Periodontal issues and orthodontics

Shivani Patel[1]

Introduction

In this article, I would like to explore the question – can we do orthodontics in patients with periodontal disease?

When teeth are moved orthodontically, in the presence of plaque and inflammation, this force can cause excessive bone and attachment loss, and the periodontal ligament does not regenerate after tooth movement.

However, this doesn't mean that a patient with compromised periodontal tissues cannot benefit from orthodontic treatment. It simply means their periodontitis needs to be controlled before, during and after the entirety of orthodontic treatment.

Orthodontics and periodontal health

Orthodontics can be an adjunct treatment to improve periodontal health by:

- Uprighting or repositioning of abutment teeth prior to restorations or implant placement
- Space creation or reduction/closure to facilitate prosthetic replacement of teeth
- Correcting crossbites that are causing bite interference
- Extruding or intruding teeth to facilitate restorative work
- Correcting crowding of teeth
- Restoring lost vertical dimension
- Increasing or decreasing overjet/overbite
- Closure of spaces in-between teeth.

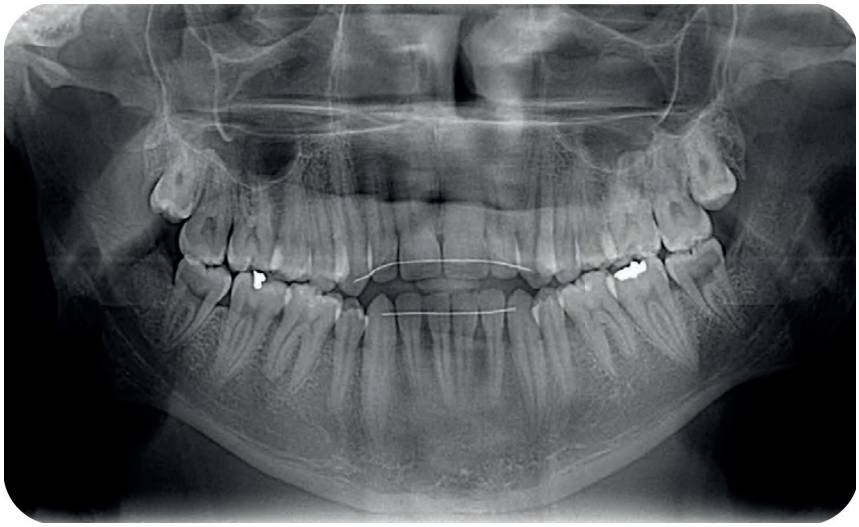

Figure 1: Following bleaching, the existing filling on the upper left lateral and a defect on the upper right lateral incisor can be seen

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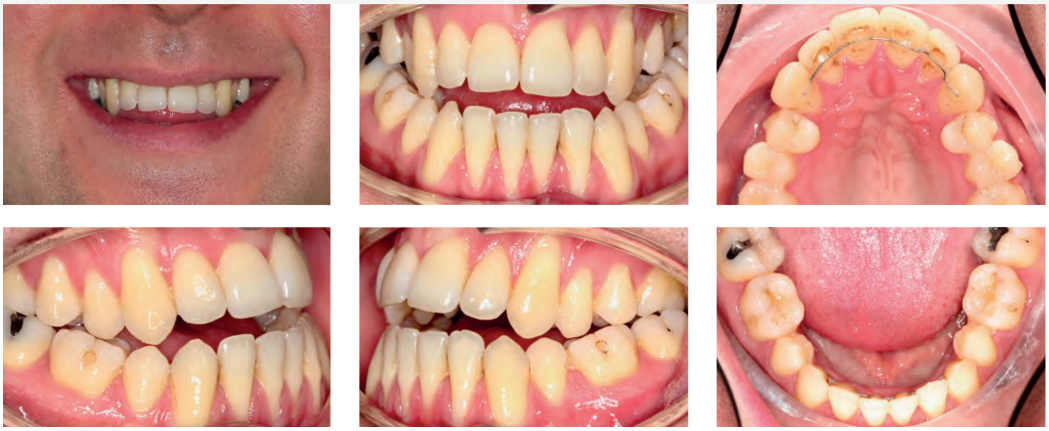


Figures 2-7: Preoperative photographs

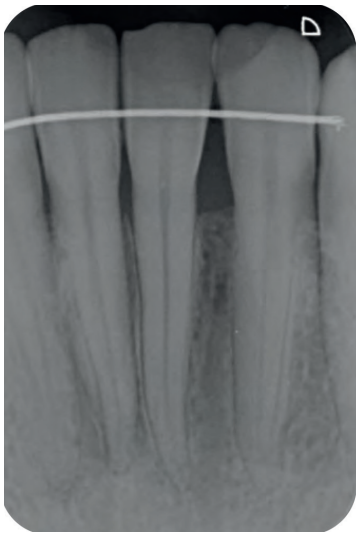


Figure 8: Preoperative lateral ceph

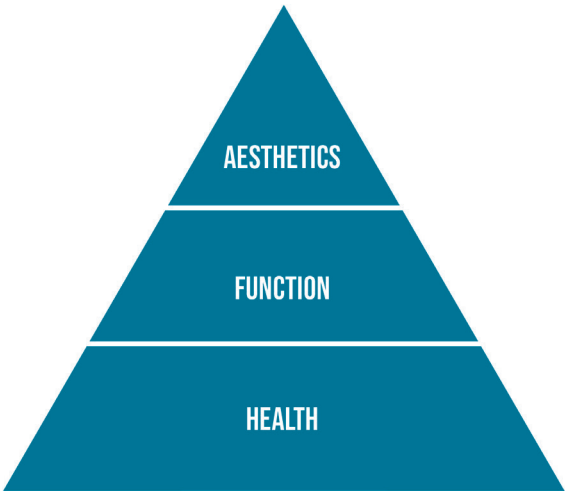


Figure 9: Elleven Dental's triangular lens

Can orthodontics induce periodontal issues?

In most patients, a transient gingival inflammation occurs after placement of fixed appliances that usually does not lead to attachment loss.

Gingival hyperplasia can develop around orthodontic bands, leading to pseudo pocket formation. However, this condition resolves after few days of debonding.

A review of the evidence-based literature shows that with optimum forces, correct orthodontic movements, good oral hygiene and the absence of pre-existing periodontal disorders poses no periodontal risk to patients. Thin, delicate tissues are more likely to undergo gingival recession than normal or thick tissues.

If the patient exhibits a minimal zone of attached gingiva or a thin tissue, then a free gingival graft placed before initiating any orthodontic treatment will help in enhancing tissues around the tooth and in controlling the inflammation.

Carefully controlled and planned movements are required, especially when considering tipping anterior upper and lower teeth or expansion.

In the following case report, we'll see how previous, poorly planned orthodontics combined with a thin biotype has reduced the long-term prognosis of the patient.

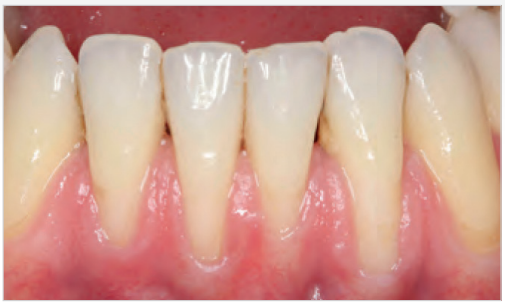
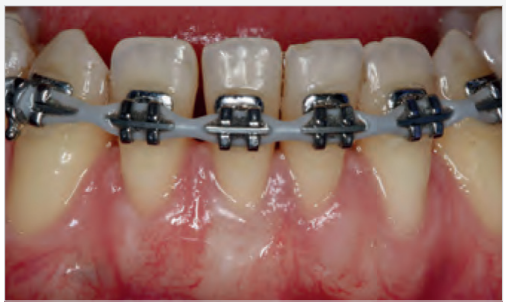
Case report

A patient attended E11even Dental in Wimpole Street in London with the complaint of having difficulty eating. The patient reported that he was a performer, and didn't like his smile.

Myself, specialist periodontist Lorena Mumford, restorative dentist Sameer Patel, and maxillofacial surgeon Ben Gurney carried out the treatment in this case.

We made the following observations:

- Skeletal III – under-developed maxilla
- Long lower face height
- Mouth breather

Figures 10 and 11: Periodontal surgery, before and after graft

- Class III
- Anterior open bite
- Narrow upper arch with crossbites
- Proclined upper incisors
- Retroclined lower incisors
- Mild crowding
- Previous orthodontics that involved the extraction of two lower premolar teeth
- Large amount of generalised gingival recession.

During the initial consultation, we took preoperative photos, a scan, a lateral ceph and an OPG (Figures 1 to 8

Detrimental previous orthodontics

Growth is hard to predict – especially in patients exhibiting skeletal III growth. This patient had orthodontics in his teenage years, which had unfortunately involved the extraction of two lower premolar teeth. Following this, he grew further both in an antero-posterior direction and a vertical direction with a posterior rotation.

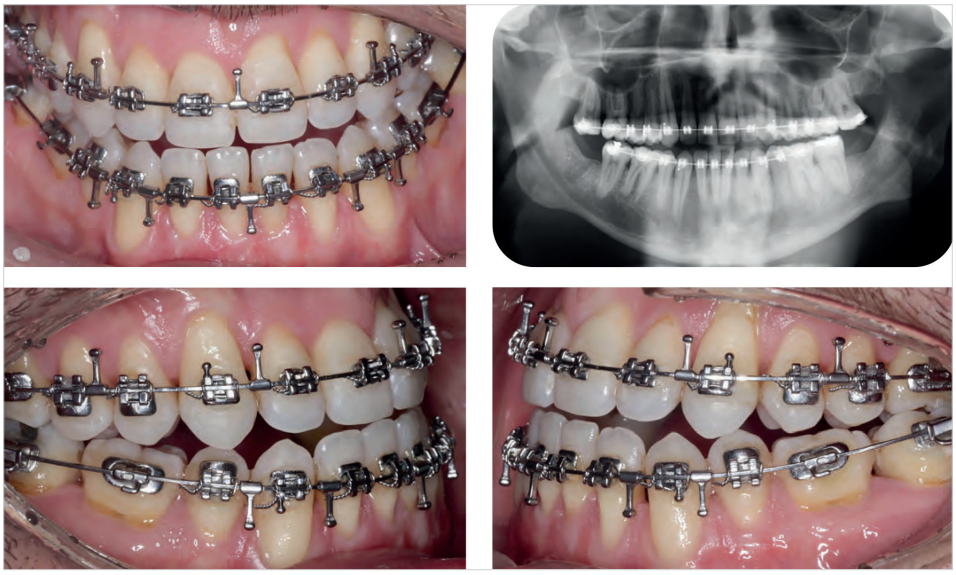
Hence when you look at the start photos you can see the anterior open bite and skeletal III with compensated incisor positions – the lowers are very retroclined, which have further led to gingival recession due to the roots being too close to the alveolar plate.

Treatment options

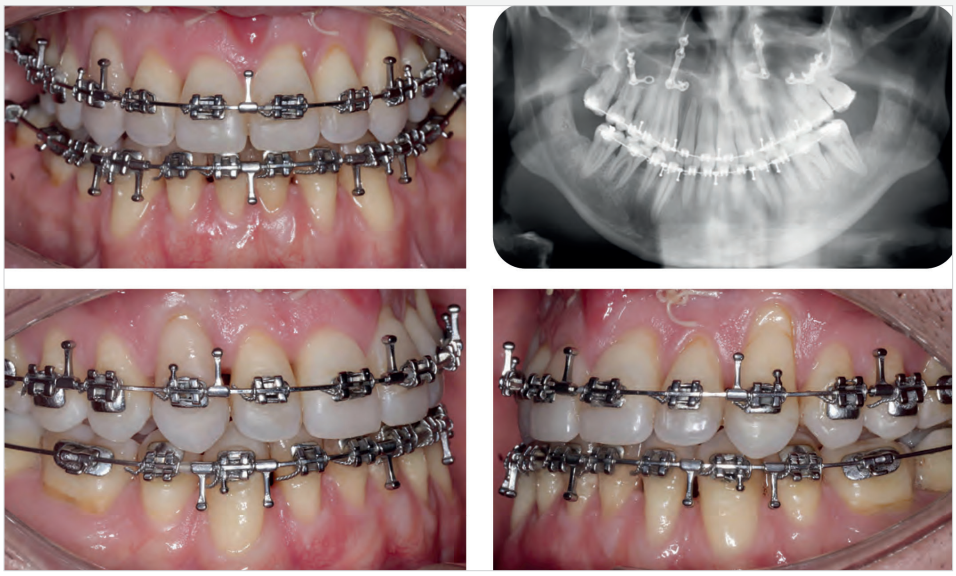
We discussed the following treatment options with the patient:

- Do nothing – accept the malocclusion but the periodontal health would need addressing
- Orthodontics alone – this would not be an option as any orthodontics would decompensate the lower incisors (proclining) accentuate the class III, worsening the periodontal health, function and aesthetics for the patient
- Comprehensive multidisciplinary care – the optimum option.

At Elleven Dental, we always like to look at every patient through the triangular lens of health, function and aesthetics (Figure 9).



Figures 12 to 15: Pre-surgery photographs



Figures 16 to 19: Post-surgery photographs

Health

In this case, we aimed to restore the basic health, provide education and reinforce prevention.

We provided a general dental check-up and a full comprehensive periodontal assessment. In terms of treatment, we placed a free gingival graft in the lower anterior region.

The patient was placed on a customised hygiene and periodontal regime.

Restoration of function

We opted for orthodontic treatment with fixed braces combined with orthognathic surgery to decompensate the upper and lower anterior teeth.

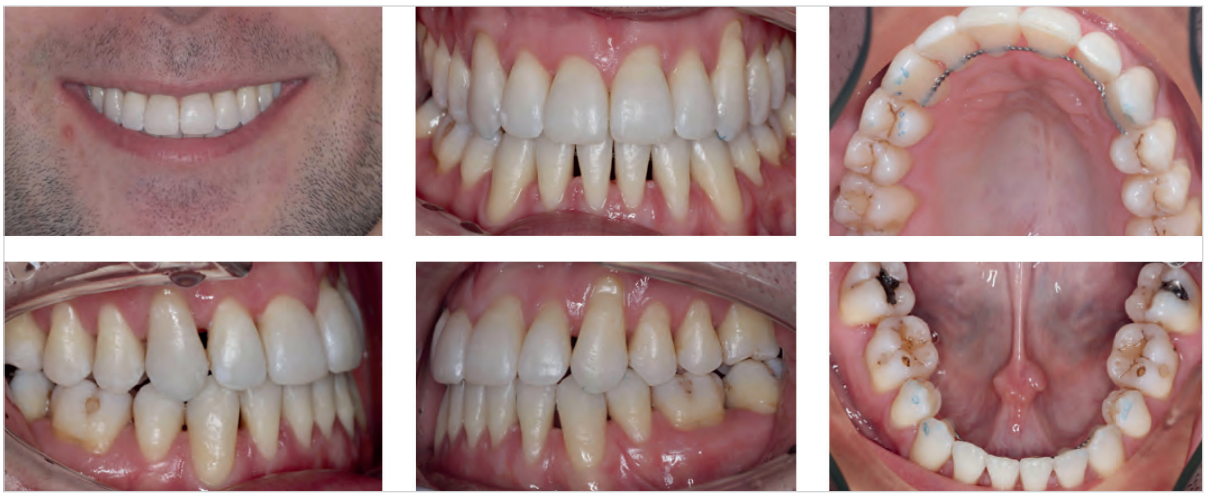
We needed careful uprighting of the lower anterior teeth and wanted minimal expansion. Coordination of the arches followed by a differential maxillary impaction and advancement. Total treatment time was predicted to be 18 months.

Aesthetics

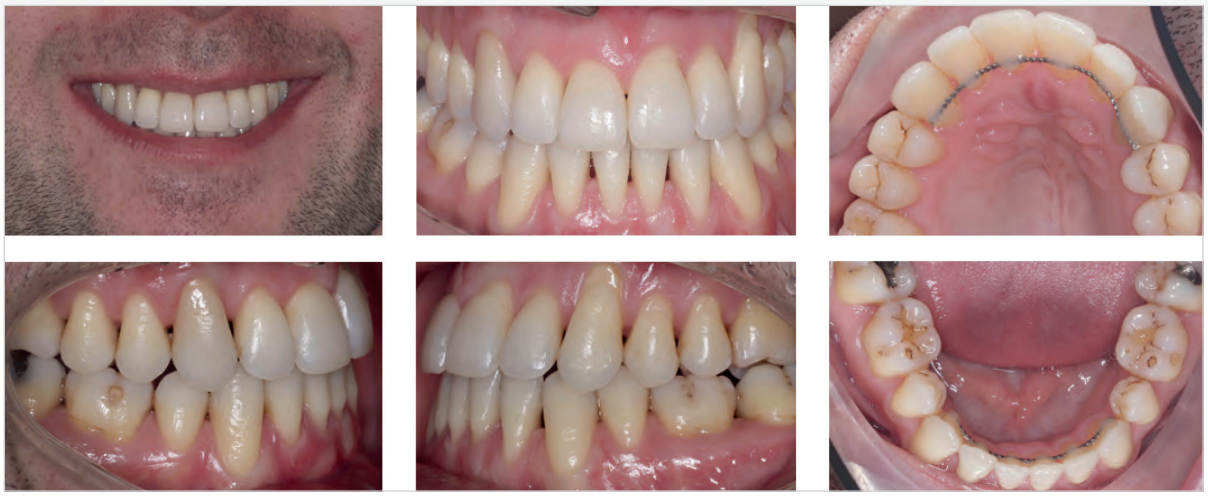
Regarding aesthetics, any further free gingival gum grafting, restorative care and tooth whitening would be offered if required.

Retention and maintenance

A combination of fixed and removable retainers would provide lifelong retention. A periodontal regime was also provided.



Figures 20 to 25: Debond photographs



Figures 26 to 31: Review

Periodontal stabilisation

Without periodontal stabilisation, we cannot progress further with the orthodontics. Elleven Dental's in-house periodontist ensured that the periodontal support system was disease free and stable enough to be able to withstand the forces of fixed braces for a prolonged period of time.

It was also imperative that the patient understood their involvement in keeping with the periodontal regime of regular hygiene etc as we were decompensating the lower incisor teeth, which would involve moving the lower roots back into the alveolar bone.

A free mucogingival graft was considered in the lower labial segment to create a more favourable condition as we were uprighting the lower incisor teeth. Orthodontic treatment commenced three months after this.

At the end of orthodontic therapy, the site should be reevaluated along with other sites and a second intervention considered. Figures 10 to 34 illustrate the periodontal surgery, pre-surgery, post-surgery, debond and case review.

Shivani's tips

Skeletal III growth is unpredictable, so if you're at all in doubt of unfavourable growth then only consider non-extraction alignment.

No orthodontic treatment should ever be carried out in patients with active periodontal disease. Orthodontic treatment of periodontal patients should be with a multidisciplinary approach.

In addition, I would highly recommend having a free gingival graft placed in areas of moderate to severe recession to assist in creating favourable conditions for orthodontic tooth movement.

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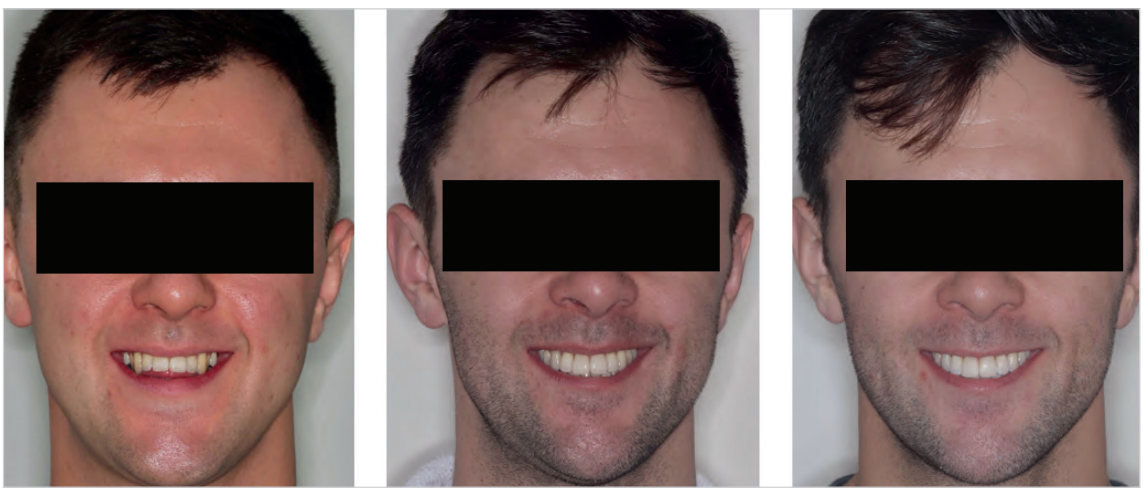

Figures 32 to 34: Full face comparison photographs – before, after and at review