Conservative Management of Gingival Recession: The Gingival Veneer

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ABSTRACT

Gingival recession is apical migration of the gingival tissues resulting in exposure of the underlying root surface. This can cause significant esthetic concerns for the patient, especially when it affects the anterior teeth. The gingival veneer is a prosthesis indicated for challenging clinical situations where there are esthetic concerns because of gingival recession, particularly loss of interdental papillae. Replacement crowns, surgery, or extraction of teeth, and provision of a removable partial denture are other treatment options; however, these have a significant biologic and financial cost compared with gingival veneers. This article aims to revisit the gingival veneer: its uses, advantages, disadvantages, and its fabrication. The cases discussed here highlight two different clinical situations where the gingival veneer prosthesis helped in achieving optimum esthetics and patient satisfaction thus proving to be a feasible and simple treatment modality in certain clinical cases. This may offer a good interim solution for patients who may wish to have time to consider their options of more advanced and complex treatment. Some patients may choose to wear the veneer as a long-term solution when the burden/risk of further advanced treatment may outweigh the benefits, as perceived by the patients.

CLINICAL SIGNIFICANCE

The gingival veneer is a viable treatment option for restoring anterior esthetics in clinical situations where there are esthetic concerns caused by significant gingival recession. Case selection is important for a predictable and successful outcome.

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INTRODUCTION

A gingival veneer (or gingival veneer prosthesis) is defined as a prosthesis worn in the labial aspect of the dental arch, which aims to restore the mucogingival contour and esthetics in areas where periodontal tissues are deficient.¹ Even though they are a viable treatment modality, gingival veneers have not been defined by the Glossary of Prosthodontic terms.²

Gingival veneers were first introduced in 1955 by Emslie and were used to mask the unesthetic appearance of gingival recession in a patient who underwent a gingivectomy.³ In 1970, L'Estrange *et al.* reported on a number of patients that had worn gingival veneers for over 3 years.⁴ The veneers were accepted very well by all the patients because of the improved esthetics. A strong emphasis was placed on the need for careful case selection, with immaculate oral hygiene being a key factor in the success of the gingival veneer. Historically, they have also been used as a vehicle for delivering topical medications such as topical fluoride,⁴ triamcinolone 0.1% in dental paste (in the treatment of desquamative gingivitis⁵), and as a carrier for periodontal dressings.⁴

*Specialist Registrar in Restorative Dentistry, Liverpool University Dental Hospital, Pembroke Place, Liverpool, UK [†]Consultant in Restorative Dentistry, Liverpool University Dental Hospital, Pembroke Place, Liverpool, UK The indications and contraindications for the use of gingival veneers^{1,6} are outlined in Table 1.

In the current economic climate, the gingival veneer prosthesis provides a simple and inexpensive treatment modality. This paper aims to revisit the use of this prosthesis, as illustrated by two case reports.

CASE I

A 41-year-old Caucasian woman was referred to the Restorative Department by her general dental practitioner. The patient was concerned about the recession and mobility affecting her upper anterior teeth. She first noticed this 2 years ago and felt that it had become progressively worse. Her general dental

TABLE I. Indications and contraindications for the use of gingival veneers^{1,6}

Indications: Gingival recession resulting in:	Contraindications
Poor aesthetics characterized by interdental "black triangles," exposed root surfaces, and/or crown margins	Poor oral hygiene
Food packing in interdental spaces	Limited manual dexterity
Lack of saliva control	High caries activity/risk
Impaired speech	Incomplete periodontal therapy
Root-dentine sensitivity	Allergy to fabrication materials

practitioner informed her that she had periodontal disease for which she underwent periodontal therapy on a 6-monthly basis. The upper anterior crowns had been fitted 10 years ago.

Medical history was unremarkable, and the patient smoked 10 cigarettes per day for 20 years, having reduced to five cigarettes per day over the last 2 years. Her oral hygiene regime at the time consisted of daily brushing without any regular interdental cleaning.

Clinically, the patient had a high smile line revealing margins of the upper incisor crowns. Her oral hygiene was inadequate with basic periodontal examination $(BPE)^7$ scores of 4 in all sextants apart from the lower anterior sextant with score 3. The upper right (UR) 2, UR1, upper left (UL) 1, and UL2 had periodontal probing depths ≥ 6 mm, were Grade I-II mobile, and were restored with metal-ceramic crowns. The patient had an Angle's Class II division 2 incisal relationship.

Radiographic assessment revealed generalized horizontal alveolar bone loss of 40–70%, with the upper anteriors being worst affected (Figures 1–2). The UR1, UL1, and UL2 were endodontically treated and heavily restored with cast post crowns, without periapical pathology.

A diagnosis of generalized moderate-to-severe chronic periodontitis resulting in gingival recession and compromised esthetics was made. Following discussion



FIGURE I. Orthopantomogram at presentation.



FIGURE 2. Periapical radiographs of crowned upper anterior teeth at presentation.



FIGURE 3. Photograph of the patient smiling revealing gingival recession and unaesthetic crown margins.



FIGURE 4. An intraoral photograph of the patient's dentition in occlusion.



FIGURE 5. The gingival veneer masks the crown margins and areas of recession.

with the patient, a treatment plan was formulated, which included nonsurgical periodontal therapy with emphasis on smoking cessation and targeted oral hygiene instruction. The patient understood that the options for managing the anterior esthetics would be dependent upon her response to periodontal treatment. During treatment, she continued to smoke but had reduced to two cigarettes per week and now used interdental brushes on a daily basis.

Following corrective periodontal therapy, the mobility and periodontal probing depths had reduced with residual sites of 4 to 5 mm. The patient was placed on a maintenance program, and the options for improving the upper anterior aesthetics were discussed with the patient as follows:



FIGURE 6. An extraoral view with the gingival veneer in situ.

- Provision of labial gingival veneer from UR3 to UL3 constructed in heat-cured acrylic resin
- Replacement of upper incisor crowns accepting residual interproximal spacing
- Extraction of teeth UR2, UR1, UL1, and UL2 with provision of a removable partial denture or implant-retained restorations

The patient refused extraction and found the costs of replacement crowns prohibitive. She agreed to wear a gingival veneer, which was the least invasive treatment option. She was very pleased with the esthetic result, which exceeded her expectations and the patient reported significantly improved self-confidence (Figures 3–6). The gingival veneer was reviewed alongside provision of periodontal maintenance on a



FIGURE 7. Orthopantomogram at time of presentation.

3-monthly basis. For the first 2 years, this was within the department, and no adverse effects noted on the periodontal status of the upper anterior teeth. Long-term stability is dependant on the patient undertaking regular appropriate periodontal care. Further follow-up was advised with the patient's general dental practitioner thereafter.

In this case, the veneer prosthesis achieved optimum aesthetics without irreversible or expensive treatment, thus meeting the patient's needs.

CASE 2

A 34-year-old Caucasian female was referred to the Restorative Department by an orthodontist, having been initially referred by her general dental practitioner for orthodontic treatment to close the upper anterior spaces. The patient was concerned about the gaps between her upper front teeth, which affected her confidence. Her medical history was unremarkable, although she did smoke 10 cigarettes per day. Her current oral hygiene regime included toothbrushing with a manual toothbrush twice daily and use of interdental brushes once daily.

On examination, oral hygiene was inadequate. BPE

accurat of	4	3	4	were recorded, with periodonta
scores of	4	2	4	

probing depths \geq 6 mm affecting molar sites. Several



FIGURE 8. Periapical radiographs of UR2, UR1, UL1, and UL2 at time of presentation.

teeth (mainly the incisors and molars) were Grade I mobile, with the lower left (LL) 7 being Grade II mobile. The patient had an upper midline diastema of 1 mm, and a 3 mm space between UL1 and UL2. Radiographs showed 40% to 60% generalized horizontal bone loss, with the upper central incisors being the worst affected (Figures 7–8).

Generalized moderate chronic periodontitis with migration of teeth in upper anterior sextant, was diagnosed. The patient underwent nonsurgical periodontal therapy, including smoking cessation support. The patient subsequently stopped smoking and improved her oral hygiene demonstrating good motivation. The upper midline diastema was closed by means of direct composite resin restorations. Flap surgery with root surface debridement was carried out on the UL6. Following stabilization of her periodontal condition (Figure 9), she undertook a course of fixed appliance orthodontic treatment alongside periodontal maintenance.

Following completion of orthodontic treatment, a fixed retainer was bonded palatally from UR3 to UL3. The patient was very pleased with the alignment of her teeth, but because of her high smile line, she felt that the "black triangles" were unacceptably visible (Figure 10).

The options to further improve aesthetics were discussed with the patient as follows:



FIGURE 9. Photograph of the dentition with considerable gingival recession and migration of teeth.



FIGURE 10. Photograph of the patient smiling with display of unaesthetic "black triangles."



FIGURE 11. Photograph of the fitted gingival veneer.

- Provision of labial gingival veneer
- Reduction of interdental spaces by addition of composite resin or indirect restorations
- Extraction of upper incisors, and provision of a removable partial denture or implant-retained restorations

The patient requested the quickest means of improving esthetics, as she was getting married and preferred not to have further restorations or extractions.

A labial gingival veneer therefore was the ideal, least invasive option to mask the unaesthetic interdental spaces.

A light-cured resin (Eclipse[®], Dentsply, Addlestone, UK) was used to construct the gingival veneer in the "light"



FIGURE 12. Photograph showing significantly improved aesthetics on completion of interdisciplinary treatment.

gingival shade (Figure 11). The patient expressed a high level of satisfaction with the esthetics and remarked that she "could not stop smiling" (Figure 12). This significantly boosted her confidence and was particularly timely, as she was also getting married shortly. She continued to abstain from smoking and maintained excellent oral and prosthesis hygiene. The patient has been reviewed within the department over the last 15 months and has continued to maintain good oral hygiene. Her periodontal status has remained stable, and she remains on a 3-monthly periodontal maintenance schedule.

DISCUSSION

The gingival veneer can provide a quick, simple, and inexpensive option for restoring the lost gingival tissues.

It eliminates the need for periodontal mucogingival surgery, which may not be a feasible option for some patients.⁸ This may offer a good interim solution for patients who may wish to have time to consider their options of more advanced and complex treatment. Some patients may choose to wear the veneer as a long-term solution when the burden/risk of further advanced treatment may outweigh the benefits, as perceived by the patients.

Case selection is important, as it requires patients who are motivated in terms of oral hygiene, caries rate, and prosthesis maintenance.⁹ In addition to periodontal cases, the gingival veneer may be suitable in various prosthodontic, implant, and therapeutic clinical situations. The use of gingival veneers with implant-supported restorations has been discussed in the literature.^{10–12}

The gingival veneer is border-moulded during fabrication and fits passively over the labial hard and soft dental tissues. Therefore, it has been our experience that there appears to be negligible pressure applied to the underlying tissues and the wearing of the prosthesis itself does not result in further recession or bone loss. There is no evidence in the literature that wearing a gingival veneer contributes to further periodontal breakdown. It is important to note that prosthesis hygiene and regular periodontal supportive therapy are crucial to long-term success.

Construction of the veneer prosthesis involves clinical and laboratory stages.

Clinical Stage

This can often be completed over three patient visits. A primary impression is taken in a stock tray, and subsequently, a special tray is fabricated. The literature suggests that clinicians have differing viewpoints on the need for a special tray for the definitive/secondary impression. In the authors' experience, a special tray increases the accuracy of the fit of the gingival veneer and allows for optimal extensions with the use of border moulding (Figure 13).



FIGURE 13. Photograph showing secondary alginate impression in special tray.

It is generally advisable to first block any interdental spaces with ribbon wax palatally, so as to prevent the impression getting "locked in" or tearing. Care should be taken to include sufficient recording of the interproximal areas to assist with retention of the final prosthesis. The impression material can be applied first into these interproximal areas, and then the loaded tray can be seated into place in a one-stage technique.

A sectional tray may be considered to obtain the definitive impression, extending just beyond the incisal tips and buccal cusps of the teeth. A two-tray technique has also been described,⁶ where the special tray consists of two separate parts, which can be located together. One part of the tray records the palatal surfaces, and the second tray records the labial surface with the impressions made in this sequence. It is important to locate both trays accurately out of the mouth so as to achieve an accurate working cast. The additional benefit of recording an impression of the palatal surfaces is questionable, with the technique made more complex.

Duplicate gingival veneers can be made on the same cast for up to two repeats.⁹ A variety of gingival shades are available to be selected with the patient's input. At the fit appointment, the veneer is tried in and trimmed carefully if needed so as to allow sufficient engagement of interproximal spaces without risk of fracture. The patient is shown how to insert and remove the veneer and care instructions given similar to any other removable prosthesis. Advice on plaque control is given, and recall arrangements are made (Table 2).

Usually, the veneer does not alter in retention and therefore does not require replacement unless it discolors or fractures (the latter is common with veneers fabricated from heat-cured acrylic resin⁸). It has been suggested that a low labial frenum can contribute to a fracture within the veneer, and it should be provided only after a frenectomy is carried out.⁴

Laboratory Stage

Gingival veneers can be fabricated using different materials, and the use of silicone, acrylic, or light-cured/nylon resin materials has been reported. The definitive veneer prosthesis is constructed indirectly within a laboratory.^{13,14}

TABLE 2. Maintenance and care for gingival veneers

Cleaning the prosthesis	Gently use a denture brush or toothbrush, and soap or denture toothpaste to clean away debris/plaque held over a basin of water. An antibacterial denture cleanser may be used as per the manufacturer's instructions.
Wearing the prosthesis	The prosthesis must not be worn at night. It should be handled with care and kept in water overnight.
Recall with the general dental practitioner	Recall at 1 week and thereafter as per routine recall schedule.



FIGURE 14. Working cast on which the veneer will be fabricated.

A temporary prosthesis can be constructed by a direct chairside method to determine the effects of providing a prosthesis before embarking on a more permanent gingival veneer. It has been suggested that a veneer can be moulded intraorally using silicone putty (President, Coltène/Whaledent[®] AG, Altstätten, Switzerland) or a tissue-conditioning material (Coe-soft[™], GC America, Inc., Alsip, IL, USA).¹³ Interdental undercuts are engaged, and the adjacent musculature is manipulated, ensuring adequate border moulding. Once set, the material is removed and contoured while trimming off any excess material. This provides a veneer that is used as a temporary of semipermanent prosthesis and replaced if a more durable and aesthetic veneer is required.¹³

Commonly, the gingival veneer is fabricated indirectly and requires close collaboration with the dental technician. The clinician must clearly communicate the extension of the veneer by outlining it on the primary cast.

Heat-cured acrylic resin veneers (methyl methacrylate resin) are constructed using the lost wax technique. These may be prone to fracture and use of a high-impact acrylic (Enigma High Base, Schottlander, Letchworth, UK) would be indicated. Use of a resilient silicone material such as Gingivamoll (Molloplast, Regneri GmbH & Co. KG, Ettlingen, Germany) may offer good flexibility¹⁴; however, a good color match can be difficult to achieve unless metallic oxide pigments are used prior to application of a protective lacquer.¹³



FIGURE 15. The baseplate resin carved and cured on the working cast.



FIGURE 16. The reduced and trimmed baseplate resin.

More recently, a light-cured resin may be used, which has a simplified laboratory stage, as described later. Light-cured resin such as Eclipse allows direct fabrication of the veneer on the working cast, thus reducing the laboratory time significantly and the cost of fabricating the veneer. The cast is warmed in the Eclipse[®] Processing Unit (Dentsply International, York, PA, USA) at 50°C for 10 minutes prior to adapting the baseplate resin. At this stage, the veneer is sufficiently dimensionally stable for try-in. This is then trimmed, and contour resin is added for a stippled and perfectly contoured finish. This is then light-cured to produce the final prosthesis (Figures 14–19 illustrate the laboratory stages).

Surface characterization in the gingival veneer may incorporate stippling and root contouring. The stippling in wax for heat-cured acrylic/light-cured resin veneers can be achieved using a toothbrush or a stiff, bristled brush. An alternative method has been suggested using a synthetic sponge made from low-density polyurethane foam (E79 foam, Bosworth Wright Ltd, Leicester, UK).¹⁵ It is preferable to incorporate it to a greater depth, as some depth will be lost while carrying out the final polishing of the prosthesis. Additionally, in the case of a heat-cured resin prosthesis, stippling can also be incorporated using a bur prior to the final polishing. However, the surface finish is less predictable.

CONCLUSION

The gingival veneer offers a predictable solution in restoring lost gingival tissues, particularly when larger



FIGURE 17. The contour resin added to the baseplate with stippling and final contours.



FIGURE 18. The veneer is then light-cured in the eclipse processing unit to give a final prosthesis.



FIGURE 19. (A,B) The final gingival veneer prosthesis.

amounts need to be replaced. It provides an interim or a longer term solution for certain clinical situations.

In a time of economic recession, the gingival veneer is an easily delivered treatment modality that is effective, inexpensive, and achieves optimum aesthetics, ensuring patient satisfaction.

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