SDR® Plus – The Ideal Bulk-Fill Material in High-C Factor Cavities

By Dentsply Sirona

The configuration of post endodontic treatment cavities are typically deep. If the surrounding tooth structure is still intact, there will be a high C-factor (cavity configuration factor) due to the large surface area for the filling material to bond to.

Polymerisation shrinkage stress builds up inside a cavity according to the size of the bonded surface area that is holding a composite in place. The larger the bonded surface area the higher the level of polymerisation stress, resulting in an increased risk of composite detachment from the cavity walls or marginal leakage. Not only does this result in a failed restoration, it also poses risk to the integrity of the endodontic procedure underneath.

SDR® Plus from Dentsply Sirona is the ideal material for coronal sealing of endodontic cavities especially with high C-factors. SDR® Plus can be bulk-filled in increments of 4mm due to its patented formulation which provides the necessary viscoelastic properties for low-stress, controlled polymerisation. As a result, SDR® Plus has up to 65% lower shrinkage stress than competing conventional and bulk-fill composites. In addition, SDR® Plus has unique self-leveling properties which allow it to automatically adapt to the geometry of a cavity. This, in combination with the fact that SDR® Plus has sufficient mechanical strength for use in the posterior region, high micro tensile bond strength and has shown excellent adherence to the cavity-floor, makes SDR® Plus the ideal material for post endo, high C-factor access cavities.

Case Study
The present case shows the use of SDR® Plus for coronal sealing and bulk-filling of endodontic cavities in one single step.

Conclusion
Given the depth of many access cavities, the possibility of bulk-filling cavities is also important in post-endodontic treatment. In the present case SDR® Plus was used to fill Class I and II cavities in bulk up to 4mm immediately after the root canal treatment. The self-leveling consistency as well as the reduced polymerisation shrinkage stress of SDR® Plus in cavities (Van Ende et al. 2016), allows both optimal adaptation and adhesion to the cavity and thus coronal sealing of the root canal filling. Another advantage of this bulk filling composite is its transparency allowing an easy removal of the root canal filling, e.g. in case of a subsequent post placement.

References
1. Trope, M. Periapical status of endodontically treated teeth in relation to the technical quality of the root-filling and the coronal restoration. University of North Carolina, Chapel Hill, Temple Dental School, USA. Int End J (1999); 22, 12-21
2. Data on file
3. Data on file

The Rivelin patch sticks to the mucosal surface for much longer than any other treatment

By Brendan Day, DTI

Though the oral mucosa’s accessibility and high level of blood supply make it an ideal site for drug delivery, various other factors can make drug delivery quite difficult. However, a new polymer plaster, the Rivelin patch, developed by scientists from the University of Sheffield’s School of Clinical Dentistry in collaboration with Dentimex from Copenhagen in Denmark, has the potential to revolutionise the treatment of oral conditions. Dental Tribune International spoke with Dr Craig Murdock, Reader in Oral Bioscience at the university and lead author of the research, about how the patch works, its benefits and upcoming plans for clinical trials.

What was it that motivated you and your team to develop the Rivelin patch? Was it designed to target any specific conditions?

There are very few ways to deliver drugs to the oral mucosa. The current methods use mouthwashes, gels, creams or sprays that are delivered to the entire lining of the mouth, in which case they affect both healthy and diseased tissue. In addition, drugs that are delivered using these methods have short contact times with the diseased tissue before they are washed away; so delivering drugs this way is often ineffective or requires the use of high drug concentrations to reach a therapeutic dose.

I have worked in the oral medicine unit at the University of Sheffield’s School of Clinical Dentistry for over ten years alongside Prof. Martin Thornhill, a world-leading expert in oral medicine. Thornhill, along with many other oral medicine consultants, has known for some time about the inadequate treatments for oral conditions. The issue has been with the development of a patch that is able to stick to the moist surface of the oral cavity, and the willingness of polymer chemists, drug delivery specialists and commercial enterprises to identify this unmet clinical need.

For more information or to request a demo, please contact your local Dentsply Sirona representative.

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