VITAL GUIDE SERIES

6 Cosmetic dentistry: treatment planning for complete patient satisfaction

- Why do dental teams need to know about cosmetic dentistry?
- How should a cosmetic procedure be approached?
- What do the various treatment options involve?

6

VITAL GUIDE TO Cosmetic dentistry

Welcome to the sixth article in the Vital Guide Series. At the end of the article are some CPD questions, which are designed to get you thinking about the article and to help you remember some of the key points. Here, **David Bloom**[1] and **Jay Padayachy**[2] divulge their extensive knowledge of cosmetic dental procedures.

Introduction

With the burgeoning interest in cosmetic dentistry the whole dental team must be aware of what is now achievable, the pros and cons of various treatments and importantly, how to communicate this with the patient. Education is power; many patients do their research on the internet so they will be well versed as to what is out there already. How silly do we look if our patient knows more than us?!

Dentistry is also changing from a 'needs based' to a 'wants based' format. Patients say what they want, and we don't necessarily listen and tell them what they need. However, this is where communication is so important, as we must communicate what is needed if a wants based treatment is to be successful. For example, there is no point placing a lovely, perfectly fitting all porcelain crown on a tooth with an untreated apical area. The patient may not want a root treatment; however, they need one if the overall health of the patient is to be met.

See also part 2 in this guide, on aesthetic dentistry (*Vital* summer 06 pages 19-24).

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First principles

Cosmetic dentistry is not purely about making teeth look pretty. Everything has to start from a basis of health. All such information can be gleaned from a comprehensive examination. The patient is involved in this examination, as they must take responsibility for what is happening in their mouth; this is called co-diagnosis. Following a full mouth series of radiographs (for all new patients or patients being re-enrolled) and digital photographs, a diagnosis can be made and a treatment plan formulated which meets the expectations of all concerned.

As a starting point, areas of gross decay should be dealt with, the periodontal condition improved with the importance of effective home care, and ongoing maintenance with the hygienist stressed. Referrals to appropriate specialists if applicable, whether it is for endodontics (Figs 1-2), an orthodontic or implant opinion, should be considered at the outset so that all options can be ruled in or out by the patient. Remember it is their mouth and they need to make the decision for themselves, albeit with our guidance.

There is so much that a nurse can now do with the appropriate training. There are radiography courses available to enable nurses to take the appropriate radiographs. Dentists can teach their nurses how to take the photographs s/he requires, and with lots of practice there is no reason why the standard set of 12 pictures

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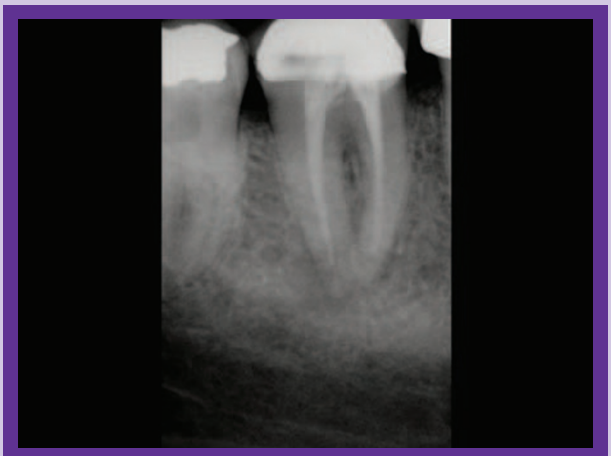

Fig. 1 Pre-op radiograph showing apical lucency

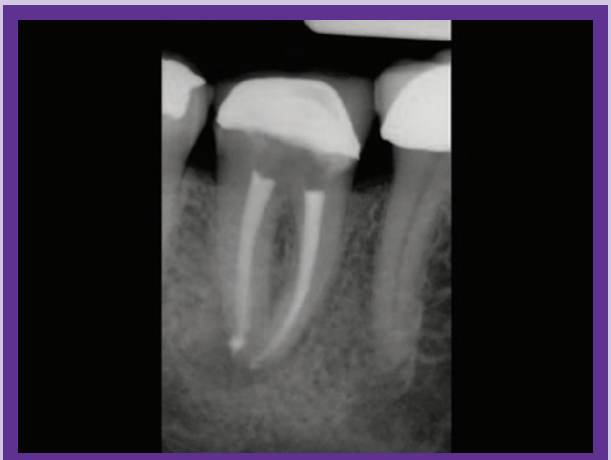

Fig. 2 Post-op radiograph of completed re root treatment

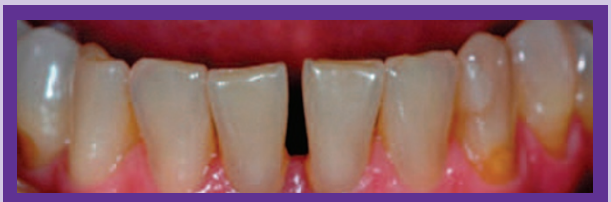

Fig. 3 Diastema present

Fig. 4 Diastema closed with composite

required for British Academy of Cosmetic Dentistry (BACD) accreditation cannot be completed in less than three minutes.

The patient may well ask the nurse about the various procedures while the dentist is out of the room, so again take time to learn the appropriate answer. CAESY, the patient education system (www.caesy.com) is a good starting point for a new team member to understand the various techniques. Following on from that, listening in to how the dentist phrases his or her replies to patient queries will further your knowledge, along with various textbooks and of course the internet!

What is cosmetic dentistry?

A simple answer to this is whatever your patients want it to be. We will now consider the various cosmetic options and techniques open to the profession.

Tooth whitening

Tooth whitening can be done in-house at the practice with a power light, or at home by the patient with trays, or using a combination of both. Studies show that home whitening alone is still the most effective way to lighten teeth although this does depend on patient compliance. With the advent of power whitening this process can be kick started to give the patient an instant 'wow' factor. Ideally they should still home whiten for up to two weeks to stabilise the end result and top up as required.

Non-vital tooth whitening on a dark, previously root filled tooth is best accomplished by home whitening using an inside/outside technique whereby the access cavity is left open but sealed so that the active agent can be placed freshly by the patient, rather than sealing in an agent which becomes rapidly inactive. It is important to cover the gutta percha 2 mm apical to the CEJ to minimise the potential for root resorption.

Direct posterior composites

This is probably the most common cosmetic procedure undertaken, often in response to failing amalgam restorations. Their main advantage is that they can be bonded to the tooth unlike an amalgam restoration, which fills a hole but adds no strength and will ultimately leak, corrode and allow secondary caries to develop.

Great care must be taken when doing such restorations, as they are incredibly technique-sensitive. A dry field using rubber dam is essential to ensure adequate bonding and an incremental build up technique to reduce polymerisation stresses within the filling material. If not, post-operative sensitivity will result, secondary decay will be inevitable and the restorations will fracture or fail very quickly. This has sadly given them a bad press, but if used in the appropriate situation and handled correctly, there is no reason why they should not last as long as an amalgam restoration. Ideally they should only be used for small to medium sized cavities. Once more than a third of the inter-cuspal width has been lost, inlays and onlays or even full coverage crowns should be considered the best treatment modality.

Anterior composite bonding

While still more practised in North America this can be a useful technique. It requires a lot of skill to make them look lifelike and takes much time to complete. Thus the best reason to do this is to avoid preparing teeth. Indications for their use include closing diastema (Figs 3-4), young patients, and class 4 cavities. Due to the time involved the fee should probably be comparable to a porcelain veneer fee less the laboratory fee. They can also be more easily repaired than porcelain veneers.

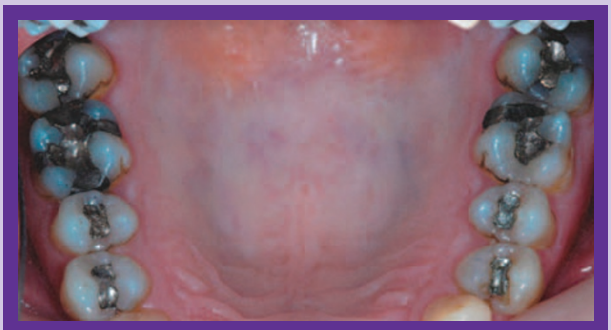

Fig. 5 Pre-op upper arch with old, failing amalgam restorations present

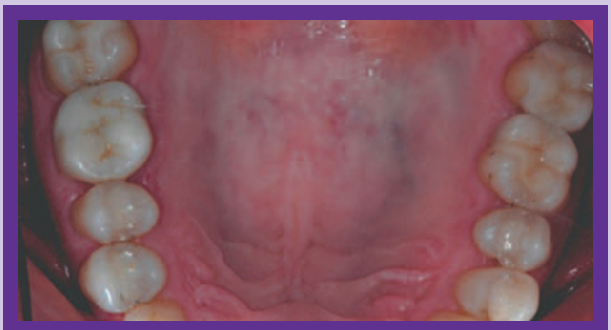

Fig. 7 Post-op upper arch with old amalgam restorations replaced with direct composites and onlays

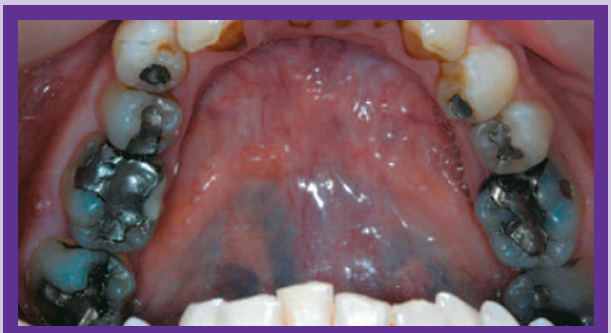

Fig. 6 Pre-op lower arch with old, failing amalgam restorations present

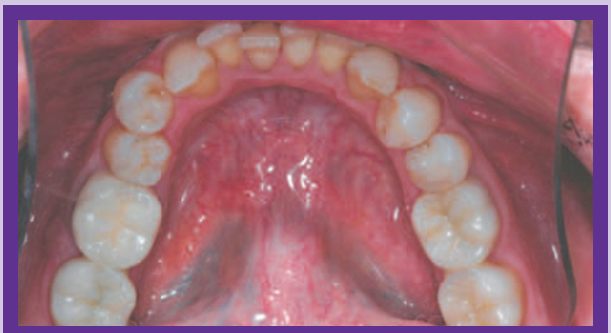

Fig. 8 Post-op lower arch with old amalgam restorations replaced with direct composites and onlays

Indirect tooth coloured inlays

When direct posterior composites are inappropriate due to their size or operator preference, indirect tooth coloured inlays can be fabricated. Being custom made for the tooth in the laboratory or by a machine (for example, Cerec), many of the problems of polymerisation shrinkage can be overcome as there will only be a fine lute of cement present. The occlusal anatomy of the tooth can also be better created. If laboratory made, there needs to be a period of temporisation, however with Cerec the restorations can be fabricated immediately and no temporisation is required.

These forms of inlay can be made from porcelain or reinforced composite materials.

By being bonded to the tooth, they can reinforce and strengthen the remaining tooth structure thus minimising the removal of any remaining sound enamel as would be required for a conventional crown preparation (Figs 5-8).

Wellness environment for the patient

Cut along the dotted line and keep!

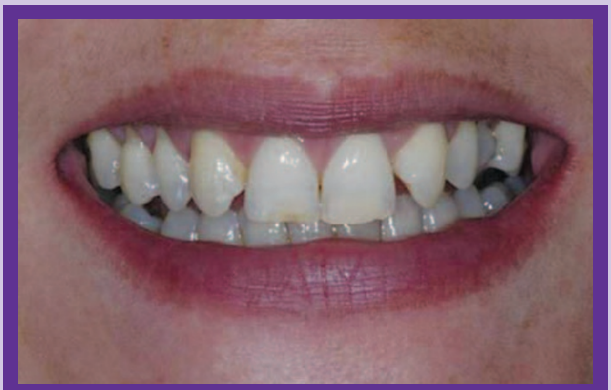

Fig. 9 Pre-op smile

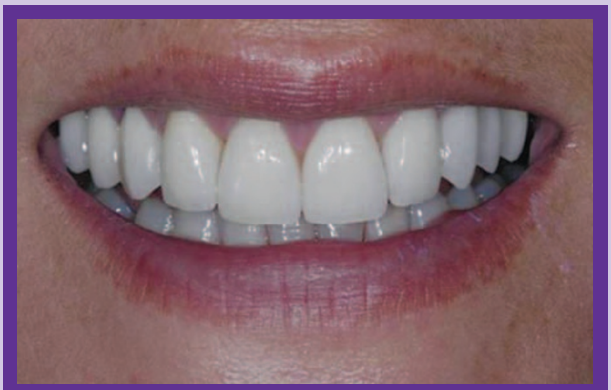

Fig. 11 Post-op smile

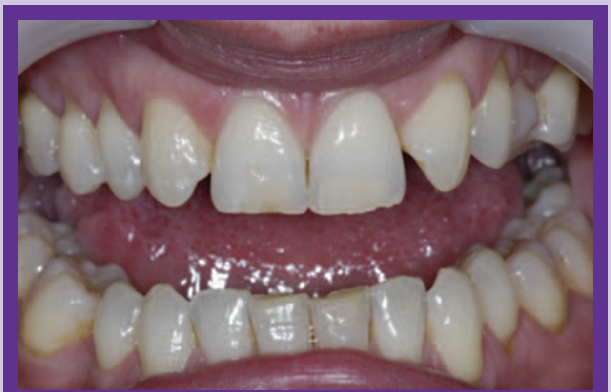

Fig. 10 Pre-op retracted smile

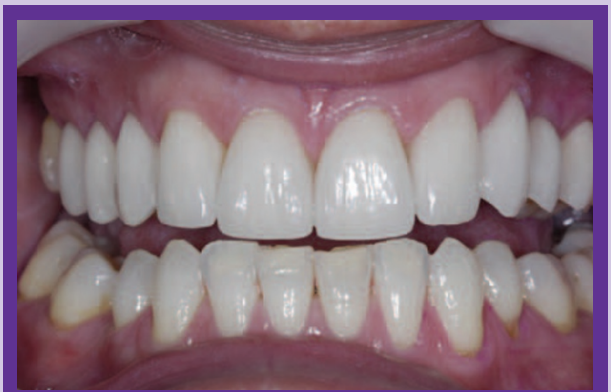

Fig. 12 Post-op retracted smile

Porcelain laminate veneers

These are ultra thin 'false fingernails' of porcelain that are permanently bonded to teeth. Ideally they should be placed within enamel but can be dentine bonded if there is no alternative. However, this bond is not as strong or as reliable as an enamel bond. They can be anything from 0.3 mm thick (this requires a very skilled ceramist) upwards. If thicker than 1 mm they should be dual cured (chemical dual cured cement as well as light cured). Indications for their use include making changes to the shape of the teeth and their arrangement within the arch rather than a purely colour reason when tooth whitening would be a better option. They can even be used for 'instant orthodontics' if the patient refuses conventional orthodontics but still wants to make changes to the arrangement of their teeth. Functional changes to a patient's occlusion can also be accommodated to, say, recreate canine guidance when a degree of palatal coverage is employed.

Dramatic life altering changes can be achieved with minimal tooth preparation with the appropriate treatment plan (Figs 9-13).

Fig. 13 Post-op portrait

All porcelain crowns and bridges

Historically crowns could be made as porcelain jacket crowns. These were all porcelain but their flexural strength and fit could not always be guaranteed. Then came the advent of porcelain fused to metal crowns. While very strong, these require a skilled ceramist to get a lifelike result as the metal sub structure needs masking out with opaque porcelain before the base porcelain and the various effects are built in. Another possible problem is if a black line or halo around the margin is visible. Recently a shift back to all porcelain crowns has happened with the advent of stronger core materials. Initially this was with Procera cores (an alumina oxide core) and more recently with zirconium cores both of which are milled by machines, the cast of the tooth having

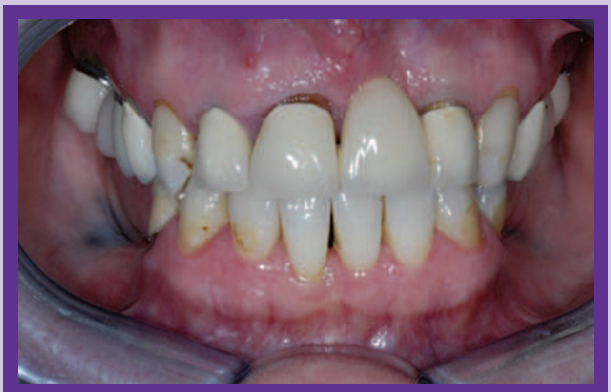

Fig. 14 Pre-op retracted view with teeth in occlusion

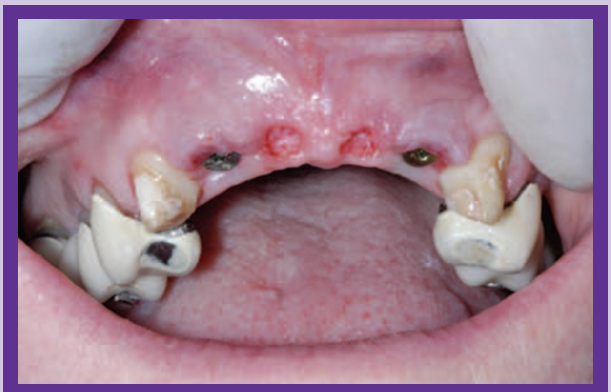

Fig. 16 Implant healing caps, ovate pontic sites and temporary bridge abutments

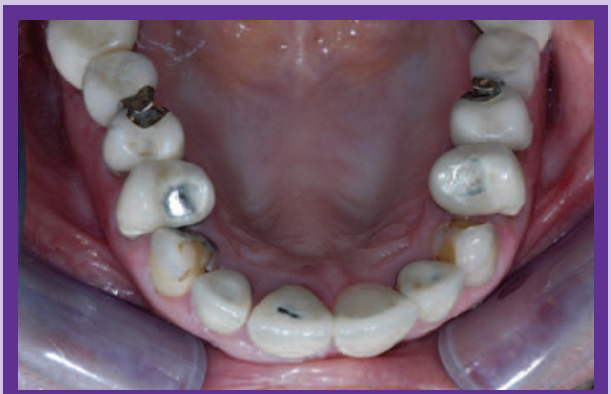

Fig. 15 Pre-op of upper arch

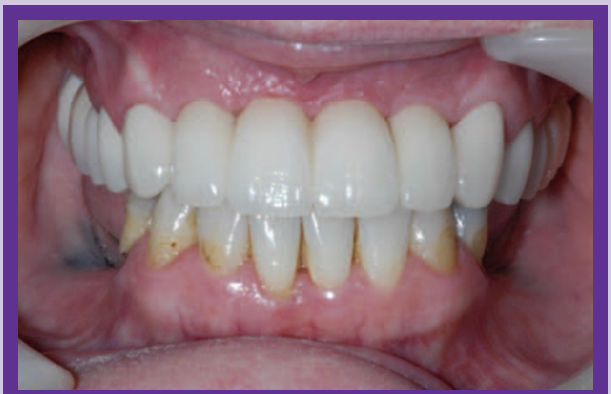

Fig. 17 Post-op retracted view with teeth in occlusion

been laser scanned. Porcelain is then built up on these cores in a conventional fashion. Zirconium is incredibly strong and can even be used for extensive bridge spans (Figs 14-18).

Implants

Titanium implants should now be considered the gold standard for tooth replacement as they enable missing teeth to be replaced without having to prepare the adjacent teeth for bridges. This is especially so if these teeth are un-restored. The implant can be placed and left to integrate with the bone or immediately loaded by way of a provisional restoration. New surface treatments of the titanium enhance this integration process greatly. They can be used to support single crowns, bridges, over-dentures and even full arch bridgework. Most recently 'All-on-4' implant concepts with zygoma implants allow full upper arch reconstruction in cases that would otherwise have required extensive bone grafting. Soft tissue management is critical to achieve a natural looking, healthy gingival margin whereby the tooth looks as though it is emerging from the gingivae like a real tooth (Figs 19-21).

Spa and well being

A dental spa is about looking after your dental guest and ensuring their experience is the most positive it can be. This involves more than just lighting a few candles and playing music. At one time patient comforts such as music, cosy blankets and paraffin hand waxes would have been considered sufficient, but now the concept of 'complete wellness' supersedes this. Ideally an environment should exist that relaxes and energises all of those who are present, both patients and team. Technologies incorporating magnets and Far infra red technology in the form of cosy blankets and eye masks now make this possible and also promote healing. Using such items has been found to reduce the volume of drugs given for sedation and even negate its use completely. It is important to consider the quality of the water consumed and the air we all breathe. Air filtration systems are now available that pump out negative ions which aids relaxation. Our aim is to consider the well being of every individual and create a unique experience.

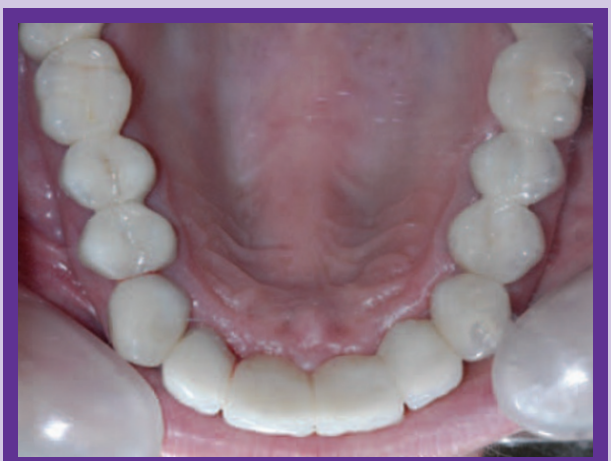

Fig. 18 Post-op of upper arch

Cut along the dotted line and keep!

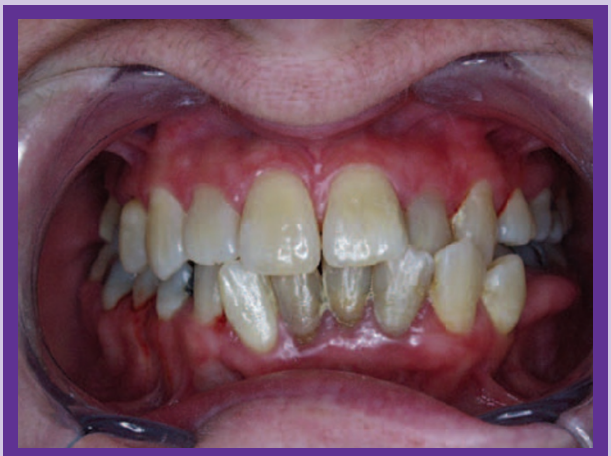

Fig. 19 Pre-op retracted view with teeth in occlusion before lower implant placement

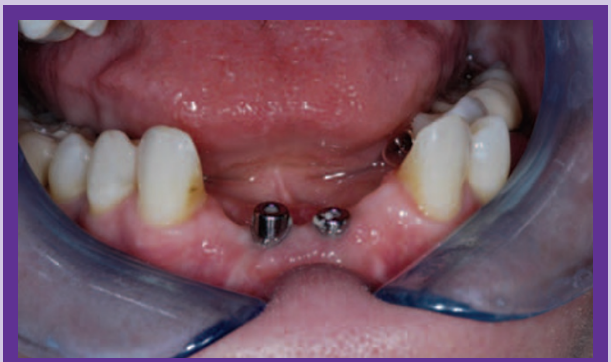

Fig. 20 Lower implants in place with healing caps

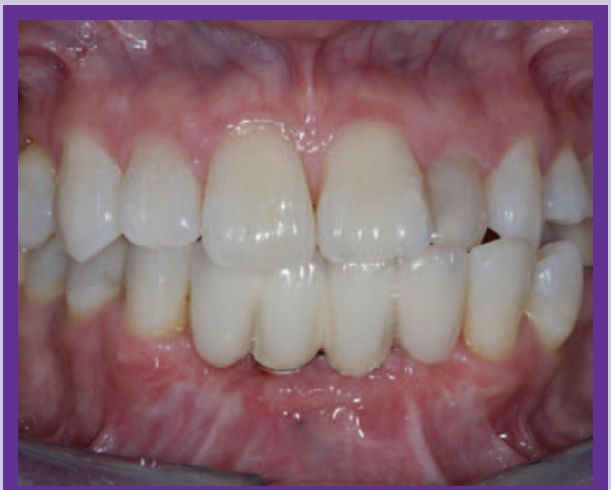

Fig. 21 Post-op retracted view with teeth in occlusion

Finally, the use of new materials can also help in the patient experience. One example of this is Collardam (www.collardam.com). This provides the ultimate in patient protection ensuring the patient's neck remains dry and their clothes protected. By having a super absorbent collar there is no need for the nurse to continually dab away the water dribbling down the side of the patient's face. This means s/he can concentrate solely on the patient lying in the chair.

Patient wearing CollarDam

Conclusion

Reference should be made to part 2 in this series (*Vital* summer 06 pages 19-24) which considers the seven deadly sins; this is equally appropriate to cosmetic dentistry. The conclusion of that article again importantly states that appropriate treatment planning and treating for health and function are crucial if the dentistry carried out is going to last. This of course applies to all forms of dentistry.

To help further your education, encourage your dentist to join societies such as the British Academy of Cosmetic Dentistry (BACD) which has a wide ranging brief to educate not only the dentists but also, importantly, the team and the general public so that they too can understand what cosmetic dentistry really is. Bespoke hands-on courses for the dentist and team are also available through seminar companies such as CoopR8 seminars (www.coopr8.com).

Jay Padayachy and David Bloom