

An easy life!

That's what general dentist Philip Lewis would like. He thinks he might have come a step closer with a new material from Dentsply...



Figure 1: SDR is supplied in compule form



Figure 2: The box contains a supply of material, an application gun, a self-etching prime and bond, a dappen dish and instructions



Figure 3: The old amalgam filling was cracked. Caries visible at the edge suggested this might well be a deep cavity



Figure 4: The tooth was isolated with rubber dam; the old filling removed and caries excavated. Hard stained dentine at the cavity base was left undisturbed



Figure 5: Xeno V one-component self-etching adhesive was applied with a micro-brush and rubbed all over the cavity for 20 seconds



Figure 6: The adhesive being light-cured for 20 seconds



Figure 7: SDR was applied directly from the compule



Figure 8: The application of the final composite layer



Figure 9: The filling was placed in four increments, this being increment one



Figure 10: Increment two



Figure 11: The completed restoration

Of all the shades teeth come in, people still prefer white. That's why there's been such an upsurge in patient demand over recent years for tooth-coloured fillings.

Metal restorations are opaque and tend to make the whole tooth look grey. Not acceptable in these days of tooth whitening and porcelain artistry.

Why isn't composite used more to restore back teeth? The usual objections include the following:

- It isn't strong enough
- It causes post-operative sensitivity
- It stains at the edges
- You can't get decent contact
- It takes too long to place.

None of these are true. Composite fillings can last a very long time and the other drawbacks are engendered by not using the material properly. Each one of these points is worthy of an article on its own, but my advice to anyone not fully familiar with the handling of this versatile and reliable material is to attend one of the excellent hands-on postgraduate courses which are widely advertised in the dental press.

I have been using composite as my routine restorative for posterior teeth for many years. There are times when I use indirect materials but they're becoming less and less. Direct composite offers a minimally invasive approach. It looks good and provides sound restorations when properly used. It has the enormous advantage of bonding chemically with tooth structure; strengthening rather than weakening.

Cusp fractures with properly bonded composite are rare – compare this to what we find with large metal restorations. Nevertheless, the material can be time-consuming to use and is certainly technique sensitive. For these reasons, any method of simplifying and enhancing

techniques must be welcomed.

The most widely accepted method of composite placement is incremental build up. This involves placing numerous small amounts of composite into the cavity, curing between each increment. The rationale is to reduce internal stresses caused by polymerisation shrinkage, a leading cause of post-operative pain. The potential drawbacks of this system include:

- Leaving voids in the material
- Inadequate cure of the deeper layers
- Long operational time leading to increased risk of contamination by saliva, etc.

A new material from Dentsply addresses many of the problems of conventional composite placement, simplifying and speeding up the technique to the benefit of both operator and patient.

SDR (Smart Dentine Replacement) is a material of flowable viscosity designed to be used in a single thick increment before a final cover of composite is applied. Supplied in compule form, it is introduced into the cavity in thicknesses of up to 4mm before light curing. The advantages include:

- Greatly reduced treatment times
- Reduced risk of voids
- Excellent adaptation to cavity walls
- Very low polymerisation shrinkage
- Low solubility.

Case study

A patient attended for the replacement of an old amalgam filling which was cracked (Figure 3). Caries visible at the edge suggested this might be a deep cavity.

The tooth was isolated with rubber dam; the old filling removed and caries excavated. As expected there was significant coronal damage. Hard stained dentine at the cavity base was left undisturbed.

Xeno V one-component self-etching adhesive was applied with a micro-brush and rubbed all over the cavity for 20 seconds.

Following the application, excess material and solvent was blown away with an air jet. The whole surface of the cavity should look glossy at this stage. The adhesive was then light-cured for 20 seconds.

SDR was applied directly from the compule. The single-use compules have a fine tip to facilitate easy

placement of the material. In the case of this deep cavity, a full 4mm of material was applied, filling the bulk of the cavity and stopping at the enamel-dentine junction.

After light curing for 20 seconds, the cavity was ready for the application of the final composite layer.

Occlusal enamel loss had produced a wide cavity. Filling this in a single increment would risk internal stress caused by polymerisation shrinkage. In view of this, the filling was placed in four increments: disto-buccal, mesio-lingual, disto-lingual and disto-buccal. Each increment was light cured for 20 seconds.

Extensive shaping

As much contouring as possible was carried out during composite placement to avoid the need for extensive shaping and finishing after light curing. Excessive finishing can damage the immature bond and can lead to stained margins or leakage. After all the increments were placed, the whole restoration was light cured for a further 60 seconds, moving the light around the margins and periodically water-cooling. As the intensity of curing lights diminishes rapidly from the centre, this extra step ensures that the margins are fully cured.

A single composite shade was used with no attempt at providing high aesthetics. This restoration is not in the aesthetic zone and I want to be able to clearly see the extent of the restoration and check its margins in the future. Had the filling been more anteriorly placed I would have colour-matched and might have enhanced the appearance with shading and stains.

SDR is a new material. Despite the lack of long-term follow-up, my initial results have been encouraging. None of my patients treated so far have complained of post-operative pain or fractured fillings.

I hope I am not a lazy dentist (don't ask my nurse!) but it seems obvious that simplification of techniques is good for me and my patients, when a reliable alternative to existing practice can be found. Despite what we may assume, our patients don't actually like lying on their backs, mouths wide open and being unable to communicate or even swallow properly for extended periods! What they do like is a quick, comfortable treatment that looks good, feels good and lasts a long time.

SDR may well be a step in the right direction towards achieving this.



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