Technique Tips: Patient Information Leaflet

Information for Patients for whom Deep Caries has been Sealed into a Vital Asymptomatic Tooth

The concept of sealing deep caries into a vital asymptomatic tooth, rather than removing all caries and risking a pulpal exposure with all the inevitable sequelae (ranging from pulp-capping to root canal-filling), has gained increasing acceptance from the time when Mertz-Fairhurst and colleagues published their ten-year randomized controlled trial in 1998.[1] In this work, in a split mouth research design study, all patients received an amalgam restoration (50% of which were sealed after restoration placement) and a resin composite restoration, with all the caries being removed from the amalgam cavities, but only the 'soft strands of decay' being removed from the composite cavities. Results of subsequent work by Kidd *et al* indicated that, when caries was sealed into a cavity and the cavity re-opened after five months, the residual caries had become harder, darker and dryer, and that the number of bacteria associated with the lesion had substantially decreased.[2] In clinical research on primary teeth from Brazil,[3] there were two treatment groups, with incomplete caries removal in 4 to 7-year-old children, cavities treated with $Ca(OH)_2$ or gutta-percha (gutta-percha to indicate an inert base), the cavities sealed with resin composite for 4 to 7 months, and then re-opened and examined. The soft caries changed to hard or leathery and the number of bacteria reduced in both treatment groups. The authors concluded that 'the resin-based composite sealing of caries lesion, with or without a calcium hydroxide liner over the infected remaining tissue, may help preserve dental tissue as well as pulp vitality'. A related study[4] concluded that 'resin-based composite may arrest the progress of underlying caries'. Review articles and Cochrane reviews have also supported the concept of sealing caries into vital asymptomatic teeth,[5,6,7,8] providing statements such as:

'There is no clear evidence that it is deleterious to leave infected dentine, even if it is soft and wet, prior to sealing the cavity, and this cautious approach may be preferable to vigorous excavation because fewer pulps will be exposed';[5]

'One can state that there is substantial evidence that the removal of all infected dentine in deep carious lesions is not required for successful caries treatment, *provided that the restoration can seal the lesion from the oral environment effectively*'[6] (present author's italics);

Figure 1. Occlusal cavity in an asymptomatic, vital lower first and second molar tooth. Remaining caries could have been removed using a large, sharp spoon excavator.

Figure 2. Cavities in Figure 1 filled with resin composite, margins etched and sealed with Biscover™ (Bisco).

FJ Trevor Burke, DDS, MSc, MDS, MGDS, FDS RCS(Edin), FDS RCS(Eng), FFGDP(UK), FADM, University of Birmingham Dental School of Dentistry, 5 Mill Pool Way, Pebble Mill, Birmingham B5 7EG, UK.

As a patient, what you need to know is:

- Dental decay (caries), one of the commonest diseases on earth, has caused a deep hole in your tooth. The decay is close to the nerve but the tooth is still alive and not causing pain. One way of treating deep decay is to drill or scrape out all the decay and risk exposing the nerve of the tooth. Your dentist will then need to carry out extensive treatment on the affected tooth: this may involve placement of a root filling and a crown or other restoration to protect the cusps of the root-filled tooth.
- The methods of treatment for deep decay in teeth which are alive and not causing symptoms have changed! With your permission, I propose to avoid scraping out all the decay because this could expose the nerve and then a root filling or extraction would be needed. Having removed part of the decay, I will fill the tooth and this will stop the progress of the decay. I will review the tooth in 6 to 12 months and take an X-ray then (or earlier should you have any discomfort). Provided the tooth remains alive, no further treatment should be needed. Please note that, on the follow-up X-ray, the decay that I left will show as a black area.
- You should be aware that this technique has gained credibility for vital teeth as the research base for this has expanded and become positive.

As a patient, what you also need to know is:

- If you change dentists and you have a subsequent X-ray on the tooth with deep decay, your new dentist could say that the previous dentist has left decay in a tooth when, in fact, (s)he has done this based on good clinical research. That's why you need to know what your dentist has been trying to achieve.
- Placing a well-sealed filling over the decay will ensure that the decay doesn't come back. There is, however, always a small chance that your tooth will die and a root filling will be needed, but this is much less than if the nerve of the tooth is exposed by drilling away all the decay.
- You have had deep decay in your tooth. That therefore means that you have a problem with your diet and/or with your oral hygiene/toothbrushing. You will therefore need to address this – your dentist and/or his/her hygienist will give you advice on this.

Table 1. Patient Information Leaflet for patients for whom deep decay has been sealed into a tooth.

'Partial caries removal is preferable to complete caries removal';[7]

'These techniques (sealing caries) show clinical advantage over complete caries removal'.[8]

The recent *Dental Update* review by Kidd *et al*[9] is particularly clear, indeed forthright, in its conclusions, namely, that 'when restoring deep caries lesions in vital, asymptomatic teeth, vigorous excavation is likely to expose the pulp. This complete excavation is *not needed* and should be avoided'. These authors stress that it is the seal which is important. The message therefore is clear, that sealing caries into a vital asymptomatic tooth has become an accepted technique. In that regard, however, the author has encountered comments from UK-based general dental practitioners who have suggested that a variety of authorities do not accept this concept and have criticized dentists for leaving caries under restorations. Moreover, dentists who are not aware of the concepts described above may criticize colleagues, should a patient for whom caries has intentionally been sealed into a deep cavity attend such a dentist. It may therefore be considered that there is a need to provide patients with an Information Leaflet explaining the concept of sealing caries into vital asymptomatic teeth: this is presented in Table 1. It is also to be hoped that 'non-believers' in the sealing-caries concept also become more aware by reading reviews such as that mentioned above, by Kidd and colleagues.[9]

An example of the concept is presented in Figures 1 and 2.

References

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