Severe Attachment Loss at the Maxillary Incisors: Part 2

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Abstract

In this two-part treatment planning series, the case of a 63-year-old woman with severe attachment loss at the maxillary incisors is presented. In Part 1, pretreatment strategies, occlusal and periodontal status, and the advantages and disadvantages of six treatment options using both conventional and implant therapy were presented. In this follow-up article, the treatment selected for the case is revealed, and the rationale—including indications and contraindications for the different treatment options—is discussed. The treatment sequence is then outlined, and the final outcome is presented.

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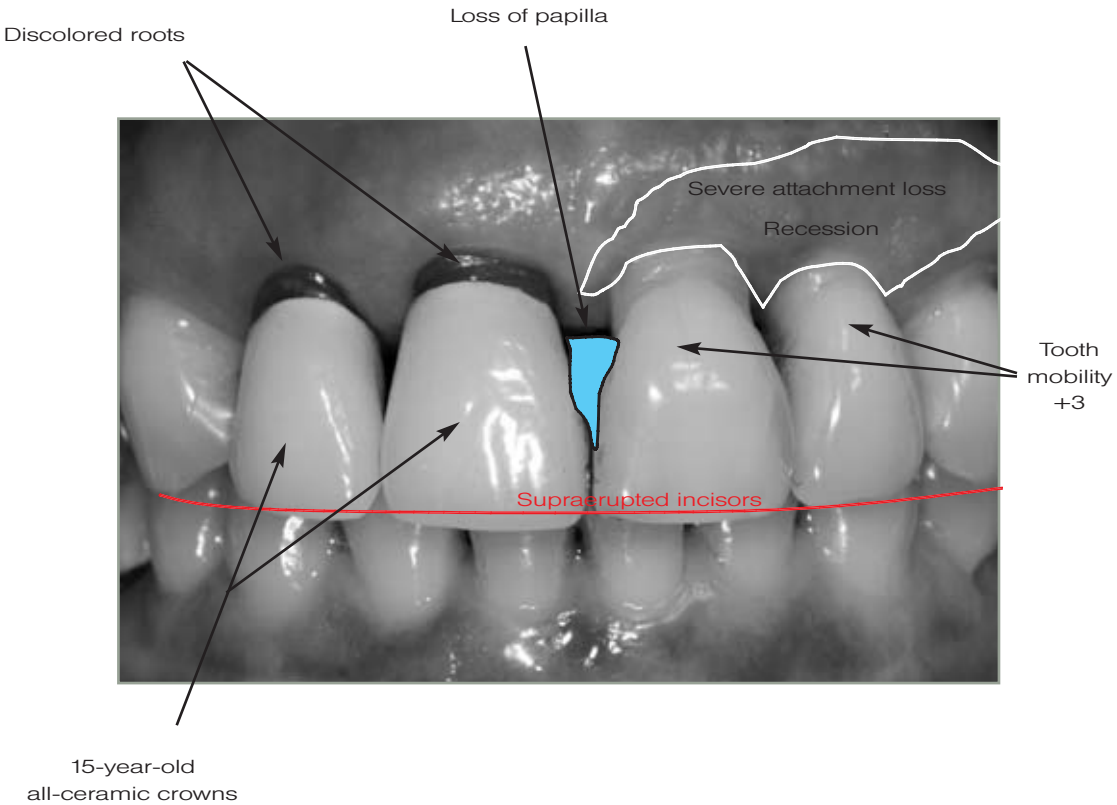

Editor's Note

In dentistry, as in all fields of medicine, there is no absolute right or wrong treatment method for any given clinical scenario. There is a multitude of methods and materials available that can be used to develop an overwhelming number of different therapeutic approaches. In order to provide clinicians with some guidance in this difficult process of treatment planning, each issue of this journal will present a clinical case and describe several possible treatment options. In the succeeding issue, the treatment selected for the case will be revealed, together with the rationale governing the decision.

Fig 1 Pretreatment three-fourths view dramatically shows the attachment loss between the central and lateral incisors.

Initial Presentation

A 63-year-old woman who had been regularly treated for 20 years at the University of Geneva presented with a heavily restored dentition in all quadrants and severe attachment loss at the left maxillary incisors (Figs 1 and 2). For several years, she was opposed to the idea of losing these teeth, to the extent that she preferred wearing a gingival prosthesis to cover the missing papillae, black triangles, and recessions (Fig 3).

Fig 2 **(a to d)** Periapical radiographs show the severe attachment loss.

By 2005, only a few millimeters of attachment remained, and the patient finally agreed to have the teeth extracted. The critical decision was how to replace them. In Part 1 of this article, the advantages and disadvantages of six different treatment options were presented. Several factors were considered before making the final decision.

High smile line

The patient showed a high smile line (ie, a gummy smile). This was very challenging from an esthetic perspective, because any imperfections of the future restorations would be dramatically evident at the level of the emergence profile.

Fig 3 Pretreatment intraoral view shows the missing papillae, black triangles, and gingival recessions.

Severe loss of attachment

Despite years of strict periodontal therapy, the patient still showed signs of periodontal disease. Bleeding on probing was present in several sites, which confirmed an active pathology. Only the two canines had sufficient attachment. Generally, in patients affected by periodontal disease, a more severe remodeling of the alveolar bone should be expected after the extraction of the compromised teeth. In the anterior maxilla, the risk of bone loss may be even higher.

Inharmonious gingival levels

The loss of attachment had led to missing papillae interproximally and to recessions facially. Consequently, the clinical crowns of all incisors were longer than the adjacent dentition (eg, canines). In addition, in the region of the right incisors, the gingiva was thin and bluish in color as a result of the discolored devitalized roots.

Even though the patient's soft tissue conditions were not optimal, the treatment goal was to provide a new prosthesis in which artificial crowns and soft tissue would be integrated harmoniously, eliminating the need for a false gingiva.

Crown replacement at the right incisors

For a satisfactory esthetic outcome, replacement of the existing Cerestore crowns (Johnson & Johnson) would be necessary, not only because of their striking color mismatch (higher value), but because all incisors were supraerupted and had drifted labially. Repositioning them more palatally and apically would help closing the cervical embrasures (where the papillae were missing), eliminating the need to create restorations that were too long or too large. However, to hide the discolored roots and compensate for the supraeruption, a more aggressive crown preparation would have been necessary. Since the teeth were already devitalized and restored with posts, their mechanical strength would have been jeopardized if the crowns were replaced.

Medical history

The patient's medical history showed an absolute contraindication to implant therapy. Since 2006, in fact, patients at the University of Geneva who take aminobisphosphonates are no longer eligible for implant therapy, as a result of several cases of osteonecrosis that developed after implant placement. The patient was also a smoker (10 cigarettes per day).

Final decision

Contraindications to implant therapy

In Part 1, three implant therapies were proposed based on different implant positions. All had the advantage of not involving the natural dentition. However, the implant sites presented extreme loss of bone and soft tissue, which would only have worsened after tooth extraction and implant placement.

Further, the implant-supported crowns would need to be unnaturally long and large to camouflage the lack of interproximal papillae. These imperfections would have been dramatically evident at the level of the emergence profile, particularly in a patient with a high smile line. The regenerative techniques available do not guarantee predictable results in cases with vertical bony defects of this magnitude.

Finally, as previously mentioned, the patient was not eligible for implant therapy, because she took aminobisphosphonates. Therefore, a conventional approach was preferred.

Rationale for conventional therapy

The major dilemma regarding conventional therapy was the choice of the abutments. On the left side, following extraction of the two incisors, the canine was the obvious choice to serve as an abutment. On the right side, however, either the central incisor (alone or splinted to the lateral incisor) or the canine could have served as abutments for a fixed partial denture (FPD). Saving the two incisors would have avoided the full coverage of an almost intact tooth (the canine) and provided comfort to the patient, who was already upset about losing the left incisors. However, the cost was considered too high.

Mechanically, the incisors would have been weaker abutments for supporting a multiple-unit FPD. The right central incisor was heavily restored and devitalized with a moderate loss of attachment. The right lateral incisor, in the same manner, would have been a very dangerous abutment, because of the aggressive crown preparation required to hide the discolored root. In the author's opinion, the overall longevity of the FPD would have been jeopardized.

Further, from an esthetic perspective, extracting all four incisors would provide the lab technician with a greater ability to remodel the mucosa for a more natural emergence profile of the final crowns.

Therefore, a six-unit FPD supported by the two canines was chosen, following the extraction of all maxillary incisors (Fig 4). The two canines were vital and nearly intact teeth with good periodontal attachment. Preparing teeth in such good condition was regrettable, but ensured the long-term survival of the prosthesis.

To provide a more natural appearance of the prosthesis, a soft tissue graft was also planned to compensate for possible gingival defects. A time frame of 2 months was set for an adequate evaluation of the postextraction remodeling.

Treatment sequence and outcome

Before extracting the incisors, the two canines were prepared for full coverage. Careful attention was paid to their parallelism. An impression of the preparations was then taken, and two single provisional crowns were delivered to the patient.

In the laboratory, the cast was used to fabricate a six-unit provisional FPD. The four incisors were removed from the model, and the convex outline of the four pontics was carved into the stone of the edentulous anterior maxilla (3 mm deep).

On the day of the extraction, great care was taken not to injure the soft tissue and the buccal plate. Thanks to the provisional FPD, each alveolar socket was immediately supported by the ovate pontics (Fig 5). No reline procedures were necessary, since the provisional was fabricated indirectly in the laboratory.

The healing proceeded undisturbed. After the first month, as a result of the healing shrinkage of the alveolar sockets, a reline of the pontics was necessary to maintain a good adaptation to the mucosa. Surprisingly, 2 months after extraction, the anticipated need for a soft tissue graft (especially in the anterior left maxilla) was no longer considered necessary. In fact, the soft tissue under the pontics was very healthy, and the papillae had obtained (or maintained) stability (Fig 6).

An additional 4 months were allowed before the final impression was taken (Figs 7a and 7b).

At the biscuit bake try-in, the differences between the provisional FPD and final porcelain-fused-to-metal FPD were noticeable (Fig 8). The presence of a metal framework is always difficult to hide. The

Fig 4 Extracted maxillary incisors.

Fig 5 From the day of extraction, the pontics of the provisional FPD closely supported the mucosa of each alveolar socket.

Fig 6 The six-unit FPD 2 months after extraction with good soft tissue health.

Fig 7 **(a)** The prosthesis in place following an additional 4 months to ensure stability of the soft tissue. **(b)** Occlusal view before taking the final impression. The soft tissue was very healthy.

Fig 8 The metal framework at try-in. The decision to use porcelain-fused-to-metal was based on the technician's preference.

Fig 9 The pontics of the final prosthesis were perfectly adapted to the scalloped soft tissue.

Fig 10 **(a and b)** Profile views of the final prosthesis in place. Because soft tissue conditioning was performed and the incisors were repositioned cervically, the emergence profile has a natural appearance.

Fig 11 The final prosthesis in place. No soft tissue grafting procedures were necessary. The missing papillae have been hidden by repositioning the teeth and closing the contact points.

lab technician will struggle between the esthetic desire to reduce it as much as possible (eg, by opening the embrasures) and the functional need to leave a certain bulk of metal to guarantee adequate support for the ceramic. At the level of the embrasures, the result will be a more opaque aspect.

The amount of crown preparation for full coverage of the two canines was also the subject of debate. The excessive tooth reduction necessary for a more esthetic restoration would have compromised the strength and the vitality of the two abutments. Considering that these teeth already had small clinical crowns and were intended to support a six-unit FPD, the reduction was kept minimal (1.5-mm facial reduction).

Viewing the final prosthesis with an analytic eye, the two canine crowns appear bulkier than the original, natural teeth, but this was an acceptable price to pay for the mechanical and biological longevity of the FPD (Figs 9 to 11).

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