

# DENTAL EROSION

**Dental Erosion** is the loss of tooth substance by a chemical process that does not involve bacteria.

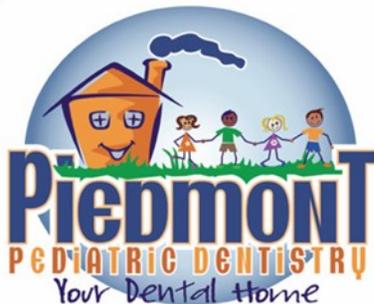
## **Extrinsic Causes: Diet and medications (Vitamin C, asthma, aspirin)**

- \* **Citrus** fruits, fruit juices and candies with high concentration of citric acid.
- \* **Herbal teas & Sour candies**
- \* Carbonated beverages– **soft/sports drinks** (citric and phosphoric acid)
- \* Vinegar (acetic acid) associated with pickled foods

## **Intrinsic Causes: Reflux or Vomiting**

### **The Signs of Tooth Erosion**

- \* Sensitivity occurs when tooth enamel wears away. You may feel a twinge of pain when consuming hot, cold, or sweet foods and drinks.
- \* Discoloration is visible as a slight yellow appearance on the tooth surface.
- \* Transparency of the front teeth appears along the biting edges.
- \* Rounding of teeth occurs along the surfaces and edges of teeth.
- \* Cracks and roughness appear along the edges of the teeth.
- \* Dents (known as cupping) develop on the chewing surfaces of the teeth. At this severe stage, fillings may actually appear to rise up.
- \* Tooth decay is caused by loss of the protective outermost layer of enamel.



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Early cusp tip cupping



Lack of surface ridges



Transparency in the incisors



Erosive wear (cupping) on first permanent molars



Wear of entire chewing surface and into contact spaces between teeth

### Dietary acids with potential to cause dental erosion\*

Acetic acid  
 Ascorbic acid  
 Benzoic acid (used as preservative)  
 Citric acid  
 Lactic acid  
 Maleic acid  
 Malic acid  
 Phosphoric acid  
 Propionic acid ( used as preservative)  
 Succinic acid  
 Tartaric acid  
 Carbonic acid

\* adapted from Milosevic 2004

### Preventative Measures to Reduce Erosion Risk from Acidic Foods \*

- Diminish frequency of consumption of acidic foods and beverages
- Restrict acidic foods to main meals
- Rinse with water after acidic consumption
- Chew sugar-free gum to stimulate salivary flow
- Use only a soft toothbrush
- Use low-abrasive fluoride and bicarbonate-containing toothpaste
- Avoid toothbrushing immediately following an acid challenge
- Rinse with a low-concentration, non-acidulated fluoride mouthwash two times daily
- Apply pH neutral, highly concentrated fluoride gel or toothpaste two times weekly
- Fluoride varnish to be professionally applied two to four times per year
- Regular dental visits for ongoing assessments

\* adapted from Imfeld 1996 and Gandara

### •pH and titratable acidity (TA) of various foods and drinks

| Foods                           | Titratable acidity (g/100g) | pH   |
|---------------------------------|-----------------------------|------|
| Seedless raisins                | 2.59                        | 3.98 |
| Dried apricots                  | 2.49                        | 3.87 |
| Orange squash 50% fruit         | 2.27                        | 2.82 |
| Pure orange juice- concentrate  | 1.27                        | 3.66 |
| Organic bio yogurt- concentrate | 1.21                        | 4.10 |
| Pure apple juice- concentrate   | 0.58                        | 3.58 |
| Natural cheese                  | 0.50                        | 5.01 |
| Bananas                         | 0.44                        | 5.15 |
| Apples                          | 0.17                        | 5.47 |
| Pears                           | 0.12                        | 5.72 |
| Strawberry flavored milk        | 0.12                        | 6.41 |
| Whole milk                      | 0.10                        | 6.69 |
| Water                           | 0.02                        | 7.28 |

### •Acidity, titratable acidity and erosive potential of some drinks

|                   | pH  | Titratable acidity | Erosion potential |
|-------------------|-----|--------------------|-------------------|
| Cola Drinks       | 2.5 | 0.7                | Medium            |
| Carbonated Orange | 2.9 | 2.0                | Medium            |
| Grapefruit Juice  | 3.2 | 9.3                | High              |
| Apple Juice       | 3.2 | 4.5                | High              |
| Orange Juice      | 3.8 | 4.5                | High              |
| Sparkling Water   | 5.3 | 0.1                | Low               |

# Acid Erosion Wheels

