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Active Care

Resin Infiltration Technique, Part 1: white spots for bad oral hygiene

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This is case number 1 of a series of cases that have as an objective to eliminate the enamel white spots by resin infiltration. Style Italiano members and friends want to share the experience they have with the Resin Infiltration Technique using ICON. This is why Style Italiano presents a series of cases where white spots lesions are present for different reasons. There are few different causes of white spots, for example initial caries by bad oral hygiene and plaque accumulation near the gingival line, like in the case we present in this clinical case article. We can also find white spots in teeth affected by fluorosis, in teeth affected by trauma, for medicine intake or in Molar Incisor Hypomineralisation (MIH). Is interesting to see in which situations is convenient to use the Resin Infiltration Technique or in which ones is better to go for the conventional technique micro or macroabrasion associated or not with bleaching and/or composite restorations.

The Resin Infiltration Technique was initially proposed to stop the incipient enamel lesion, but surprisingly the technique allows to mask the white spots by modifying enamel properties. Since white enamel lesions disappeared the indications of the technique started to grow because other teeth affected by white spots (for example in mild fluorosis) had been treated with success.

In this first case, we can see enamel white lesions caused by plaque accumulation in the cervical area of the teeth. Enamel caries lesions are characterized by mineral loss beneath an apparently intact surface layer. Increased porosity within the lesion body causes the characteristic whitish appearance of these lesions due to the difference in refractive index (RI) between sound enamel and caries lesions, resulting in highly unaesthetic appearance, especially in the anterior zone. Before Resin infiltration technique appears, the early enamel carious lesions management included bad oral hygiene habits correction and promotion of remineralization. A recent in vitro study showed superior aesthetic results of resin infiltration of superficial white spots when compared with remineralization after application of fluorides. (1)

The Infiltration Technique has gained in significance in recent years. It seems to be less invasive than other available methods for the arrestment of white spot lesions as megabrasion (http://styleitaliano.hime.host/kilian-molina-modified-megabrasion) or traditional restorative techniques with composite resins (2).

Icon (DMG, Hamburh, Germany) is a low-viscosity hydrophilic light-curing material with good penetration characteristics used
for the Infiltration Technique. Icon can seal the microporosities of initial caries lesions, thus inhibiting the diffusion pathway to cariogenic bacteria and their by-products and preventing further lesion progression under demineralizing conditions (3) and provides significant mechanical support to tooth tissue (4). This can also eliminates the RI mismatch between sound and carious enamel (5).

We present a case report of a 24 years old male patient with several enamel caries lesions in smooth buccal surfaces treated with Icon infiltration.
Fig. 2  Intraoral frontall view.
Fig. 3  Intraoral detailed view.

Fig. 4  Cross-polarized filters allow a more objective picture of the lesions.
Fig. 5  Before starting the treatment the affected smooth surfaces and adjacent teeth are cleaned.
Fig. 6  A retraction cord is inserted into affected teeth sulcus.

Fig. 7  It helps us to improve visibility and protect soft tissues.
As always when working with adhesion isolation with rubber dam is mandatory.
Once the rubber dam is placed teflon cord and floss knots allow us extra-retraction improving access to cervical areas.

Icon (DMG, Hamburg, Germany)
Fig. 11

The screw smooth Surface-Tip facilitates the Icon-Etch application onto the lesions.
According to the manufacturer’s instructions an ample amount of HCL 15% is applied onto the lesions and keep it set for 2 minutes.

Water-air spray is used for at least 30 seconds.
Fig. 14
Then surfaces are dried with oil-free and water-free air.
99% ethanol (Icon-Dry syringe) is applied onto the lesions and keep it set for 30 seconds and dried once again. Sometimes it is recommended to repeat etching two or three times depending on if white spots are still visible after Icon-Dry is applied.

In the next stage Icon-Infiltrant is applied onto the etched surfaces and allowed set for 3 minutes.
In this particular case a small amount of enamel shade composite was applied in the canine surface.
Fig. 18 Icon-Infiltrant and the thin layer of resin composite were light cured for 40 seconds.

Fig. 19 Clinical result the after first light-curing
40 seconds extra-light curing through glycerin gel was applied in this particular case.
After rubber dam removal final glossing and polishing was done with silicone points, discs, felts and polishing paste.

Cross-polarized immediate result.
Fig. 23  6 months post operative control.