



White Spot Lesions in Orthodontics: A Topic of Interest

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Abstract

White spot lesions around the fixed orthodontic attachments are the most common iatrogenic consequence of fixed orthodontic treatment, which masks the ultimate aesthetic outcome of the treatment. Bonded or banded brackets provide the plaque retentive areas thereby promoting white spot lesions/demineralization of the tooth surface. Various suggestions are made in the literature to prevent or minimize this condition. However, to date, no definitive conclusion regarding its management protocol has been made.

Keywords: White Spot Lesions; Fixed Orthodontic Treatment; Plaque; Demineralization

Abbreviations

WSL: White Spot Lesion; WSLs: White Spot Lesions.

Orthodontics is one of the specialized branches of the dentistry which involves the movement of the teeth in the desired direction with the application of force. Fixed orthodontic treatment involves the use of various brackets and arch wires which are attached to the tooth surface. White spot lesions (WSLs) are the most common and undesirable complication which occurs during and following the completion of fixed orthodontic treatment [1]. The accumulation of plaque and debris around the orthodontic brackets and arch wires leads to the production of acid by the bacterial plaque resulting in WSLs or areas of demineralization on the tooth surface. Thus, it compromises the ultimate aesthetic result of the treatment. Clinically, WSLs forms around the orthodontic attachments as early as 4 weeks during the treatment.

Tufekci., et al. observed a sharp increase in the WSL during the first 6 months of treatment that continued to rise at a slower rate to 12 months, thus the initial months of the treatment are critical for evaluation of oral hygiene [2]. The labiogingival area of the maxillary central and lateral incisors is the most common site for WSLs while the maxillary posterior segments are least affected. According to the literature, the prevalence of WSLs ranges from 2% to 96% among the orthodontic patients [3]. It is generally believed that natural remineralization of WSLs occurs by saliva once the appliances are removed. However, natural remineralization ac-

counts little for recovery of WSLs and deeper lesions are unlikely to be affected by saliva [4]. Thus, its prevention is one of the goals of every orthodontist.

Primary prevention of WSLs can be done along with the fixed appliances which are as follows:

- Mechanical plaque controlling measures involves the use of proper brushing technique, flossing and interdental brushes.
- Chemical plaque controlling measures involves the use of fluoridated toothpaste and mouth-rinses, application of fluoride varnishes, and use of fluoride-releasing modules and adhesive.

Secondary prevention can be done after the completion of orthodontic treatment which are as follows:

- Application of various remineralizing agents such as Casein phosphopeptide-amorphous calcium phosphate (CCP-ACP), fluoride varnishes, fluoridated toothpaste and mouth-rinses.

Tertiary prevention for deeper lesions can be done by bleaching, micro abrasion and restoration of the tooth structure.

In many clinical studies, various methods were used for prevention of WSLs, but discussion related to the most effective method for its prevention is still proceeding. A recent systematic review concluded that neither fluoride mouth-rinses nor phosphopep-

tide toothpaste with or without fluoride has any positive effects on WSLs [5]. Thus, no definitive conclusion regarding its management protocol has been made.

Conclusively, it is the responsibility of every orthodontist to prevent or minimize the WSLs as a consequence of orthodontic treatment by thoroughly educating and motivating the patients for excellent oral hygiene practice and also careful monitoring of the oral hygiene during the treatment. "Prevention is better than cure".

Conflict of Interest

No conflict of interest exists.

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