

Prosthodontic management of congenitally missing lateral incisors an integrated approach

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INTRODUCTION:

Approximately twentypercent of all congenitally missing teeth are maxillary laterals, being the third most common missing tooth after upper and lower second premolars. The condition has an obvious impact on facial esthetics.¹

Treatment options include orthodontic space closure,¹ resin bonded fixed partial dentures after orthodontic space opening,² fixed partial dentures (resin bonded or full coverage) or single tooth implants.³

This article presents clinical steps and laboratory procedures for the treatment of congenitally missing lateral incisors with full coverage Fixed Partial Dentures, a traditional approach, that can provide excellent esthetics if certain guidelines are followed. An approach used to handle the dento-gingival issues and to achieve a natural appearance at the perio-restorative interface is also presented.

CASE REPORT:

A 16 year old female patient presented to the Department of Prosthodontics, Sibar Institute of Dental

ABSTRACT:

Congenitally missing teeth especially in the anterior region affect the facial esthetics. Prosthodontic treatment options include full coverage fixed partial dentures, resin bonded bridges or implant restorations with or without orthodontic space corrections. In order to obtain adequate esthetics, especially when lateral incisors are missing bilaterally, we need to use guides to achieve a pleasing appearance. Several guidelines have been proposed over the years for obtaining a pleasing smile. Esthetics in the anterior region is affected not only by the white component of the smile but also by the pink component. In this article, we have presented a case report where anterior esthetics was achieved by using the golden proportion grid and gingival porcelain.

Key words: Golden Proportion, Congenitally missing lateral incisors, Dentogingival esthetics, gingival porcelain

Sciences, Guntur, with a spacing of 10 mm between the central incisors. There was no history of previous extractions and radiographs did not reveal any impacted teeth (Fig 1).

The mesio-distal width between the two centrals was lesser than the space required for accommodating two teeth (Fig 2). The mesio-distal width of the central incisors was 8mm. The cervico-incisal length of the incisors was 10.5mm each. Mock preparation and diagnostic wax-up helped visualize the treatment outcome. As the central incisors required more reduction on the mesial aspect compared to the distal to create more space, the patient was advised intentional root canal treatment for the two central incisors. After the completion of root canal therapy, tooth preparation was done using maxillary central incisors and canines as abutments. Impressions were made and the working casts and dies were prepared.

Provisional restoration was fabricated using tooth colored autopolymerizing acrylic resin(DPI tooth moulding powder, B shade) and cemented in the patient's mouth using addition-cured silicone based zinc oxide temporary cement (Temposil).

The compromised dentogingival esthetics can be appreciated in the provisional restoration (Fig 3). The patient had a medium smile line and the gingival embrasures were visible during smiling.

The wax pattern was prepared and cast. Metal try in was done. The gingival contours were determined clinically and ceramic build-up was done. Gingival porcelain was used on the cervical aspect of the central incisor for creating a uniform gingival curvature to mimic a natural appearance. The principle of smile design⁴ was followed by placing the height of curvature of the marginal gingiva of the lateral incisor incisal to that of the central incisors or canines. The color of the gingival porcelain was matched according to the pigmentation of the patient's gingiva (Fig 4).

A golden proportion grid was drawn by using the width of the patient's natural central incisor i.e. 8 mm. The width of the lateral incisor as seen from front was taken as 5 mm (0.62 multiplied with the width of the central incisor) and that of the canine was taken as 3mm (0.62 multiplied with the width of the visible amount of lateral incisor). This grid was used as a guide during ceramic build up and confirmed in the patient's mouth during bisque try-in (Fig 5).

The final prosthesis was cemented after glazing (Fig 6&7).

DISCUSSION

Cosmetic dentistry has become one of the main areas of dental practice emphasis and growth for several years. The goal of esthetic treatment should be an enhanced but natural appearance that imparts a vibrant and believable appearance to the patient a result that would be "bright, beautiful but believable"⁵

Several standard guides and aids have been proposed to achieve a pleasing smile. Eddy Levin, a practicing dentist in London had applied and tested the golden ratio in his practice and described a simple tooth to tooth golden proportion.⁶ He suggested the use of the theory of Golden proportion to relate the successive width of the anterior teeth as viewed from the labial aspect. The width of the central incisor is in golden proportion (1.618) to the width of the lateral incisor and the lateral incisor should be in golden proportion to the width of the canine when viewed from the front.⁷ The validity and existence of golden proportion in esthetic smiles has been questioned in several studies.^{8, 9} The recurring dental proportion or the RED proportion was described by Ward as the proportion of successive width of the teeth remaining constant, when progressing distally from the midline.¹⁰

The RED proportion could not be used for this case because of missing laterals bilaterally. The phenomenon of golden proportion has been combined in a grid¹¹ which can be used to assist us in perfecting the aesthetics of the front teeth. The use of golden proportion grid was a definite guide for determining the width of the lateral incisors and canines when viewed from the front.

Esthetics in the dentogingival region should be established based not only on the white part of the restoration but also on the pink component. Replacement of lost gingival tissues (due to surgery, trauma, ridge resorption, or traumatic extraction) can be done by use of several methods (e.g. by regenerative procedures or by prosthetic replacement). Materials used for gingival prostheses include pink auto cured and heat-cured acrylics, porcelains, composite resins and thermoplastic acrylics, as well as silicone-based soft materials.¹²

CONCLUSION:

In order to fabricate a prosthesis that can be accepted by the patient, especially in the esthetics zone, an understanding the color and the form of the dentogingival composition is essential. An esthetic restoration that blended with the surrounding oral environment was fabricated using the golden proportion grid as a guide and dentogingival esthetics was obtained by use of gingival colored porcelain.



Fig 1: 10 mm space between central incisors



Fig 2: Intra oral Picture



Fig 3: Compromised Dentogingival esthetics can be clearly appreciated in the provision restoration



Fig 4: Gingival porcelain shade was matched to that of the patient's gingiva



Fig 5: Golden Proportion Grid



Fig 6: Final prosthesis



Fig 7: Pre and Post treatment photographs of the patient

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