Treating Incisal Edge Wear

A step-by-step approach

by Dr. Marvin Fier

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How often do we see incisal edge wear in patients whose oral health and dentition are basically healthy? I'm sure we can all recall seeing the yellow or brown color of dentin surrounded by borders of enamel on lower incisal edges (Fig. 1) or perhaps even on upper incisors. Do we leave these areas untreated and monitor them because we don't think they're in need of treatment … yet?

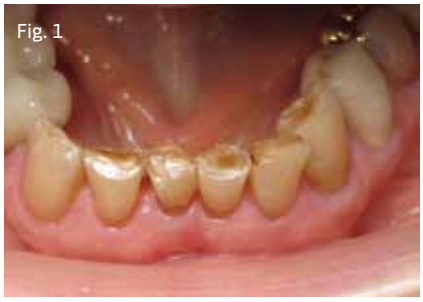
Sometimes we also see chipping or increased translucence of the incisal edges due to very thin enamel. The patient might notice a bluish translucency on upper incisors or tell us his/her teeth are starting to chip. When abfractions accompanied by severe posterior wear are also present, chances are the patient is a severe grinder and clencher (Fig. 2). The discoloration of lower incisal edges is easily seen by a patient, or the patient might not be aware of what's happening.

With our aging population, people are keeping their teeth longer. Attrition of tooth structure accompanied by continuous eruption, is a normal phenomenon, but cratering or cupping of incisal edges with exposed dentin represents excessive wear. This can be detrimental to a patient as seen in Figs. 1 and 2. Excessive wear areas are easily spotted on lower incisors (Fig. 3). These areas can also occur on upper incisors in the inciso-palatal region and are often overlooked (Fig. 4).

Excessive wear

Excessive tooth wear can be caused by abrasion, GERD (gastroesophageal reflux disease), bruxism, clenching, acidic beverages and foods, and genetic factors.[1] It's important to determine the causative factors when we see cratered or gauged out upper or lower incisal edges. Did the excessive wear arise from dietary erosion due to acidic substances contacting the teeth? Was bruxism the cause? Interestingly, "there is no consensus about the definition and diagnostic grading of bruxism."[2] If the problem is bruxism, is it nocturnal, daytime, or both? Awake bruxism is thought to be semi-voluntary, (i.e., genetic and environmental), and often associated with stress caused by family responsibilities or work pressures.[3]

A detailed history including the patient's awareness of clenching or grinding habits must be taken. A comprehensive examination



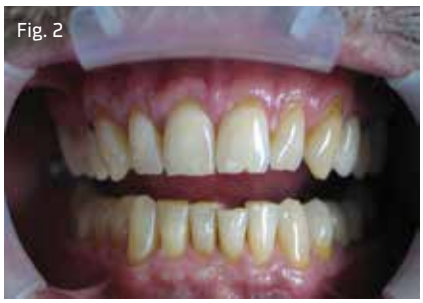


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Fig. 3

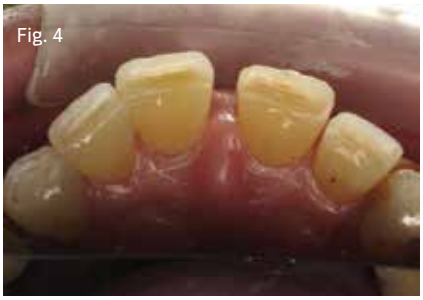
Fig. 4


Fig. 5


Fig. 6


Fig. 7

should be performed, including soft and hard tissues, oral cancer screening, periodontal pocket measurements, and impressions for diagnostic models. Before recommending treatment, it is incumbent on us to try our best to find out why the incisal edges are worn excessively. In my experience, there are many patients who exhibit this anterior wear pattern without severe posterior wear and collapsed vertical dimension.

This article will deal with caring for a patient who had minimal chipping and severely exposed dentin on the inciso-palatals of his upper incisors. In this case we'll demonstrate a technique for restoring the physiologic contours and protecting the exposed dentin and incisal edges of the patient's upper incisors.

The technique will show tooth preparation and bonding and restoration with Estelite Sigma Quick (Tokuyama Dental), a universal, supra-nano filled composite. This material has spherical fillers that make it easy to polish and contribute to long-lasting retention of surface smoothness. Its chameleon property makes it an excellent choice for blending with surrounding tooth structure.

Background

The patient reported that he felt "ridges" near the edge of his upper front teeth a few years ago but didn't think much of them. He also noticed some "small chips" on his "top front teeth." He made no comment about his lower front teeth, which also showed moderate wear. After studying all the data we gathered through our comprehensive examination process, it was determined that the patient's excessive upper incisal wear was probably due to a combination of factors.

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In the years before we saw him, he discovered he had a habit of pushing his lower teeth forward during the day and rubbing them against his upper front teeth in what we know is a protrusive movement. Since his lower incisal edges showed moderate wear, it's probable that the excessive wear on his uppers began prior to his feeling the ridges.

Our comprehensive examination findings showed a flattened bite without canine guidance and disclusion (Fig. 5). A combination of erosion, further attrition and parafunctional movements probably contributed to the large troughs in his upper incisal edges.

Treatment recommendations included

full upper and lower rehabilitation with an improved bite relationship or, at the very least, bonding composite resin into the severely worn areas to reinforce the upper and lower incisal edges. This would protect them from chipping and prevent further erosion of the dentin. In either case, a nightguard was part of the plan.

It was made clear to the patient that edge reinforcement would address the results of his bruxism, like the worn and chipped edges, but not the causes. He was advised that he could expect the restorations would need to be resurfaced or replaced from time to time. The patient opted for edge reinforcement, and for financial reasons we had to treat the lower and upper edges at different times and make his nightguard after treating both.

Chairside treatment

The lower edges were treated approximately nine months before the uppers. Fig. 6, page 31, shows the completed lower edges when we began the uppers. Conservative troughs were created in the upper incisal edge indentations for several reasons. Prepared enamel would offer better bonding than unprepared enamel and having a resistance form for the restorations would provide better long-term retention. Round end chamfer diamonds (Komet USA) approximating the size of each wear area were used to create preparations (Fig. 7, pg. 31). The preparations were cleaned with a Microetcher IIA (Danville Materials) to ensure a clean surface for bonding (Fig. 8). Fig. 9 shows the preparations ready to be restored.

K-Etchant Syringe (Kuraray), a 35 percent phosphoric acid etching gel, was applied to the preparations for 10 seconds and washed thoroughly. The preparations were dried, and Clearfil Universal Bond Quick (Kuraray) was applied with a 1.5mm fine Microbrush (Microbrush International) in a rubbing motion. This bonding agent permeates dentin and enamel in three seconds because of its new amide monomer.

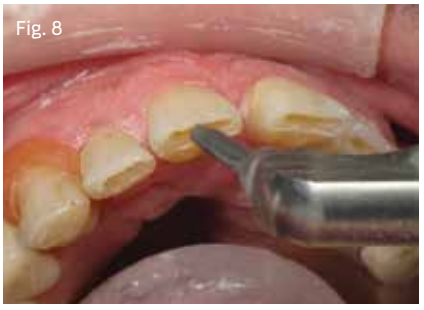
Fig. 8

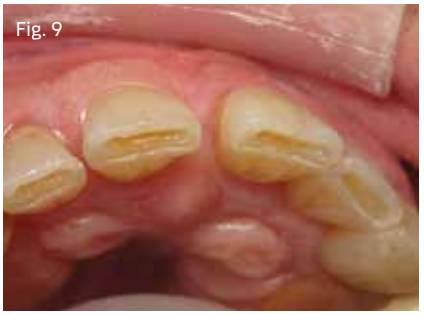
Fig. 9


Fig. 10

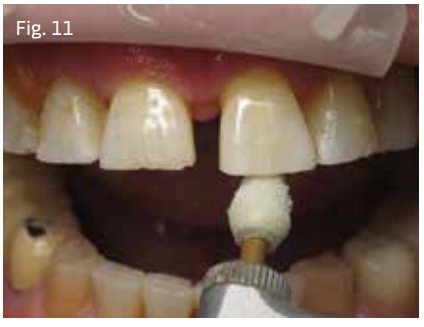
Fig. 11


Fig. 12

Products used

- Estelite Sigma Quick (Tokuyama Dental)
- Round end chamfer diamonds (Komet USA)
- Microetcher IIA (Danville Materials)
- K-Etchant Syringe (Kuraray)
- Clearfil Universal Bond Quick (Kuraray)
- 1.5mm Fine Microbrush (Microbrush International)
- Kerr OptiLux 500
- Enhance point (Dentsply Sirona)
- Jazz Supreme 1-step polisher (SS White Dental)
- Trollfoil Articulating Foil (Troll Dental)


Fig. 13

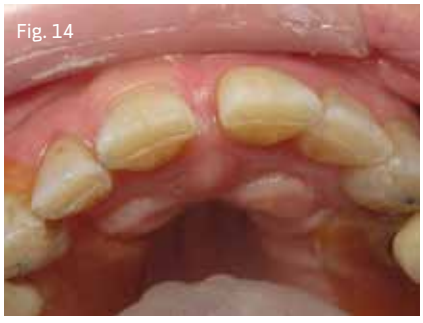
Fig. 14

After evaporating the solvent with a mild stream of air for five seconds, the bonding agent was cured with a Kerr OptiLux 500 curing light (SDS Kerr) for 10 seconds (Fig. 10).

Estelite Sigma Quick shade A2 (Tokuyama Dental) was placed in each tooth and cured for 30 seconds. Each restoration was finished with an Enhance point (Dentsply Sirona) (Fig. 11). To achieve a high-gloss polish and smooth surface to the patient's tongue, a Jazz Supreme 1-step polisher (SS White Dental) was used (Fig. 12). The patient's occlusion on his new restorations was checked with Trollfoil articulating foil (Troll Dental) (Fig. 13). The immediate postop result is seen in Fig. 14.

Final thoughts

What could be better than improving a patient's health and appearance and simultaneously improving your bottom line? This case showed a comprehensive approach to diagnosis, treatment planning, patient-centered case acceptance, and clinical protocols. It is my hope that you will view excessively worn incisal edges in a new light. And after you look down at the lowers, look up at the uppers. With some patients, it's OK to live on the edge. ■

References

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