AESTHETIC UPDATE

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Simple smile enhancement

The past ten years has seen a dramatic change in the priorities patients have towards dentistry.

While dentists correctly perceive their principal role as creating a healthy oral environment for their patients, there are many people who now take this aspect of dentistry for granted and their concerns now rest upon the way they "look".

In a contemporary society where self-image and perfection play an increasingly important role, the aesthetic component of a dentition has become something of a focus in social priorities. Furthermore, the value that people now place upon retaining their teeth creates a dilemma for patients who are faced with extensive tooth preparation as the only alternative to regaining an attractive smile.

The advent of adhesive dentistry has provided dentists with many conservative options to the traditional tooth cutting techniques. There is, however, a further range of choices beyond traditional and adhesive dentistry that offer simple and lasting improvements to a smile with minimal intervention, time and patient discomfort.

Superficial stains on the surfaces of adult's and children's teeth were often seen as a problem until the work of Dr Walter Kane of Colorado Springs, who was removing these taints with 18 percent hydrochloric acid back in 1916, was rediscovered and verified.

This technique was improved by adding hydrochloric acid to pumice to form an abrasive paste which is effective but presents a safety problem to both operatory personnel and patients from the splatter of the corrosive slurry, despite commercially available kits with comprehensive safety instructions.

A paper published in the December 1989 issue of *Dental Outlook* by Professor Graham Craig further improves the technique and enables dentists to treat these superficial stains simply and safely, without elaborate precautions and expensive kits, using materials readily available in most dental offices.

A slurry of 37 percent phosphoric acid (see Figure 1), either in liquid or gel form, and pumice removes these stains as effectively and without the inherent dangers of a slurry of 18 percent hydrochloric acid. Figure 2 shows a young man with an aversion to tooth brushing and moderately blemished central incisors. These blemishes were removed using pumice and 37 percent phosphoric acid with minimal trauma to the surrounding soft tissues (see Figure 3). It was hoped this procedure would increase his oral awareness. He failed to keep his appointment for oral hygiene education and a follow up photograph.

Diagnosis plays an important role in determining the suitability of stain removal using this micro abrasion technique. Those stains that best respond are the brown blemishes that appear on the labial aspects of incisor teeth (see Figures 4 and 5).

Deeply indented white blotches, tetracycline stains and enamel hypoplasia respond poorly if at all to this treatment. The final diagnostic decision depends upon the outcome of the procedure and as ►

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

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there is no specific scientific evidence that either material will not cause MS or any other illness, it is inferred that they may.

The decision to use mouthguard bleaching to mask a stain will depend upon the degree to which the stain has disappeared and its nature.

It is of particular benefit to bleach teeth that have been tainted by small white spots (see Figure 8). After bleaching and micro abrasion these spots all but disappear into the surface of the tooth (see Figure 9).

Carbamide peroxide also removes extrinsic stains such as nicotine and coffee from tooth surfaces. Figure 10 before, and Figure 11 after bleaching. Patients should not undergo long term carbamide peroxide therapy to keep these stains under control, but the procedure does have applications when acute gingival inflammation or healing is being managed with chlorhexidine mouthwashes.

Carbamide peroxide removes chlorhexidine stains as well as helping to maintain healthy gingivae. Figure 12 shows a mouth after twice daily rinses of chlorhexidine glutonate (Savacol) for one week. Figure 13 shows the same mouth after three days of wearing a splint loaded with ten percent carbamide peroxide for two hours each day while continuing to rinse with chlorhexidine.

There are many patients whose gingival health would be substantially improved with chlorhexidine therapy yet dentists resist this option because of the staining that occurs. This is not a universal treatment for patients with gingival problems but a useful addition to the list of available clinical options.

Figure 8

Figure 9

Figure 10

Figure 11

Figure 12

Figure 13

Aesthetic reshaping remains one of the least practised aesthetic procedures and possibly one of the simplest and most effective in the right circumstances.

The dynamics of an attractive smile are such, that the incisal edges of the upper teeth form a continuous line parallel with the lower lip when a patient is smiling and the same line should be mimicked by the lower incisors. An interruption in the continuity of either line is enhanced by the contrast of the white teeth and the dark negative space within the oral cavity.

Often, with minimal adjustment, a significant improvement can be created for a person's smile as demonstrated in Figure 14 and after aesthetic reshaping Figure 15.

Figure 14

Figure 15

There are several points to note when performing this service:

- It is an irreversible process and it is important that patients understand this before proceeding;
- The canines often produce unsightly extensions in the mouths of adolescents and can be easily reduced. It is necessary to be aware that these teeth are often extremely sensitive to reduction and will continue to remain so for some time afterwards; and
- Give patients a mirror and let them see the effects of contouring. ►

the technique is minimally invasive and certainly the simplest alternative available it is often worth attempting. Partly removed blemishes may well have diminished to the extent that simple composite overlays will mask them. Figure 6 shows moderate staining of the centrals and severe blemishes on the canines and lateral incisors. After micro abrasion the severity of the blemishes on the canines and laterals was reduced, but not as successfully as on the centrals. Kelly's smile was improved further by placing composite veneers on the laterals and canines (see Figure 7).

Figure 6

Figure 7

The technique for removing surface stains using 37 percent phosphoric acid may be described as follows:

- Make a slurry of enamel etching gel or liquid (37 percent phosphoric acid). Place pumice into the slurry until just before the mix becomes so dry it no longer holds together;
- It is not necessary to isolate the teeth with a rubber dam. However, as there is some chance of splatter with this technique it is wise to protect eyes and clothing of both patients and operatory personnel;
- Take a slow speed prophy handpiece with a rubber cup attached and scoop up a portion of the abrasive slurry and start abrading the tooth surface over the stain;
- In the event of more than a single tooth requiring treatment it is advisable to commence on the most stained tooth first and compare the improvement with the adjacent tooth;
- Light pressure and intermittent bursts are required with the prophy cup to avoid overheating the tooth surface and causing pulp damage. It is prudent to ask a patient to signal if any discomfort is experienced during this procedure;
- The time required will be about three minutes per tooth. No evidence of stain removal after this time suggests further improvement is unlikely;
- After stain removal has been completed carry out a similar procedure on any further blemished teeth; and
- Micro abrasion means that a small portion of surface enamel has been removed and a small amount of remaining enamel may be weakened by the acid. Application of topical fluoride for two minutes will protect these surfaces.

Incomplete removal of the stain leaves a clinician with three choices:

- Decide jointly with the patient to accept the result;
- Place a veneer over the stain to further mask the discolouration.

If this decision is taken, the tooth will require etching for 15 seconds (micro abrasion destroys the etched surface of enamel) and do not place fluoride over the surface as this will interfere with bonding; and

- Use vital bleaching techniques to enhance the effects of micro abrasion.

While the status of the above procedure remains controversial there is no scientific evidence against the clinical use of this material, despite many attempts to discredit it, in the concentrations prescribed and with limited usage in a supervised environment.

The same flawed arguments against the use of ten percent carbamide peroxide for vital bleaching are used to denounce amalgam as a restorative material. Because ►

It is useful to do one side of the mouth before the other so that the full benefit of the procedure can be appreciated.

Aesthetic dentistry has an exciting and increasing range of treatment choices to enhance a patient's smile. If there is more than one answer to a problem it is often the simple procedure that provides the better long term solution, particularly in view of the fact that this is the technique that usually leaves the maximum number of future options available.

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