A report from a symposium dedicated to enamel erosion in children and adolescents

By Lisa Townshend, Dental Tribune U.K. Edition

Tooth wear due to factors such as acid erosion has become one of the hot topics of dentistry in recent years. With the recent appearance of products such as toothpastes, mouth rinses and mousses in the consumer market, the profile of enamel erosion has risen in both the public consciousness and clinical spheres.

The pre-congress symposium of the 10th Congress of the European Academy of Paediatric Dentistry, held jointly with the British Society of Paediatric Dentistry, focused entirely on the issue of tooth surface loss in children and adolescents.

The event was well attended for a Friday afternoon, with almost 500 people ignoring the pull of beautiful sunshine in the Yorkshire moors to attend.

A first for paediatric dentistry, and chaired by Sven Poulsen and Jack Toumba, the afternoon started off with a look at the general issues surrounding tooth wear and some of the different products on offer that clinicians can recommend to patients presented by Prof. Monty Duggal.

The science of erosion

Duggal is currently professor and head of paediatric dentistry at Leeds Dental Institute and spoke about “The Science of Erosion and Challenges for Children,” discussing the significance of the introduction of consumer products aimed at combating tooth erosion. These products have caused massive interest research-wise about the efficacy of the products, and many discussions of the importance of tooth surface loss as a condition.

Duggal discussed how it is becoming a significant problem globally, and the size of the challenge faced by clinicians both in preventive and management of tooth surface loss.

Duggal looked at the aetiology of the condition, citing that one of the main difficulties in dealing with surface loss is that it is multi-factorial; a combination of acid erosion, attrition, abrasion and abfraction.

One interesting point he made is that clinicians are not necessarily “programmed” to look for tooth wear, being more “addicted to caries.” So, in terms of diagnosis, how good are clinicians at looking for and recording instances of surface loss?

In terms of research, Duggal detailed a study he has been undertaking looking at a combination of products aimed at treating the condition to see what was more efficacious and in what combinations. Duggal is very clear in his thoughts that the use of a combination of products and advice in a patient-tailored regimen is the most beneficial to patients. From the study, he found that one of the best combinations was a mix of GSK’s Pronamel toothpaste and GC’s Tooth Mousse for helping to manage surface loss.

Solving the mystery

Next to the stage was Dr. Martha Ann Keels. Keels is currently the division chief of paediatric dentistry at Duke Children’s Hospital, located in North Carolina in the United States. Her presentation, “Solving the Mystery of Tooth Surface Loss, Role of Non-dietary Factors such as GORD and the Management of Acid Errosion in Children” very specific in its look at gastroesophageal reflux disease (GORD), or GERD as the U.S. spelling variant, as a major causal factor of tooth surface loss.

Keels treats the oral damage caused by GORD in children and sees the various levels of tooth wear that it can cause. She detailed some of the risk factors, including eating habits, emotional stress (school, family issues, etc.), asthma sufferers and special needs patients. It has been noted that the condition is more prevalent in boys.

Using case studies, Keels highlighted some of the treatment options available for sufferers and explained the indices used to monitor the progress of tooth surface loss. While her preference is dietary change over medication or surgical interventions, the list of treatments available is fairly broad. The 5, 4, 3, 2, 1, almost none” lifestyle mantra is used at Duke Hospital:

- 5 portions of fruit/vegetables
- 4 glasses of water
- 3 structured meals
- 2 hours or less of screen time
- 1 hour of activity
- almost none: sugar

In addition, trying to treat child stress using easy breathing techniques, or relaxing before bedtime, is useful to help alleviate any condition.

Keels looked at various medications that have been prescribed to help reduce the acid production in the patient’s stomach, including acid reducers and acid blockers. In some patient cases, surgery is necessary in the form of a Nissen Fundoplication.

When managing the dental effects of GORD, Keels described her simplified index, which can be utilised by team members to chart the progression of surface loss, be verified by the clinician and then used as a patient and parent visual aid to describe what’s going on.

Preventing dental erosion

After a short break for coffee, the delegates were treated to a presentation from Prof. David Bartlett, head of prosthodontics at Kings College London Dental Institute as well as a consultant in restorative dentistry and specialist in prosthodontics.

His presentation focused on “A Risky Situation: Aetiology and Prevention of Dental Erosion.” He discussed the different causes of erosion and what actually happens to a tooth as the enamel is eroded, using a series of images from a scanning electron microscope.

Bartlett looked at the need for the dietary advice given to patients, emphasising the need for advice to not conflict with medical advice for healthy eating. His opinion was that it’s not what is eaten or drunk, it’s the frequency and how it is consumed. Using photos of tooth wear, he illustrated his points with anecdotes of patients he had seen in his career, including one who would take all day to eat an orange segment by segment.

He then discussed the research into tooth erosion he had been involved in over the years, and discussed the difficulties that clinical studies have in validating their research. The use of superimposition of impression scans taken at regular intervals gave the researchers reference points to examine the surface loss over a distinct period of time, in this case, three years.

Bartlett’s final message to delegates was very clear: clinicians can have an effect on preventing tooth erosion with a combination of treatment and advice.

Adhesion to dentine

The final speaker of the afternoon was the head of prosthodontics at the University of Marburg in Germany and began his presentation with the acknowledgement that restorative therapy in children is not an easy task.

Much of the talk centred on the relative merits of the different etch and bonding systems on both primary and permanent dentition.

Frankenberger stated that self-etch adhesives are very successful for primary teeth, but that the three-step systems were better for permanent teeth. “Use more bottles for permanent teeth” was his mantra.

He also used many images to illustrate the bonding strengths under different conditions, some in 5-D to fully demonstrate the processes taking place between tooth and adhesive.

A relevant topic

This pre-congress symposium was a fascinating look into the topic of tooth wear in children’s teeth, and raised many discussion points amongst the delegates.

As a topic that is becoming more relevant in today’s paediatric dentistry, the four presentations gave a very thorough grounding in what clinicians should be looking for, as well as providing a guiding hand in finding the evidence base needed to do the best for patients.