Technique Tips

Immediate Orthodontic Retention after the Placement of Adhesive Bridges

Orthodontic retention holds the teeth in the treated position for the period of time necessary to maintain the result and minimise relapse.[1] Relapse can be related to physiological recovery, age-related changes and an unstable final occlusion.[2] It is acknowledged that spacing is one of the risk factors for post-treatment relapse. This includes pre-restorative orthodontics, whereby space is redistributed for prosthetic tooth replacements.[3] Therefore, it is essential for the retention phase of treatment to be planned and discussed with the patient from the outset.

Adhesive bridges are a recognized long-term solution for the fixed replacement of missing teeth after orthodontic treatment. The fabrication and timely placement of a removable retainer after placement of such bridges can be challenging.

The authors' preferred removable retainer is the clear pressure-formed retainer (PFR), which has some evidence suggesting increased patient preference, cost effectiveness and fewer breakages compared with Hawley retainers.[4] There is often a delay between the fitting of the bridges and fitting the replacement retainer, ranging from a few days to a few weeks, which can lead to the risk of unwanted tooth movements.

The authors advocate a modified approach to the above that allows placement of the final adhesive bridge and immediate insertion of the clear PFR.

Appointment 1: design (and preparation, if desired) of the adhesive bridge

For impression-making of the arch in which the bridge will be required, the authors recommend the use of a material used for the production of a definitive prosthesis, eg addition silicone, polyether, etc. This impression needs to be fully extended to include all of the teeth in the arch, including the terminal molars. For impression-making of the opposing arch, the authors recommend the use of a standard fast-setting alginate material. Finally, a laboratory prescription for the fabrication of the bridge should be completed.

Appointment 2: trial insertion of the bridge

The bridge should be attached to the abutment tooth to confirm the correct design, marginal adaptation, occlusal prescription and aesthetic outcome. The authors suggest the use of a temporary crown and bridge cementation material to facilitate this. A second laboratory prescription is required for reseating the bridge on the working cast, blocking out the undercuts and fabrication of a clear PFR.

Appointment 3: insertion of the adhesive bridge

The adhesive bridge should be definitively cemented and any excess cement removed.

The clear PFR should then be inserted and checked for adequate retention and patient comfort. The patient's ability to correctly insert and remove the retainer should be confirmed, and dedicated oral hygiene should be provided for the bridge and clear PFR.

Case report

We outline a case that allowed cementation of three cantilevered adhesive bridges and immediate placement of a clear PFR (Figure 1).

A 14-year-old male patient originally presented to the orthodontic department with a Class II division 1 malocclusion on a skeletal II base with reduced vertical proportions. The

Figure 1. The mandibular arch with LR5 and LL5 developmentally absent.

malocclusion was complicated by hypodontia of the LR5 and LL5, an increased overjet and overbite. The arches were generally well aligned. His treatment involved growth-modification treatment to address the skeletal discrepancy with a Twin Block functional appliance, followed by upper and lower fixed appliances treatment to redistribute space for the prosthetic replacement of LR5 and LL5. Note that there was more prosthodontic space remaining in the lower left quadrant compared to the lower right quadrant. Impressions of the lower arch were recorded in an additional silicone material and the upper arch was recorded in alginate

The adhesive bridges were replaced accurately on the working cast following trial insertion in the patient's mouth (Figure 2). Note that the cast captures the entirety of the lower arch to allow fabrication of the bridges and the clear PFR.

The cast was blocked out with blue light-cured silicone material (Blue-Blokker, Scheu Dental), as with all standard clear PFRs. The pontics had additional, permanently plastic silicone block-out material (Sil-Kitt, Scheu Dental), which blocked out the space under the pontics (Figure 3). The purpose of this

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Figure 2. The adhesive bridges on the working cast.

Figure 3. Blocking of the cast and pontics.

Figure 4. Adhesive bridges and PFM fitted onto the working cast.

Figure 5. Mandibular occlusal view of the three cantilevered adhesive bridges.

Figure 6. Anterior view of the adhesive bridges.

was to prevent the thermoplastic material engaging larger undercuts, and thus prevent oral insertion.

The working cast after fabrication of the clear PFR over the bridges and block out material is shown in Figure 4. The thermoplastic co-polyester was fabricated from a 1-mm thickness blank, and trimmed to 1–2 mm from the gingival margin of the teeth, or base of the ridge in the pontic region.

A retracted anterior and occlusal view of the patient after fitting of the three adhesive bridges is shown in Figures 5 and 6. The lower clear PFR was fitted immediately after this and required no modification.

Compliance with Ethical Standards

Conflict of Interest: The authors declare that they have no conflict of interest.

Informed Consent: Informed consent was obtained from all individual participants included in the article.

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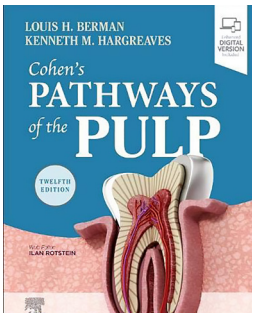
Cohen's Pathways of the Pulp



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Cohen's Pathways of the Pulp aims to serve as the definitive reference guide for endodontics.

Now in its 12th edition, this comprehensive book looks at the theory and practice of endodontology. Compared to previous editions, this text introduces a number of new elements.

First of all, the 2020 edition includes the newest advances in clinical techniques in endodontics. Each chapter has updated images and references, which the reader will find is a significant improvement on previous editions. In addition, with each purchase, the reader has the ability to access an extensive online library of videos, images, case studies and quizzes.

Finally, the chapters are now organized into three broad categories:

- The core science of endodontics: covering topics such as diagnosis, instruments, materials and treatment of various clinical scenarios
- Advanced science topics: addressing the underlying science such as the nature of the dentine–pulp complex, pathology and microbiology,
- Advanced clinical topics: covering the management of complications such as root resorption or iatrogenic damage.

One aspect of this book that impressed me was the in-depth explanations and analysis of various topics. In particular, I found the chapters outlining access to cavities, cleaning and shaping different canal shapes were explained in a clear, yet concise, manner. I also found the online content to be complementary to the written text and it helped me to gain further understanding of the topics outlined in the book.

With previous editions, I have often found the content to be wordy and overly repetitive. While this edition marks a significant improvement on this, the reader should be warned that at 928 pages, it is by no means a short read. As a general practitioner, I found this book valuable as a reference text, reading the relevant chapters as and when required.

To summarize, *Cohen's Pathways of the Pulp* can serve as an in-depth reference book for both dental students, general practitioners and specialists, and is a must-read for anyone interested in all things endodontics.

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