

MARKETPLACE

High strength core material

Tony Beale describes this new and adaptable product that contains zirconium



Figure 1: Zircules showing 25ml Automix cartridge and 5ml syringe presentation



Figure 2: Initial preparation of tooth after removal of tooth structure and caries. Careful attention was given to the margins prior to post placement



Figure 3: Post preparation and try-in



Figure 4: post cemented using Zircules, and direct core build-up performed using automix tip. Note, material stays in place without slumping



Figure 5: Final preparation for a PFM crown with ferule effect. Note smoothness of preparation and perfect blend between dentine and Zircules



Figure 6: PFM crown cemented

Existing core materials

Throughout the years, various materials have been used for the fabrication of cores. Amalgams, glass ionomers and composites have all been cited as suitable, but in reality they fall short of being ideal, with none of these being able to fully match and reproduce the properties found in natural dentine.

Larson states that 'glass ionomer materials are considered too weak to withstand stress as a core material'* and whilst some composite materials have offered a reasonable degree of adaptability, strength and durability they have been found to lose significant properties of strength if they were not light-cured.

Therefore, in fulfilling the role of an 'ideal' core material it is essential that a product meets the required criteria of:

High strength: In replacing lost tooth structure, a core materials strength should be such that it will be capable of withstanding the sometimes varying and complex occlusal and other intraoral traumatic forces that can be exerted upon it within the mouth.

Adaptability: In building up a core, the material used should allow core height and width to be achieved through stacking, and without the problem of material 'slump'.

Cutting: In creating the correct core shape and profile, a material should exhibit good cutting properties, similar to that of natural dentine. It should also allow a smooth transition from core material to natural tooth, be free from gouging and capable of easy marginal adaptation.

Radiopacity: This is advantageous if clear definition is required via radiographs.

Low flow consistency: This property should allow the material to be used not just for simple and more complex core build-ups, but also for the successful cementation of posts.

Self-cure and dual cure core materials: A material that retains its properties when used in both self - cure and dual cure techniques is always preferable.

Aesthetics: Materials such as amalgam can have

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a negative influence on the overall appearance of ceramic-based crowns, so more aesthetically acceptable alternatives are desirable.

Unique product

The Clinicians Choice company, who are represented in the UK by Optident, have now developed a rather unique product, called Zircules that does now succeed in satisfying virtually all the ideal properties required of a versatile, multi-use core material.

Zircules is different from other core materials. Its unique chemical composition incorporates zirconium dioxide nano-fillers that impart extra hardness to the material, enabling it to retain its strength regardless of whether it is used as a light-cure or self-cure material.

Zirconium is now used extensively in laboratory-fabricated restorations, and is recognised as being able to contribute significant strength, hardness and durability to crowns and bridges. The incorporation of this element into the composition of Zircules allows the material to retain all its strength regardless of clinical situations.

The material possesses ideal low flow consistency, and low film thickness; with this property permitting its use both as a core build-up material and as post cement.

Core builds can be 'stacked' without slumping, allowing optimal adaptation to cavity walls and to root posts, and once polymerised will cut like natural dentine, with a smooth transition from core material to natural tooth without gouging.

Zircules is available in two aesthetic shades (A2 and A3). These are ideal for all ceramic restorations on anterior teeth. It is also available in a blue or white

opaque coloured version that is useful where easy definition between the tooth structure and core material is required. All shade options are also radiopaque. Setting times are short, and without heat generation.

The manufacturers have thoughtfully packaged the material in 25ml automix cartridges, this size being most convenient for the shades used most frequently, and in 5ml cartridges for the less frequently used shades.

Zircules can offer significant advantages to the practitioner who requires a high strength, easy to use core preparation material, that can also be used as an effective post cement. **■**

References

- * Larson, T.D. 'Core restoration for crown preparation', Dept of Restorative Sciences, Division of Operative Dentistry, University of Minnesota School of Dentistry, Minneapolis, USA. NorthWest Dentistry, 2004, Sept /Oct. 83(5): 19-22-5, 28.

Zircules is available from Optident Ltd, International Development Centre, Valley Drive, Ilkley LS29 8AL. Tel:(0044) 01943 605050: email: sales@optident.co.uk www.optident.co.uk



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