AESTHETIC UPDATE

Compiled by Geoffrey M. Knight

A time of review

A recent presentation required an extensive review of the relevant literature and an analysis of current restorative materials and techniques. Casting a wide net can produce some interesting observations, set out below are a few of them.

Longevity of restorations

A paper published in *Acta Odontologica Scandinavica*, last year, recorded the clinical performance over 15 years of almost 500 units of fixed prosthodontic work. After 5 years 98.7 per cent of all restorations were still intact. However, at 15 years one-third were missing, one-third were unsatisfactory and one-third remained acceptable.

Across the Atlantic, George Zarb reported after 7 years, 90 per cent of single crowns remained intact but only 65 per cent of restorations with multiple pontics were present in the mouth after this time.

Compared to a motor vehicle, the fiscal costs of fixed prosthodontics can comfortably be amortized over these time frames. The biological costs, however, are another matter.

It is interesting to speculate on the level of case acceptance if patients were informed that after extensive and irreversible tooth preparation, in 15 years time, only a third of the proposed crowns would be travelling happily within their mouths. The standard response from colleagues to this situation has usually been 'my crowns always last longer than that'. However, one has to assume that their anecdotal assessment of success may be clouded by their satisfactory observations over 5 years.

In an environment where patients are increasingly well informed and expect to keep their teeth for a life time, it is puzzling that the dental ►

Continued from page 26

profession has not invested more energy into research directed towards less invasive, minimal intervention techniques.

The diagnosis dilemma

At a recent seminar, a graduate of almost 60 years informed those present that he had been using a sickle probe, a perio probe and dental radiographs to identify the common dental diseases from the day that he graduated and throughout his long period of clinical practice.

It is amazing in the technologically sophisticated environment of modern dentistry that these outmoded forms of diagnosis remain and even more surprising that there currently exist no viable alternatives.

A great weakness of all professions is the monopolistic umbrella under which they operate, one of the consequences being the tendency to focus research upon the complexity and not the efficiency of providing professional care.

Dental treatment is becoming less affordable to large sections of the community and unless there are efficiencies in delivery to improve access to care, the profession will find itself under ever increasing criticism and the threat of further intervention from governments and relevant social institutions.

Clinical use of caries detector

The increasing trend towards adhesive dentistry requires sophisticated insights into the nature of the enamel and dentine surfaces to which restorations are being bonded. The structure of dentine depends upon the site within the tooth and the extent to which the tissue has been affected by age and/or disease. Fusayama has identified various changes in the surface structure of dentine throughout the carious process which have a profound effect upon its adhesive properties. It is particularly important to differentiate between carious and non carious dentine, a decision often fraught with difficulties in day to day clinical dentistry.

The use of a predictable caries detector to correctly identify the clinical status of dentine must be regarded as an essential diagnostic tool for successful adhesive practice. This does not prescribe the dogmatic application of a caries detector in every clinical situation, but rather, having the solution on hand to assist when the predictable removal of caries is compromised by either gross and extensive decay or the clinical situation reduces access to the lesion.

The clinical performance of Type III glass ionomer cements

The long-term clinical observations of specific restorative techniques and materials will occasionally produce some unusual results. One such case has been the performance of Type III glass ionomer cements. Ketac Bond used as a restorative agent for small to medium occlusal and tunnel restorations exhibited negligible occlusal wear and good marginal integrity for periods exceeding four years. When the low clinical costs, the user friendliness and the inherent caries protection of these materials are assessed, they must be considered as preferred restorative agents for these clinical applications.

The introduction of another Type III glass ionomer cement, Fuji 9, for use as an 'atraumatic restorative treatment' material signals a shift in the delivery of dental care. Type III glass ionomer cements have immediate applications in Third World environments that lack access to modern dental equipment, but they also have applications within sophisticated delivery systems where atraumatic and minimally invasive modalities of intervention are seen as the foundations of optimal clinical care.

Tunnel restorations

Published data on tunnel restorations, using glass ionomer cement as a restorative material, for initial Class II lesions, has been present in the dental literature for over 10 years and is now taught in many dental schools around the world as the preferred technique for this clinical situation.

The use of a 'T' type cavity preparation enhances both the visual and mechanical access to the proximal lesion, while still maintaining the critical marginal ridge, the loss of which predisposes a tooth to many potential iatrogenic problems. The use of a caries detector further enhances the ability of a clinician to predictably remove all diseased tooth structure from the preparation. Arguments suggesting that access to caries are not possible using this technique have been groundless.

Type III glass ionomer cements are preferable for use with tunnel restorations as their performance over time appears to be equal to resins with the further benefits of fluoride release that maintains the cariostatic potential of the restoration at both the occlusal and proximal interfaces.

Should the unlikely fracture of a marginal ridge occur during restoration of the cavity, the defect can be corrected by etching the fractured enamel and underlying glass ionomer cement with 37 per cent phosphoric acid for ten seconds, washing and drying with oil-free air and placing a small bonded resin in the defect. The tooth is far better served than resorting to the destruction of the marginal ridge as prescribed in conventional cavity design.

It may be argued that a cavity design for the restoration of an initial proximal lesion with anything other than a tunnel preparation fails to provide a patient with the optimal level of clinical care.

Quotations of interest

There have been some interesting comments made by overseas ►

Continued from page 28

lecturers to dentists in Melbourne this year.

Steven Duke commented that 'Three-year trials suggest that dentine bonding agents start to disintegrate at the restorative interface after the third year'. There are indications that this is caused by materials used in the primers to denature the collagen fibres at the exposed dentine surface, essentially forming a 'scab' which sloughs off after the underlying tissue (dentine) has healed.

Karl Leinfelder said 'Compared with the current generation of composite resins, the costs of aesthetic inlays and onlays cannot be justified for the benefits they bring to patients'.

The thrust of this statement was supported by Felix Lutz who said that 'The marginal integrity and wear resistance of current direct and indirect resin restorations are the same'.

This is certainly an exciting and confusing time to be practising dentistry! □

Information about the Australian Society of Dental Aesthetics may be obtained from:

Dr Malcolm Cooke, Suite 1, 1761 Pittwater Road, Mona Vale NSW 2031. Phone: 02 997 8511.

Dr Tim Latham, 76 Turnham Avenue, Rosanna Vic 3084. Phone: 03 457 2738.

Dr Jim Choimes, 100 Currie Street, Adelaide SA 5000. Phone: 08 231 5324.

Dr Andrew Bochenek, The Kings Hotel, 517 Hay Street, Perth WA 6000. Phone: 09 221 5454.

Dr Kerry Eupene, 111 Smith Street, Darwin NT 0800. Phone: 089 81 9149.

Dr Peter Efstathis, PO Box 342, Mudgeeraba Qld 4213. Phone: 075 79 9900.