Out damned spot!

Oral hygiene for the orthodontic patient

By James Noble*

White spots

A common problem encountered in orthodontic treatment is the presence of white spot lesions or enamel decalcification around teeth with brackets or bands. This has been estimated to occur in 13-50% of orthodontic patients. The increased surface area of brackets or bands allows for increased accumulation of plaque and food. This, in conjunction with poor oral hygiene, results in a decrease in the pH of the oral cavity and causes the development of unattractive white spots on the teeth around the brackets or bands. This may ultimately result in frank dental caries and the patient may feel the need for aesthetic restorative procedures following removal of the orthodontic appliances.

Lesion risks

Poor oral hygiene, gingivitis and periodontal disease are the most important risk factors for the development of white spot lesions. This often occurs in patients who do not use effective brushing and flossing techniques. The dental team has a responsibility to teach each patient these procedures, in addition to ensuring that they comprehend how white spot lesions and dental caries develop. The patient must understand that if they fail to maintain oral hygiene practices, white spot lesions may develop in as quickly as one month, which is the time between orthodontic appointments.

Diet and acid

Diet is another significant risk factor for the development of white spot lesions. Specifically, a diet rich in carbohydrates results in teeth being exposed to acid for a prolonged period of time. Brackets and bands make it especially difficult for saliva and the tongue to remove food. Also, carbonated beverages that are concentrated with sugar and phosphoric acid can result in the production of an acidic intra-oral environment. The frequency of exposure, time that the intra-oral environment is exposed to sugar and the amount present, determines the rate at which white spot lesions will develop.

Bonding agents

The materials that bond brackets or bands to teeth can also be a risk factor for white spot lesion development. If the bonding agent is not contoured around an orthodontic band, leakage can occur and white spot lesions can develop. If excess bonding material is left around an orthodontic bracket, plaque can accumulate around it increasing patient risk of decalcification.

DECREASING THE RISK

Hygiene education

Orthodontic treatment should be delayed in patients presenting with poor oral hygiene, dental caries, gingivitis or periodontal disease. The dental caries should be addressed and an aggressive oral hygiene education programme should be initiated. Before orthodontic treatment can begin, the patient should display proper oral hygiene procedures over a series of appointments and be free of cavities, gingivitis and periodontal disease.

Brushing, flossing and diet

The education programme should include teaching the patient proper technique on how to brush their teeth on a typodont and flossing technique with a hand mirror in their mouth. To ensure the patient has learned the instructions, they should be asked to apply these techniques either on a typodont or in their mouth.

An important and often neglected component in the education programme is the development of a detailed diet record and a comprehensive nutritional counselling session. The patient should understand the concept of how foods can potentially cause caries and be capable of explaining this concept to the health care provider. This includes the dangers of

eating sugar-containing and sticky foods and sugar-containing drinks. The patient should be given a list of healthy non-cariogenic alternatives. They should be informed of the number of times it is necessary to brush their teeth per day and to time themselves while they brush to ensure they do so for the correct length of time. Patients should be taught the importance of brushing after meals, and the advantages of rinsing with water or chewing sugar-free gum to help stimulate saliva after their meals if they don't have a toothbrush available.

Staying motivated

If the patient turns over a new leaf, and over time, demonstrates good oral hygiene, gingival health and is without additional dental caries, orthodontic treatment can begin. The programme, however, must not end, and during orthodontic treatment, the dentist, orthodontist and their staff should work as a team to ensure that the patient stays motivated with encouragement and constant reminders. If relapse of poor oral hygiene is observed, the orthodontic archwires should be removed to facilitate brushing and floss. If still no improvement is noted, the braces should be removed. This prevents white spot lesions and dental caries from developing.

Supplementary aids can be recommended such as the use of an electric toothbrush or flosser to encourage these procedures. Prescribing a daily 0.05% sodium fluoride rinse is also recommended in these high risk patients along with the administration of professionally applied topical fluorides such as fluoride varnish (see *Vital* spring 2008 page 39) at each visit.

Team responsibility

Patients presenting for orthodontic treatment should undergo an intraoral assessment, be free of dental caries and have healthy gingiva before treatment is initiated. The dentist, orthodontist and their respective teams have a responsibility to provide comprehensive oral hygiene instructions to their patients prior to treatment and it is hoped that these habits will stay with the patient for the rest of their lives. If poor oral hygiene is observed, orthodontic treatment should be delayed, an education programme should be undertaken and the patient should be monitored regularly.

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