Preventing wear and tear

Professor Andrew Eder presents an overview of tooth wear and offers practical advice for stopping pathological effects in their tracks.

The most recent Adult Dental Health Survey showed an 11 per cent increase in tooth wear amongst the populations of England, Northern Ireland and Wales in just over a decade (from 66 per cent to 77 per cent between 1998 and 2009). The Child Dental Health Survey of 2013 also showed an increase in the incidence of tooth wear in all age groups.

Tooth wear is, of course, a natural process of ageing, so it is important for dentists to be able to differentiate between pathological and physiological damage. It has been estimated that normal, age-related wear (physiological) stands in the region of 20-38µm annually. Tooth wear beyond that may be pathological (the rate of wear is greater than would be expected for the patient's age). In such cases, as well as if a patient is concerned about wear, or the teeth are compromised in some way, preventive advice and action followed by restorative treatment may be appropriate.

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A multi-factorial challenge

Tooth wear has been divided into three main categories – erosion, abrasion and attrition. Signs of pathological tooth wear in a patient are extremely unlikely to be the➲

result of one type of tooth wear, and therefore a holistic view needs to be taken of the problem.

Erosion is tooth wear resulting, for example, from the consumption of acidic food and drinks or stomach acid regurgitation, which is often found to be a result of conditions such as bulimia, pregnancy sickness or hiatus hernia.

As for abrasion, it is tooth wear caused by excessive rubbing away of enamel and dentine as a result of, for instance, vigorous tooth brushing, porcelain crowns rubbing against the natural dentition or the consumption of a rough-textured diet.

Attrition, meanwhile, occurs when there is contact between the teeth over and above what we would consider 'normal' use. Such patients generally suffer from bruxism when asleep, which is often linked to a stressful lifestyle.

For dental professionals, the signs that indicate pathological tooth wear may be occurring include:

- Tooth sensitivity
- Discolouration where some of the outer enamel layer has been lost (including yellowing and loss of shine)
- Sharp or chipped anterior teeth
- Occlusal surfaces wearing flat and taking on a shiny, pitted appearance
- Altered occlusion as vertical height changes
- Restorations standing proud of the teeth
- Abfraction lesions developing cervically
- V-shaped notches or shallower cupping present cervically

Once the type of tooth wear has been diagnosed (bearing in mind it is common for a patient to suffer from more than one form), it is important to be able to monitor the rate of wear objectively by taking clinical photographs and study casts for future reference. Then, action is needed to prevent further damage, starting with patient education.

Preventive care

As mentioned briefly earlier, acidic foods and drinks can contribute to erosive tooth wear. Our patients need to be told that a number of foods that are generally considered to be 'healthy' have a low pH, such as fruits, fruit juices, sports and diet drinks, a significant number of protein sources, many cheeses and some grains. pH charts can easily be accessed online to help patients make informed choices.

Elimination of all these acidic comestibles is not realistic, so it is important to raise awareness of what patients can do to help themselves, including:

- Drinking still water or low fat milk between meals
- Limiting fruit juice to once per day and avoiding fizzy drinks
- Rinsing the mouth with water for 15 to 30 seconds after consuming acidic foods or drinks
- Chewing sugar-free gum or eating a piece of cheese after consuming acidic food or drink
- Waiting at least an hour to brush teeth after consuming any acidic foods or drinks
- Using a toothpaste that contains 1400ppm fluoride and a non-abrasive toothbrush
- Using a fluoridated mouthwash every day at a different time to tooth brushing, as well as before or after acidic foods and drinks

Erosion is also linked to several medical conditions that result in frequent regurgitation. In these cases, preventive advice may involve:

- Using a fluoride rinse or gel and a high-fluoride toothpaste for daily use
- Not brushing immediately after vomiting but instead rinsing with a fluoridated mouthwash and chewing sugar-free gum afterwards.

Moving on to abrasion, where excessive rubbing damages the enamel and dentine, it is a good idea for the dentist or hygienist to demonstrate how to brush the teeth without being too vigorous and, where appropriate, to recommend the use of a soft toothbrush and non-abrasive toothpaste. It is also worth mentioning to patients that foods with a rough texture will make matters worse.

As for the third category – attrition – if a patient presents with pain and/or tooth wear that can be attributed to bruxism and they tell you that they are stressed, it is a good idea to let them know that making a few simple lifestyle changes can be of significant benefit, such as:

- Doing something relaxing before bed, for instance having a bath, meditative exercise or reading
- Learning to brush effectively yet gently with a relatively soft toothbrush and a toothpaste low in abrasivity

In addition, prescribing muscle relaxants and the use of a suitable mouthguard may be effective, protecting against any damage that may be caused by a habitual grinding pattern and to break the habit. Recommending care from a physiotherapist or osteopath with specialist knowledge of the temporomandibular joint might also be appropriate to prevent further damage.

The treatment phase

Once preventive strategies have been implemented and the risk of further pathological wear eliminated, suitable remedial treatment can be considered. For patients exhibiting slight damage to the teeth, adhesive techniques may be indicated to protect the damaged tooth surfaces and improve both function and aesthetics.

In the unfortunate event of damage resulting from tooth wear not being diagnosed and action therefore not taken in the early stages, treatment may need to include extensive restoration to correct the situation. When a patient presents with particularly troubling issues or appears to require complex treatment, referral to a specialist may be recommended to ascertain what is in the patient's best interests and/or to provide the treatment.

Once treatment has been completed, regular check-ups are necessary to discuss the patient's progress, monitor the rate of wear, provide further guidance, help with adjustments to lifestyle, and provide motivation.

References available on request.