A young woman presented in the dental office with a primary complaint of the presence of fluorosis unattractive «white stains». External whitening using thermoformed trays and 10% carbamide peroxide gel increasing the overall brightness of the teeth, acts as masking of small white defects in the enamel. The erosion-infiltration technique, which was initially developed for the treatment of early caries lesions in the enamel, has the secondary effect of masking white stains because it modifies the optical properties of the tooth (ICON by DGM). After an erosion conducted using a gel of 15% hydrochloric acid, the infiltration of a very low-viscosity resin, with a refraction index that is close to the healthy enamel, into the porosities of the body of the lesion, produces a translucent enamel one again. This therapy preserves the structures of the patient tooth and do not cause any pain to the patient. It should be considered as an alternative to micro-invasive treatments for concealing the white stains of fluorosis.
Fig. 1  Initial frontal Smile picture: The prophylactic dose of fluoride appears to have been exceeded over a number of years, since no record of her prior fluoride treatment was available. Clinical examination did not reveal any dental caries, and the diagnosis of fluorosis was confirmed.

Fig. 2  Initial Intra-oral picture
Fig. 3  Initial Polarized Picture
External Bleaching was carried out using thermoformed trays and 10% carbamide peroxide gel. Treatment consisting of nighttime use of the trays lasted 15 days with a weekly inspection in the dentist’s chair. Whitening, by increasing the overall brightness of the teeth, acts as masking of small white defects in the enamel. The results of the whitening process is satisfactory, but is not sufficient. In fact, the opaque fluorosis stains were not sufficiently attenuated by whitening the rest of the tooth. Therefore, the resin-infiltration session is scheduled for one month after the whitening treatment has been completed.

The erosion-infiltration session begins with a prophylactic polishing using an interdental brush and prophylactic paste in order to eliminate any biofilm and therefore salivary proteins. A rubber dam is placed. This step is essential for protecting the surrounding tissues while the hydrochloric acid is being applied and in order to keep everything away from any moisture during the resin infiltration process.
The following step consists of accessing the hypomineralized fluorosis lesions. This requires the elimination of the hypermineralized enamel on the surfaces of the lesions. Therefore, the erosion is conducted using a gel of 15% hydrochloric acid (Icon-Etch DMG) for 120 seconds. The surface is mechanically rubbed using a microbrush. The Icon-etch is then rinsed for 30 seconds using a water spray and the surface is dried using waterfree air.
Déshydratation with ICON DRY. Once the enamel has been eroded, the water that is contained in the microporosities of the fluorosis lesions must be eliminated before the resin infiltration is carried out. Effectively, the infiltrating resin (Icon-Infiltrant) is a matrix based on hydrophobic methacrylate resin (TEGDMA). For this reason, the lesions must be desiccated beforehand. This dehydration is accomplished through the application of a solution of 99% ethanol (Icon-Dry), for 30 seconds, on the surface of the lesions using a flat-end needle.
At this Step the result with ethanol is not perfect. So we have to do another erosion step with ICON-ETCH.
Erosion 2 ICON ETCH 2 minutes

Deshydratation 2: The spots are always present so an other erosion is necessary to access to all hypomineralized enamel.
Fig. 11  Erosion 3: ICON_ETCH 2 minutes.
Fig. 12: Dehydration 3: the lesions appear to be much less bright and have nearly disappeared. Therefore, this time, they are accessible for the resin infiltration. Drying with airblow is then carried out in order to evaporate the ethanol.

Fig. 13: At this point, infiltration can be performed. The application of TEGDMA-based resin (Icon-Infiltrant) with a refractive index of 1.52, which is close to that of enamel (1.62), is done. This resin, which has very low viscosity and water-resistant, uses capillary action to infiltrate the porosities of the lesions for 3 minutes. The application of acid provides significant surface tension, which also facilitates the infiltration. The resin penetrates more deeply into the enamel than conventional adhesives.
Fig. 14

A polymerization step is performed for 40 seconds
A similar infiltration step is carried out during 1 min. This minimizes the surface porosity.

A last light cure procedure is realized with glycerin gel.
To finish the session, the operating field is withdrawn and the surfaces are very carefully polished to prevent any future external discoloration. Any excess is eliminated using dental floss and, if necessary, low-granulometry abrasive strips. All vestibular surfaces are polished using silicone tips. The microgeography is then copied if necessary before final polishing, using silicon carbon brushes (Enamel Plus; Shiny 4 (Micerium)), diamond pastes associated with a goats’-hair brush (Enamel Plus; Shiny A and B (Micerium)) and aluminum oxide paste (Enamel Plus; Shiny C (Micerium)) associated with a felt disk.
Final Result: polarized picture
To conclude,
First This minimal invasive treatment of fluorosis spots of enamel is very easy to do: the crucial moment in the technique is the decision on infiltrate. Sometimes, the infiltration is performed after a large number of cycles of erosion but never before alcohol produces a clear optical effect with translucent spot.
Secondly this technic is not expensive compared to a prosthetic rehabilitation for the patient.
Finlay it’s a fast treatment performed in only one session and patients are very grateful with us because of the result and also the minimal invasive procedure.