

Practical application of composite resin techniques in the posterior dentition

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Posterior direct resin restorations are the combination of appreciation of anatomy, form and art. We require an understanding of the ideal form and metrics to control occlusal forces whilst layering our composite resin in the most amenable fashion to enable a predictable and asymptomatic restoration which looks and functions much like that of the natural dentition. In this article, and his associated presentation at the British Dental Conference and Exhibition 2016, Dr Chandrapal will discuss the methodology and practical based tips required to form clinical success within the environment of limited time, thus avoiding unnecessary complexities.

BASIC TECHNIQUE

The technology within composite resin has changed vastly in the last decade. It is fair to say we now have materials that are easier to handle and offer less shrinkage, greater strength and improved aesthetics. Modifications in particle size, photo-initiators and polishability have led to advancements in the number of applications the clinician can use such materials for. This has since widened the scope to a point where it is predictable and systematic to use composite

resin where once indirect restorations would have been the only restoration of choice. Some even use composite resin for suitable full mouth rehabilitations.

With all these advancements, it remains essential that the basic strategy of technique is never forgotten. While this dictates a degree of rigidity to such techniques, it also means the same rules apply whether the clinical case is simple or complex. This is where the general practitioner can develop principals that result in superior, predictable and aesthetic restorations that are both functional (thus requiring less time for adjustment) and pleasing to the patient's eyes. Certain key parameters are essential for clinical success in the general practice environment:

- Pre-operative assessment of the anatomical features of the tooth and its current restoration
- Simple and effective forms of isolation with adequate training of the surgery assistant to aid in this process
- Suitable preparation techniques to reduce potential of stress and internal de-lamination or fracture
- Knowledge of functional anatomy and cusp distribution
- Use of anatomically correct sectional matrix systems
- Basic knowledge of layering techniques and minimal configuration factors
- Minimal finishing and reduction in time spent on polishing and occlusal adjustment due to the above factors.

Once disciplined to these key parameters it becomes possible to create superior

composite resin restorations in reasonable time frames and with little or no post-operative complications. This also enables the clinician to adopt fundamentals of appointment planning to incorporate such techniques to appropriate profitability.

A CASE EXAMPLE

The following series of photos illustrates the steps taken, using only two shades of composite to create like-life restorations that are not only aesthetic but remain functional. Anatomical sculpting will contribute to masticatory efficiency and elimination of occlusal interference (thereby saving clinical time), and will also improve longevity of the restoration and create tight yet cleansable contact points that avoid marginal breakdown and food impaction.

Figure 1 highlights the restoration of two failing amalgam restorations using composite resin in general practice. The patient concerned also had attachment loss leading to open contacts and deep proximal caries lesions. Suitable isolation in quadrants using only one clamp (Soft Clamp, Kerr) and narrow diameter hole punches within the rubber dam sheet lead to rapid yet comprehensive moisture control. Figure 1b illustrates the depth of the proximal boxes yet the isolation dam manages to provide interproximal soft tissue

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qualified from Birmingham University and has since progressed to achieve further qualifications and training in the fields of his special

interests: dental cosmetics, composite resin bonding, complex rehabilitation and management of wear. He has a double Masters of Clinical Dentistry (MClindent) in fixed and removable prosthodontics as well as two further academic diplomas, and is also a graduate of the Kois Centre, based in Seattle. Currently, Andrew is President-Elect for the British Academy of Cosmetic Dentistry and a long-standing member of the American Academy of Cosmetic Dentistry, the International Team for Implantology, the Association of Dental Implantology and the British Society of Occlusal Studies. He is also a post graduate tutor at King's College London.



Fig. 1 Shows the restoration of two failing amalgam restorations using composite resin in general practice. a) pre operative status; b) isolation with prepared cavity and sectional matrix; c) completed resin restorations; d) verified occlusal integration

protection and retraction, thereby opening visual access to the base of the proximal box. This enables a sectional matrix system

(V3 Ring, Triodent) to be applied by using the ring, suitable matrix band and a wedge placed in a modified position in order to manage the wide proximal box. The restorations are built up using separate dentine and enamel shades (Venus Pearl OMC/AM, Heraeus Kulzer). Careful sculpting is arranged in correct anatomical format of cusp distribution using a similar method to that used by dental technicians. Each increment is applied using minimal numbers of everyday instruments and then fully cured to ensure polymerisation shrinkage of the material has a minimal effect on the tooth tissue and thus the status of the pulpal tissues. Minimal tint (Venus Colour, Heraeus Kulzer) is then used very sparingly within the occlusal pits of the restoration in a similar distribution to the adjacent natural teeth. The whole procedure takes 1.10 hours with very minimal occlusal adjustment required, as denoted by Figure 1D, using articulating silk. In this case only the second molar required any form of occlusal refinement on the palatal slope. Note the dehydration of the adjacent teeth in the treatment appointment illustrates the restorations to be hyper chromatic. Rehydration of the teeth occurs within 24 hours at which point the new restorations are able to integrate with excellent effect. This can be seen when comparing the pre-operative photo (Fig. 1a) highlighting the original shades of the natural teeth.

CONCLUSION

Such techniques are readily available to the general dental practitioner. As with most updated techniques, it requires hands-on education, practice, perhaps updated matrix systems, and time. However, these techniques represent progression where the general dental practitioner is sure to satisfy the needs of their patients while at the same time deriving satisfaction and also commanding appropriate fees due to reasonable timeframes.

Andrew Chandrapal will present a session on the subject of *The art and science of posterior composite restorations* on Thursday 26 May at the British Dental Conference & Exhibition 2016, as part of the BACD series.

You can register for the conference online at: www.bda.org/conference. Three-day VIP conference passes are free to Extra and Expert BDA members and these free passes can be booked through the website.

British Dental Conference & Exhibition 2016

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