Cosmetic Rehabilitation Following Successful Treatment of Aggressive Periodontitis

Abstract: With advances in periodontal therapy, many sufferers from aggressive periodontitis are retaining their teeth after successful treatment. This presents the practitioner with aesthetic and restorative challenges in these relatively young patients. Lifelong motivation is essential to the supportive therapy for these patients, and the maintenance of good aesthetics, combined with biologically acceptable corrective therapy, may help maintain a high level of motivation. Any treatment provided must naturally be conducive to maintaining long-term dental and periodontal health. This paper aims to demonstrate options for dealing with the aesthetic challenges posed by a number of patients who have undergone initial cause-related therapy for aggressive periodontitis.

Clinical Relevance: Loss of gingival tissue, tooth positional changes and tooth loss present practitioners with challenges in relation to patient satisfaction with aesthetics following advanced periodontal breakdown. A range of techniques will be required, tailored to the consequences of periodontal attachment loss, in order to satisfy patient demands.

Aggressive periodontitis

The term ‘aggressive periodontitis’ is used for a group of diseases brought together under one classification by the International Workshop on Periodontal Classification in 1999.1 It is subdivided into localized and generalized forms.

The disease is found in patients who are healthy and have rapid loss of attachment and alveolar bone.2 In many cases there may be a family history of this type of disease process. In some of these cases, the aesthetic changes following periodontal attachment loss may be the patient’s presenting complaint.

The rate of progression of aggressive periodontitis, together with the degree of attachment loss at the time of diagnosis, normally indicates referral to a specialist for confirmation of diagnosis and appropriate treatment planning, unless the General Dental Practitioner has adequate postgraduate training in the management of this form of periodontal disease.

Corrective therapy

Effective long-term maintenance has been shown to be achievable. Five-year follow-up studies3,4 have demonstrated good long-term prognosis for successfully treated patients. Ninety-five per cent of lesions were arrested successfully,4 and those which showed disease progression were associated with risk factors such as high bacterial counts of P. gingivalis, T. denticola, a continued smoking habit and stress.5

These studies suggest that there may be a number of successfully maintained patients who have extensive, but stable, attachment loss. Some of these can have very specific, and often lifelong, multi-disciplinary demands, to be addressed in the corrective phase of treatment. In the authors’ experience, a key area of concern for these patients may be related to altered aesthetics, which could be directly related to the disease process or a consequence of its successful treatment.

These are likely to be related to the following:

Treatment of aggressive periodontitis

Initial cause-related therapy

Treatment usually consists of non-surgical and/or surgical pocket debridement, together with the use of systemic or, in some cases, topical antimicrobial agents.7
Gingival recession; Drifting teeth; Tooth loss.

As aggressive periodontitis may present as localized and generalized forms, aesthetic implications can also be localized or generalized. The cases below illustrate treatment options reflecting both of these eventualities.

**Recession**

Following successful cause-related therapy, reduction of probing depth is likely to be due to a combination of recession and the formation of a long junctional epithelium. Areas of localized recession, more commonly found in other forms of periodontitis, are often amenable to surgical treatment, but the more generalized bone loss, often affecting all root surfaces in aggressive periodontitis, make this option less feasible.

Depending on the patient’s lip line and smile line, recession may, or may not, be of aesthetic concern to the patient. The aesthetic concerns may be related to the presence of exposed crown margins, or root surface exposure and interdental tissue loss (‘black triangles’ created at the gingival margin owing to shrinkage of the interdental papilla).

Recession may also result in protracted dentinal sensitivity and potential pulpal changes.

The use of a removable gingival prostheses can be an effective treatment option, in cases of localized and generalized gingival recession, where the gingival contour is compromising aesthetics. A gingival prosthesis may also help to address the phonetic difficulties some patients experience as a result of anterior interproximal gingival tissue loss, by eliminating escape of air from between the teeth.

A number of techniques and materials have been discussed in the literature. However, the main differences centre around the use of rigid versus flexible materials and one visit versus two visit techniques. The authors will outline their favoured technique later in this paper.

Coverage of the gingival tissues in patients with a history of periodontal breakdown is not without its risks. Patients must demonstrate an excellent level of maintained oral hygiene, and are advised to wear the prosthesis for the minimal time possible. Regular plaque scores are needed to demonstrate a high level of maintenance.

**Drifting**

Owing to loss of attachment, functional and parafunctional forces may lead to drifting of one or more teeth (Figures 1 and 2). Depending on the control of the disease process, the extent of drifting and patient preferences, a decision will need to be made whether to align the teeth, disguise the positional discrepancy or remove the malaligned tooth or teeth.

In order to arrive at the best solution, all options should be explored and presented to the patient in a way that is easy for them to visualize. This may be achieved with the use of diagnostic wax-ups and Kesling set-ups (Figure 3a–c) or, in cases of minimal change, white orthodontic wax, uncured composite or chinagraph pencils at the chairside.

Careful planning of the revised occlusal scheme will be necessary when aligning or modifying tooth shape, in order to prevent increased occlusal loading exceeding the physiological limit of the reduced periodontal support. Excessive occlusal loading may lead to increased mobility and drifting of the overloaded tooth or teeth.

**Tooth loss**

Tooth loss may be a traumatic event in any patient’s life, and for young patients may have a number of psycho-social implications. Careful handling of the planning and presentation of both the immediate and long-term tooth replacement options can, to some extent, minimize the psychological trauma.
Replacement of anterior teeth with implants in itself poses cosmetic challenges in relation to soft tissue contour. In patients who have extensive bone loss due to aggressive periodontitis, complex grafting may be needed, requiring specialist referral.

Restorative implications

The relatively young age of some patients who have successfully completed treatment for aggressive periodontitis may have implications in terms of long-term restorative maintenance. Restorations will need to be carefully reviewed, maintained and replaced throughout the patient’s life, and the lifespan of some restorative options will need to be carefully evaluated. These younger patients are likely to have larger pulps and wider dentinal tubules, increasing the risk of pulpal damage during restorative procedures unless extreme care is exercised. Obviously, the possibility of pulpal injury must be discussed with the patient when obtaining informed consent for any procedure involving crowns.

Restorative options to meet these challenges are illustrated in the following brief case profiles.

Drifting

Case 1. Localized drifting treated with restorative camouflage

Appearance was compromised in this case due to drifting of the anterior teeth and gingival recession exposing
crown margins (Figures 4 and 5). Once the periodontal disease had been stabilized, a new metal ceramic bridge replacing 2/, metal ceramic crowns 1/1 and a porcelain veneer 1/ were placed to re-establish acceptable aesthetics (Figures 6 and 7).

**Case 2. Localized drifting treated with extraction and immediate fixed replacement**

Following successful treatment of the active periodontal disease, the poor aesthetics caused by the drifting and rotation of 1/ was addressed (Figure 1). Ninety per cent bone loss had occurred on the distal root surface of this tooth and 60% loss on the mesial surface. The one walled morphology of the bony defect was not amenable to regenerative surgery and removal of 1/ was indicated. The crown of the extracted tooth was decoronated. The pulp chamber of the crown was disinfected with sodium hypochlorite and sealed with dentine-bonded composite, which was carefully polished to obtain a smooth and cleansable surface. Orthodontic wire was then attached to allow bonding to the adjacent teeth with composite resin (Figures 8 and 9). The bonded restoration provided an aesthetically acceptable immediate replacement during healing of the extraction site (Figure 10). A conventional cantilever bridge was later provided as the definitive replacement, and the patient has remained stable for five years.

**Case 3. Generalized drifting treated with fixed appliance orthodontics**

This 27-year-old female patient, with 70–90% bone loss in the upper arch, and 30% in the lower, successfully completed periodontal therapy for aggressive periodontitis (Figure 2). None of the lower teeth was mobile, and the maximum mobility in the upper arch was grade 1. The smile line was low and the patient was not concerned with the appearance of gingival recession, but she was very concerned with the drifting and irregularity of her upper anterior teeth. Both diagnostic wax-up and a Kesling set-up were produced to assess the aesthetics possible following either prosthetic or orthodontic therapy (Figure 3 a–c). Following discussion, the patient decided to have the upper teeth re-aligned with full arch fixed orthodontic therapy.

Owing to the reduced bone support, the patient was made aware that permanent fixed retention would be necessary. A good aesthetic result was obtained with a treatment time of only seven months (Figure 11), and has been maintained for four years so far. A permanent bonded retainer was placed palatally on the upper anterior teeth to prevent relapse.

**Recession**

**Case 4. Localized recession treated with gingival prosthesis**

This patient’s disease was treated both non-surgically and surgically over 20 years ago and resulted in an extensive localized recession 345/ area (Figures 12 and 13). This has remained stable and a heat polymerizing PMMA acrylic resin gingival prosthesis has been provided for the patient to wear in social situations to give acceptable aesthetics (Figures 14 and 15). A preliminary impression was recorded and a small special tray fabricated. The special tray was designed to be extended into the

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*Figure 14: Post treatment aesthetics (see Case 4).*

*Figure 15: Gingival veneer in situ (see Case 4).*

*Figure 16: Special tray and impression material (see Case 4).*

*Figure 17: Pre-prosthetic treatment aesthetics (see Case 5).*

*Figure 18: Gingival veneer in situ (see Case 5).*

*Figure 19: Gingival veneer on model (see Case 5).*
depth of the sulcus buccally, but then only on to the occlusal surfaces of the teeth. This allowed for an accurate impression of the buccal interdental defect to be achieved whilst avoiding the impression becoming ‘locked in’. Wax was then placed interproximally on the palatal aspect of the teeth as a further guide against the impression material flowing through the embrasures and preventing removal of the impression without tearing. A secondary impression was recorded in medium-bodied silicone which was syringed into the interproximal areas to give optimum accuracy. The tray was removed in a labial direction to minimize tearing and distortion of the impression. (Figure 16). A shade was selected for the final prosthesis. In the authors’ experience, production laboratories will have access to prefabricated acrylic shade guides or will custom make them if requested. The prosthesis is made to fill the interdental spaces and adapt well to the teeth, with the edges tapering to a thin knife edge for optimum aesthetics and patient comfort. The prosthesis is usually finished at the cemento-enamel junction.

Case 5. Generalized recession treated with gingival prosthesis

This 36-year-old patient with advanced periodontal breakdown was successfully treated with non-surgical periodontal therapy and adjunctive antimicrobials. The resulting generalized gingival recession and drifting was a significant aesthetic concern for the patient (Figure 17). A gingival prosthesis was provided and worn whilst the patient waited for orthodontic treatment to commence. Note that the shape of the defect and position of the undercut may make achieving an accurate impression difficult and it is not always possible to mask the resultant ‘black triangles’ completely (Figures 18 and 19).

Case 6. Recession exposing metal ceramic crown margins treated with all porcelain crowns

This 31-year-old female patient (a former cigarette smoker of 20 cigarettes per day for 15 years) was successfully treated for aggressive periodontitis. Gingival recession exposed the previously subgingival margins of her metal ceramic crowns 1/1 (Figure 20). Her smile line was high, and the appearance of her upper anterior teeth was poor. It was decided that placement of crown margins subgingivally would not be appropriate owing to her periodontal history. All porcelain dentine-bonded crowns with supra-gingival margins provided an aesthetic improvement (Figure 21), without increasing the risk of further periodontal breakdown due to plaque retention related to subgingival margin placement.

Summary

All patients with successfully treated aggressive periodontitis will require careful and lifelong monitoring. Advanced levels of attachment loss may mean that even a small amount of further loss of periodontal attachment could be catastrophic for these patients. The GDP is likely to be the person best placed to review these patients over a prolonged period of time, and monitoring of patient risk factors, as well as detailed periodontal indices, will be essential in the maintenance of periodontal health.

It is likely that clinicians will continue to develop innovative strategies to meet the aesthetic challenges presented by these periodontally healthy, yet compromised, patients as part of their long-term management. It is important that successful treatment options are shared to provide practitioners with a wide range of options for the treatment of the aesthetic problems that advanced attachment loss presents.

References

2. Milward MR, Chapple IL. Classification of periodontal diseases: Where were we? Where are we now? Where are we going? Dental Update 2003; 30: 37–44.