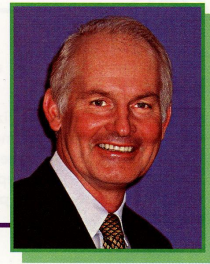


# AESTHETIC Update



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## Preservation dentistry

As the pharmacological management of dental caries improves, **moderate intervention** instead of **minimal intervention** is required to preserve carious tooth structure in order to incorporate it into the restorative base.

### Similarly, the preservation of tooth structure is fundamental to any cosmetic treatment plan.

The HealOzone system (Kavo) is an example of the pharmacological management of dental caries. A short period of ozone application destroys cariogenic bacteria and creates an environment within a carious tooth that facilitates remineralization.

To achieve this, a silicone rubber cuff is applied over the lesion to create an air tight seal. To prevent ozone from being released into the oral environment, the ozone is sucked through the handpiece creating a passive flow as long as the cuff maintains an air tight seal.

To date, the system can only be applied to occlusal or exposed root lesions where an air tight seal can be achieved on a single surface.

The ability to apply the HealOzone system to lesions that extend beyond a single tooth surface would significantly increase the clinical applications of this instrument.

### CLINICAL CASE

An 18-year-old patient presented with a lesion on tooth 47. Although he had previously received regular dental care (remnants of resin fissure seals on teeth 46 and 47) he had not attended a dentist for several years and a large lesion had developed that involved both occlusal and lingual surfaces. (Fig 1.) A Bitewing

radiograph confirmed the lesion and although the tooth was asymptomatic, complete removal of caries may have involved a pulp exposure. (Fig 2.)

### CAVITY PREPARATION

Cavity preparation involved removal of unsupported enamel with an air rotor and the preparation of a moat with a # 3 round bur into sound dentine at the DEJ so that a predictable biological seal at the tooth restoration interface could be achieved. The remaining soft, amorphous, carious dentine was then removed with a hand excavator leaving rubbery carious dentine at the cavity base.

### MATRIX PLACEMENT

A Tofflemire matrix band was placed around tooth 47 to form the lingual wall of the restoration. The matrix band helps to hold the GIC restoration in place and isolates the tooth from the surrounding oral environment. A 37 per cent phosphoric acid gel was applied for five seconds and the preparation was washed and dried with oil free air. (Fig 3.)

### CREATING AN AIR TIGHT SEAL

Fuji VII auto cure GIC (GC Corp) was applied to fill the lingual defect and cover the occlusal surface in the form of a doughnut that would improve the chances of creating an air tight seal between the HealOzone cuff and the tooth. Low viscosity of Fuji VII can be sculpted freehand into the lingual and over the occlusal surface

and is ideally suited for this clinical application. (Fig 4.)

Leaving the matrix band in place provides added support for the freshly set GIC allowing application of the HealOzone once the initial set of the Fuji VII had occurred. The soft, rubbery, carious dentine is clearly visible at the base of the cavity.

### OZONE APPLICATION

The Fuji VII doughnut over the occlusal surface facilitates forming a predictable seal for the HealOzone tip to enable the infusion of ozone into the lesion. (Fig 5.)

The routine application of Fuji VII around any lesion prior to application of the HealOzone technique improves the predictability of achieving an air tight seal during the ozone application.

### RESTORATION PLACEMENT

Once the ozone treatment was completed a further capsule of Fuji VII was used to fill the cavity preparation and complete the interim restoration placement. (Fig 6.)

### CONTOURING AND FINISHING

After setting, the Fuji VII was reduced to fit within the occlusal table using a # 8 slow speed round bur and abrasive discs. (Fig 7.)

### RATIONALE

The dynamics of dental caries involves a constant interaction between cariogenic bacteria lowering the pH at the carious interface to produce demineralization and the defense mechanisms of a tooth (saliva and dentinal tubular fluid) attempting to increase the pH to create an environment to initiate remineralization. Destroying cariogenic bacteria with ozone improves the remineralization potential of the tooth. Fuji VII is a high fluoride releasing GIC that facilitates the formation of fluorapatite within the





Fig 1. Pre treatment showing patient with extensive occlusal wear.

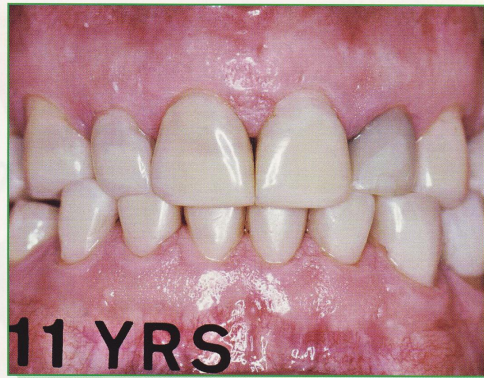


Fig 2. Same patient 11 years post buildups. While there has been some occlusal wear the patient still retains a functional anterior occlusion compared to presentation.



Fig 3. Patient presented with a habitual edge-to-edge occlusion.



Fig 4. Placing laminates with lingual ramps on the upper incisors guides the occlusion back into a standard Class I profile.



Fig 5. Patient presented with severe occlusal wear on the lingual aspects of upper incisors.



Fig 6. Establishing a new occlusal plane on the canines and first bicuspid enables laminate placement to repair damaged upper incisors.