Case Report

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Cosmetic Makeover of Periodontally Compromised Patients using Flexible Gingival Mask and Porcelain Laminate Veneers: Report of Two Cases

Abstract:

Chronic periodontal disease can lead to advanced gingival tissue loss that can result in problems with esthetics, phonetics, food impaction and tooth sensitivity. One of the most difficult problem encountered in the management of periodontal disease is loss of interdental papillae which leaves unsightly "black triangles" between the teeth. The first step in the management of these problems is surgical correction of the defect. In cases where mucogingival surgery is unpredictable due to generalized recession and loss of large volume of gingival tissue, removable gingival prosthesis is an excellent alternative to correct the deformities remaining after the control of destructive periodontal disease specially in the maxillary anterior region. Gingival prosthesesmay be fixed or removable. It can be made from a range of materials like acrylic, silicones, porcelain- based materials and flexible resin denture material. This report describes two clinical situations in which combined periodontal/prosthodontic rehabilitation was done for patients with advanced periodontal disease. Accurately fitting flexible gingival prostheses and porcelain laminate veneers were fabricated to restore advanced gingival tissue loss in esthetic area following periodontal flap surgery. The flexible gingival masks not only help to achieve excellent cosmetic results but also reinstate the functional and psychological wellbeing of the patient.

Key-words: periodontal disease, gingival recession,flexible gingival mask, porcelain laminate veneer, esthetics

Introduction:

Periodontal disease may lead to tooth and tissue loss that can result in esthetic problems. One of the most common sequelae to this is loss of interdental papillae which leaves unsightly "black triangles" between the teeth. Such spaces not only compromise on esthetics but also results in plaque retention, dentinal sensitivity and impairment of speech. The first step in the management of these problems is surgical correction of the defect. Surgical procedures however are invasive, irreversible and challenging, with results that are often unsatisfactory especially when large volume of tissue needs to be replaced. With a removable prosthesis, creating an ideal contour of the missing gingival tissue without disturbing the other dental units is not only easier and more predictable but it also offers the accessibility to proper cleaning. Gingival prostheses may be fixed or removable. It can be made from a range of materials like acrylic, silicones, porcelain- based materials and flexible resin denture material. Undercuts or dental attachments are used to secure the removable prosthesis. This clinical report illustrates two different clinical situations where removable gingival mask was used effectively to correct the deformities remaining after the control of destructive periodontal disease in the maxillary anterior region. Excellent functional, phonetic and aesthetic results were achieved which dramatically improved patient's confidence

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Case Report 1

A 46 year old female was referred from the Department of Periodontics to the Department of Prosthodontics, KLE Belgaum with a chief complaint of elongated teeth, tooth sensitivity and food lodgment. Patient also expressed dissatisfaction with the esthetics of her existing dentition. On examination, there was generalized gingival recession, loss of interdental papillae, unsightly black triangles secondary to chronic periodontal disease and missing mandibular incisors (Fig.Ia). After the patient received phase-I therapy in the Department of Periodontics, a decision was made to fabricate a removable gingival mask as it was not possible to replace the large volume of lost tissue through surgical intervention.

A labial acrylic custom tray was made on a model cast from a preliminary alginate impression (Fig.Ib). The tray was located on buccal cusp tips and incisal edges only extending up to the distal embrasure of the second premolar. The tray was extended into the labial sulcus, without over extension to create a good peripheral seal in the final mask.[1]The impression should capture the interdental spaces without tearing so that the gingival mask can fill the embrasures, thereby excluding air to prevent lisping and also aiding retention. To prevent the impression material from flowing out of the embrasures, a palatal barrier was made using silicone putty (Fig.Ic).[1] Once set, it was trimmed in such a way that it only forms a barrier at the palatal aspect of each embrasure but does not encroach into the interdental space itself. Secondary impression was made using heavy and light body, addition silicone impression material. (Fig.Id). Using a syringe, the light body impression material was made to flow into each embrasure space to capture the interdental spaces accurately and the heavy body impression material was loaded in the tray. The impression was removed carefully to avoid tearing of interdental tags which represented the embrasure spaces. The cast was obtained and mask was waxed-up exactly as it had to appear as once the material has been processed, contouring and polishing are no longer possible (Fig.Ie). The model was then invested and dewaxing was done. After proper color matching with adjacent soft tissue, the mold was packed with silicone material (Gingivamoll from Molloplast, Regneri GmbH & Co.KG, Germany)in stages as described in the technical manual which accompanies the kit. It was then polymerized in a dry heat oven at 130˚C for 2 hours. On completion of curing, the mask was gently removed from the flask and trimmed using a sharp blade. A layer of protective lacquer was applied. The mask was then tried in patient's mouth and trimmed wherever required (Fig.If). Instructions were given to the patient for its use and maintenance. The patient was advised to remove the prosthesis in the night to ensure adequate rest to the gingival tissues. Further the patient was instructed to clean the prosthesis once daily with a mild detergent solution. Smoking and frequent consumption of tea and coffee was discouraged as they can accelerate discoloration of the prosthesis. Patient was recalled every month for 6 months to check for plaque accumulation and stability of the prosthesis. The importance of persistent plaque control was emphasized again to prevent occurrence of caries and periodontal disease.Missing mandibular incisors were replaced using a removable partial denture.

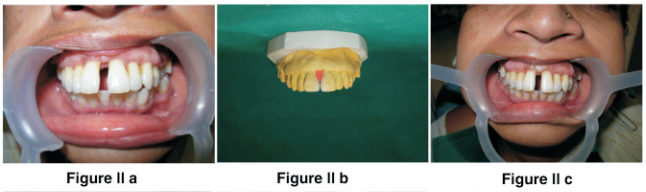

Figure II a | Figure II b | Figure II c

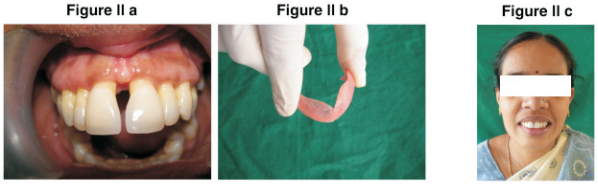

Figure II d | Figure II e | Figure II f

Fig II a: Diagnostic Wax-up
Fig II b: Preoperative View
Fig II c: Tooth preparation
Fig II d: Porcelain laminate veneers
Fig II e: Flexible Valplast gingival mask
Fig II f: Postoperative View

Case Report 2

A 34-year-old female was referred from the Department of Periodontics to the Department of Prosthodontics, KLE Belgaum with a chief complaint of bleeding gums, midline spacing and elongated teeth. Examination revealed generalized periodontal pockets, recession and bleeding on probing. A midline diastema was also found due to high maxillary labial frenal attachment (Fig.IIa). Orthodontic tooth movement was not possible due to insufficient remaining bone support.

A diagnostic cast was made from a preliminary alginate impression. Diagnostic wax-up was done using tooth-colored wax to evaluate the effect of space closure (Fig.IIb). Owing to a large midline gap, complete closure of the space would have resulted in too wide central incisors. Hence, with patient's consent, a decision was made to close the midline diastema with porcelain laminate veneers leaving a slight gap of about 0.5 mm. Crowns were avoided because additional tooth reduction was required

To achieve periodontal health, a full mouth periodontal flap surgery was performed. Although the periodontal health was restored, the patient was unhappy with the unesthetic appearance of elongated teeth and unsightly black triangles.

Therefore, a decision was made to fabricate a removable gingival mask.

Both the central incisors were prepared to receive laminates. Since a change in contour was planned, an incisal overlap or wrap type laminate preparation was done[2] (Fig.IIc). A uniform reduction of 0.5mm was done with the gingival half of the labial surface having a reduction of 0.3mm. A deep chamfer finish line was placed supragingivally within the enamel. The proximal reduction was extended into the contact area. The incisal edge was slightly reduced such that the porcelain overlaps the incisal edge, terminating on the lingual surface. The incisal overlap helps to provide a vertical stop and aids in proper seating of the veneer. The lingual finish line was placed ¼ the way down the lingual surface ,1.0mm from the centric contact, connecting the two proximal finish lines[3].A rubber base impression was then made. Provisional restorations were placed. Laminate veneers were then fabricated. The laminates were tried in the patients mouth and the marginal fit, proximal contact and the shade were verified. The laminates and the tooth were then prepared for luting by etching the prepared tooth with 37% phosphoric acid and etching the veneer with 10% hydrofluoric acid followed by application of silane coupling agent. Laminates were then luted with the resin cement (Fig.IId).

Another impression was made with addition silicone to register the gingival margin/laminate interfaces and the interdental spaces using a custom buccal tray.[4]The gingival mask was then fabricated with Valplast, following the same steps as mentioned above (Fig.IIe). The patient was instructed to place the prosthesis over the laminates and press it in position (Fig.IIf).Instructions were given to the patient for its use and maintenance. Patient was recalled every month for 6 months to check for plaque accumulation and stability of the prosthesis.

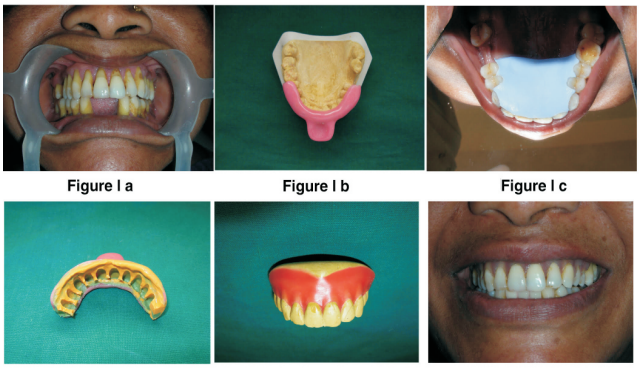

Figure I a | Figure I b | Figure I c

Figure I d | Figure I e | Figure I f

Fig I a: Preoperative View
Fig I b: Buccal custom tray
Fig I c: Palatal Barrier
Fig I d: Elastomeric Impression
Fig I e: Final Wax-up
Fig I f: Postoperative View

Discussion:

Gingival defects may be treated with surgical or prosthetic approaches. With surgical treatment, it is possible to restore original tissue contours. However, surgical procedures are invasive, technique sensitive, costly and results are often unpredictable when large volume of tissue is missing[5]. Various prosthodontic techniques have been documented to improve gingival esthetics using contemporary materials such as acrylic, silicones, porcelain- based materials and flexible resin denture material which offer excellent functional, esthetic and phonetic results.[5,6,7]

Use of acrylic veneers to mask gingival deformities is well documented.[4,5,6] However, they are hard and rigid and require bulk for strength.[8] They also pose difficulties in fitting accurately around multiple teeth leading to small gaps which collects food debris.[1,8] The flexible gingival mask is very thin, fits accurately in the undercuts and gives a more natural feel without any discomfort.[1,6] It can be fabricated easily with predictable results. Oral hygiene maintenance is feasible and it is possible to create an ideal gingival contour without disturbing the other dental units.[6] Moreover, the prosthesis can be adjusted as tissue changes occur. An esthetically pleasing, functional restoration can be achieved without undergoing any additional surgical procedure. Added advantage is that, it is possible to show the patient a waxed-up result or even take try-in prosthesis directly to the mouth for evaluation before significant treatment is initiated.[6]

Valplast, a flexible resin denture material, is available in four natural tones which allows picking characteristics of the underlying gum tissue and blending seamlessly with the natural gums and teeth. They are thinner, more flexible, lightweight and virtually unbreakable and can be used for patients allergic to acrylic monomer.[8] However, the flexible gingival mask too has the drawback of colour instability and dimensional changes when used for more than a year.[6,8] The frequency of replacement is dependent on the care and use each individual patient gives to the prosthesis.[1]

In both the cases, the flexible gingival mask not only improved the esthetics and phonetics significantly but also reduced tooth hypersensitivity and food lodgement. In the second case, a combined approach, using both fixed and removable elements, helped to achieve substantial improvement in esthetics which was highly appreciated by the patient. The prosthesis was found to be stable during eating, speaking and other daily activities. The patients were recalled every month for 6 months. No complications were observed.

Conclusion:

Periodontal disease often results in loss of gingival coverage of the teeth in the esthetic area resulting in gingival recession and loss of interdental papilla. The goal of a comprehensive rehabilitation is not only to restore the health of the periodontium but also to improve the esthetic appearance of the patient. Porcelain laminate veneers and a removable flexible gingival prosthesis can be used as a reliable and consistent alternative prosthetic procedure to treat advanced tissue loss, in cases with uncertain surgical outcome. The patient need not undergo any additional regenerative surgical procedures and receives an esthetically pleasing functional restoration.

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