of FPD, timely hygiene checkups and sufficient plaque control by patient is required.

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