White spots due to demineralization associated with fixed orthodontic treatment is pretty common occurrence, especially if the patient has poor oral hygiene. The white spots lesions (WSL) are caused by the combined action of acids and plaque. WSL was defined as the first sign of caries-like lesion on enamel that can be detected with the naked eye.

Fixed orthodontic devices such as brackets, bands, and arch-wires favor plaque accumulation since complicating conventional oral hygiene for our patients who could be WSL developers; new sites of plaque accumulation on the enamel surrounding the orthodontic attachments is common in patients undergoing fixed appliance therapy and may be influenced by the duration of the orthodontic treatment. This may lead to poor esthetics, patient dissatisfaction and even legal complications. Orthodontists must take active responsibility in educating patients about the importance of good dietary compliance and excellent oral hygiene. Clinically, formation of white spots around orthodontic attachments can occur as early as 4 weeks into treatment and their prevalence among orthodontic patients ranges from 2% to 96%. Tufekci et al. found that a sharp increase in the number of WSLs occurred during the first 6 months of treatment that continued to rise at a slower rate to 12 months, thus in initial months of the treatment critical evaluation of oral hygiene is recommended.

It was found that plaque deposition is greater on resin bonded material than on enamel, and that elastomeric ligature rings allow greater growth of cariogenic microorganisms compared to stainless steel wire ligatures.

At the beginning of a fixed orthodontic treatment, an assessment of the patient’s susceptibility to enamel demineralization may made in order to identify the risk of developing carious lesions.

Enamel’s resistance to acid and bacterial attack can be obtained improving home oral hygiene of our patients and/or with topical application of fluoride. Nevertheless, some Authors, including a review of the Cochrane Library, found some moderate evidence that fluoride varnish applied at the time of the orthodontic treatment could lead to an improvement in WSL.

After removal of the orthodontic brackets some patients might exhibit natural remineralization of white spot lesions and daily use of fluoride toothpaste and rinse may help in this process. However, in case the patient does not show this tendency, both for clinical and legal aspects, it is mandatory to provide a solution for this kind of lesion prior to discharging the patient from
www.styleitaliano.org - Post-orthodontic white spot lesions and resin infiltration: the new way to treat the orthodontic treatment.

For this reason we want to show with this article a systematic use of the ICON method when you see WSL the day of the debonding.

Fig. 1  O.A., Female aged 19, come at our observation showing an upper cuspid inclusion, Class II relationship on the right and class I on the left side and the upper midline deviated on the left side.

Fig. 2  Occlusal views.

Fig. 3  CT scan.
At the occlusal view and on Bitewing, 4 severely compromised first molars are present, as a direct result of a MIH (Molar Incisor hypo-mineralization) in childhood. After initial records, Xray and clinical evaluation, in agreement with the patient, it was decided to carry out an orthodontic treatment with multiple extractions: 1 bicuspid (14), 1 cuspid (23 palatally included), 4 first molars (16, 26, 36 and 46). The final occlusion obtained will provide a class II molar relationship moving the upper second molars in substitution of the first ones and the upper first bicuspid in place of 23. In order to obtain an adequate shape and function, a selective intrusion will be performed and a build-up with semi-indirect composite shell is planned.
After the teeth extraction, an indirect bonding was carried out and space closure performed.

Occlusal view.

Because of the low compliance of the patient with elastics, it was decided to improve the anchorage using a device anchored on 2 palatal screws named TADs (Temporary Anchorage Device).
Intra-oral final view.

Occlusal view after alignment.
At the end of treatment, a good and stable occlusion was obtained, without Co-Cr discrepancy, correct midlines and proper gingival margins.

However, the lack of cooperation with the oral hygiene has led to the formation of white spot lesions around the brackets. With the aim to give the patient the best esthetic and functional results, the day of the debonding the buildup of 24 and resin infiltration on upper and lower teeth were performed.

Preformed composite shells (componeer, Coltene, Switzerland) were used in order to obtain an adequate shape of bicuspid changed in canine. The palatal cusp was not cut, indeed has become the â€œnew cingulusâ€. 
At the same time by using the same dam, resin infiltration with Icon (DMG, Germany) was carried out.

Etching procedure carried out with Icon etch.
The final result was satisfactory for both the clinician and the patient.
The White Spot Lesions are not usually detected until debonding, presenting a significant esthetic problem. Patients, parents, orthodontists and general dentists all have the same perception that their appearance is highly undesirable. This aspect can be heavily improved by resin infiltration, and the best results are experienced with infiltration of mild to moderate white-spot lesions directly or closely following the appointment of debonding. Studies show that ICON proved to be most effective at masking white spot lesions and less resistant to formation of new white spot lesions when compared to treatment with therapeutic fluoride solutions.