
**Submission to the Scientific Committee on Consumer Products From The Dublin Dental School & Hospital, Dublin Ireland.**
26th January 2005.

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The use of low concentration hydrogen peroxide, as an oral antiseptic mouthwash, has been widespread for many years, with minimal adverse effects reported. Over the last decade, peroxide-based whitening/bleaching pastes and gels have also been widely used to reduce or eliminate unsightly extrinsic and intrinsic staining of teeth. Over that period, the common adverse effects of tooth hypersensitivity and/or mucosal irritation have been reported. More extensive/serious effects have been very rare. This balanced review summarises the available scientific evidence in relation to these unusual side effects.

**It appears advisable to limit the unrestricted Over-The-Counter access to peroxide-containing agents as consumers are untrained in the recognition of the associated adverse effects, particularly those related to their overuse. It is unreasonable to make consumers responsible for the management of side effects caused by bleaching agent. The public is also unlikely to recognise early stages of malignant conditions, either associated with, or coincidental with, the use of bleaching agents.**

The management of localised or generalised tooth colour defects is often dealt with most conservatively by the use of tooth whitening/bleaching agents; however the use of the agents should closely monitored by appropriately trained personnel. Consumers should be informed of the relative risk/benefits of tooth bleaching compared with other potential treatments. Manufacturers of tooth whitening products are unlikely to provide complete and unbiased information to patients regarding treatment alternatives. The dental team is in the best position to educate patients about all of their options.

The alternative management of such lesions, particularly in young individuals, may consist of refusing active treatment, which may affect the developing individual's self image, or to undertake irreversible and destructive masking procedures. These are also associated with significant adverse effects, and need periodic replacement.

The supervised use of bleaching/whitening dental agents is a useful tool in the dentist's armamentarium for the management of unsightly dental discolorations. The diagnosis of the discolouration origins, and most appropriate management/treatment would seem to sensibly lie within the remit of oral health care professionals. **In addition, the monitoring of treatment outcome, any adverse effects and maintenance are functions best undertaken by the dental team.**

## Alternative Treatments

The alternative treatments to tooth whitening may include placement of laminate veneers or full coverage porcelain /porcelain-metal crowns in order to enhance the cosmetic appearance of the tooth /teeth. These are invasive to different degrees and are irreversible procedures. A veneer involves removal of 0.5 to 1.0 mm of tooth structure from the front, whilst a crown may involve the removal of up to 1.5 mm from all aspects of the tooth.

The life span of porcelain laminate veneers is in the region of 8-10 years with approximately 35% requiring re-treatment at 10 years (Peumans et al., 2004). The lifetime of crowns is greater than 10 years (Walton, 1999). Ultimately these restorations will require replacement with more extensive restorations, subjecting the tooth to repeated insult involving the removal of additional, sound tooth structure. It is important to note that the placement of veneers or crowns on teeth may lead to loss of vitality, tooth decay, or gum disease.

The cost of both veneers and crowns is far greater than that for tooth whitening, and costs are increased with each future re-treatment. Tooth whitening appears to require only occasional short courses of additional treatment to maintain an acceptable appearance.

## Ethical Issues

Patients who present with discoloured teeth, such as those with developmental defects, currently pose an ethical dilemma for dentists. In order to be as conservative as possible tooth whitening ought to be routinely considered as an option. The advantages are that tooth whitening is a simple treatment that produces satisfactory results without tooth substance removal. In addition it does not preclude the patient from future treatment options for the tooth, including veneering or crowning.

Current legislation prevents dentists from providing tooth whitening as a procedure and are forced to pursue the line of irreversible treatment. This poses the question as to what is best practice for an individual patient? Irreversible treatment imposes a restorative burden on the patient for life in terms of restorations and their ongoing

replacement. Is it correct to proceed with treatment if a more conservative option is available?

Figure 1 shows a patient presenting with mild amelogenesis imperfecta. Previous composite resin laminate veneers were no longer aesthetically acceptable for the patient. In the upper arch the best option was the placement of porcelain laminate veneers as the teeth had had tooth reduction previously. However, in the lower arch the teeth had not been restored so tooth whitening was offered.
Figure 2 shows that veneers have produced an acceptable result in the upper arch. However, for the lower teeth, whitening alone provided a functional and aesthetic result for the patient (Figure 3). The latter does not preclude any future treatment options for these teeth and leaves no restorative burden for the patient into the future.

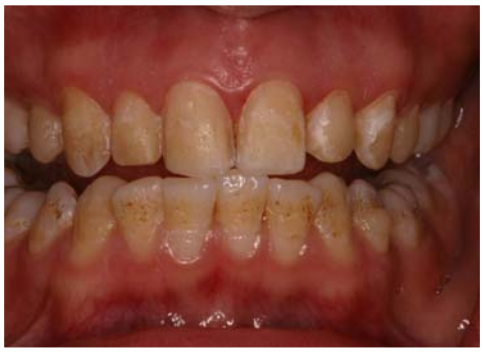

Figure 1

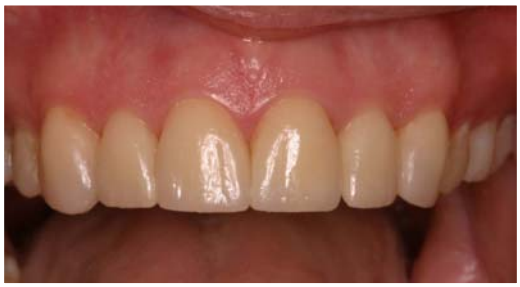

Figure 2

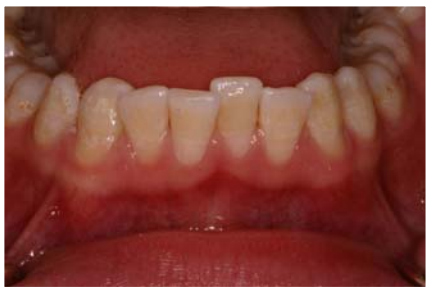

Figure 3

Peumans M, De Munck J, Fieuws S, Lambrechts P, Vanherle G, Van Meerbeek B. A prospective ten-year clinical trial of porcelain veneers. J Adhes Dent. 2004;6(1):65-76.
Walton TR. A 10-year longitudinal study of fixed prosthodontics: clinical characteristics and outcome of single-unit metal-ceramic crowns. Int J Prosthodont. 1999;12(6):519-26.