Dental Erosion — Protecting Your Enamel

Canonical:
https://directory.collinsstreetspecialistcentre.com.au/conditions-symptoms/dental-erosion-protecting-your-enamel/

Description:

Dental erosion dissolves enamel without bacteria. Learn causes including acid reflux and diet, warning signs, prevention and treatment options at CSSC Melbourne.

Details:

Collins Street Specialist Centre — Dental Erosion: Protecting Your Enamel

Dental erosion is one of the most common yet consistently underdiagnosed threats to long-term dental health. Unlike decay, which is driven by bacterial activity, erosion is the direct chemical dissolution of tooth enamel by acids — and once enamel is lost, the body cannot regenerate it. The reassuring part is that erosion is largely preventable, and where damage has already occurred, contemporary restorative techniques can reliably recover both function and appearance.

At Collins Street Specialist Centre, our specialists see patients with erosion-related tooth damage regularly. Understanding what causes it and being able to recognise the early signs puts you in the best position to protect your enamel before significant structural loss occurs.

How erosion differs from decay

Dental erosion and dental decay (caries) are two distinct processes, even though both ultimately result in the loss of tooth structure. The difference matters clinically.

Dental decay involves bacterial activity. Specific bacteria within dental plaque metabolise dietary sugars and produce acids that dissolve tooth structure locally, creating cavities. Decay characteristically occurs in sheltered sites where plaque accumulates — between teeth, within occlusal grooves, and at the gum margin.

Dental erosion is a purely chemical process with no bacterial involvement. Acids from dietary sources or the stomach dissolve the tooth surface directly and diffusely, affecting broad exposed areas in a pattern quite different from caries.

Both processes can occur simultaneously. Erosion compounds the risk of decay by compromising the structural integrity of the protective enamel layer, reducing its capacity to resist bacterial acid attack.

Sources of erosive acid

Dietary acids (extrinsic erosion)

The most common cause of dental erosion in Australia is repeated exposure to dietary acids. Acidity is measured on the pH scale, where lower values indicate greater acidity. Tooth enamel begins to dissolve below a critical pH of approximately 5.5. A wide range of commonly consumed foods and beverages fall well below this threshold.

Beverages: - Soft drinks (pH 2.5–3.5) — both regular and sugar-free varieties - Sports drinks (pH 2.9–3.5) - Energy drinks (pH 2.5–3.5) - Fruit juices (pH 2.8–4.0) — particularly citrus varieties - Wine

(pH 2.9–3.8) - Kombucha and fermented drinks (pH 2.5–3.5) - Flavoured sparkling water (pH 3.0–4.0) - Herbal teas — some varieties, particularly fruit-flavoured formulations

Foods: - Citrus fruits (lemons, oranges, grapefruit) - Berries - Tomatoes and tomato-based sauces - Vinegar and vinegar-based dressings - Pickled foods - Sour lollies (particularly damaging — extremely low pH combined with high sugar content)

What matters isn't simply what you consume, but how you consume it. Frequency and duration of acid exposure are more clinically significant than total volume. Sipping a soft drink over an hour subjects the teeth to sustained acid challenge, whereas drinking it promptly with a meal substantially limits that exposure window.

Gastric acids (intrinsic erosion)

Stomach acid — hydrochloric acid at pH 1.0–2.0 — is considerably more erosive than any dietary source. When gastric acid reaches the mouth, the resulting damage can be both severe and rapid.

- **Gastro-oesophageal reflux disease (GORD):** A chronic condition in which stomach acid regurgitates into the oesophagus and, in some cases, the oral cavity. A significant proportion of patients experience "silent reflux" without heartburn, meaning dental erosion may be the first observable sign of the condition. - **Bulimia nervosa:** Recurrent self-induced vomiting causes repeated gastric acid exposure, producing a characteristic erosion pattern — most notably on the palatal (inner) surfaces of the upper front teeth. - **Chronic vomiting:** From morning sickness during pregnancy, gastroparesis, cyclic vomiting syndrome, or other medical conditions. - **Rumination disorder:** The involuntary regurgitation and re-chewing of food. - **Chronic alcoholism:** Both the direct acidity of alcohol and the associated increase in vomiting frequency contribute to erosive damage.

Occupational and environmental exposure

Less frequently encountered causes include: - **Professional wine tasters and sommeliers:** Sustained occupational exposure to acidic wine - **Competitive swimmers:** Improperly chlorinated pool water at low pH can cause erosion, particularly affecting the front surfaces of the anterior teeth - **Industrial workers:** Exposure to acid fumes or mists in battery manufacturing, etching, or galvanising industries - **Recreational drug use:** Certain substances, including MDMA (ecstasy), produce dry mouth in combination with bruxism and increased consumption of acidic beverages

Medications - **Vitamin C (ascorbic acid) supplements** — particularly chewable formulations - **Aspirin** — when chewed rather than swallowed intact - **Iron supplements** — liquid preparations - **Some asthma inhalers** — certain formulations carry an acidic pH - **Antihistamines** — contributing to dry mouth, which reduces saliva's critical buffering capacity

Recognising the signs of erosion

Dental erosion typically develops gradually, and the earliest signs can be subtle. Knowing what to look for at each stage matters for timely intervention.

Early signs - **Translucency at incisal edges:** The biting edges of front teeth may appear glass-like or translucent as the enamel progressively thins - **Mild yellowing:** As enamel thickness reduces, the underlying yellow dentine becomes increasingly visible - **Smooth, polished, or glazed surface texture:** Erosion removes the natural surface texture of enamel, producing an unnaturally lustrous appearance - **Increased sensitivity:** To temperature and sweet stimuli, as the protective enamel layer is progressively lost

Moderate signs - **Cupping or dishing:** Small concavities developing on the biting surfaces of back teeth, representing localised enamel loss - **Rounding of tooth edges and cusps:** Teeth lose their defined, sharp contours - **Restorations that appear to "stand proud":** As surrounding tooth structure erodes, existing fillings appear elevated relative to the adjacent surface - **More pronounced

yellowing or darkening** - **Visible loss of tooth contour**

Advanced signs - **Significant reduction in crown height:** Most apparent in the front teeth - **Dentine exposure:** Broad areas of yellow-brown dentine visible on examination - **Severe sensitivity or pain:** As erosion progresses towards the pulp - **Fracturing and chipping:** Structurally weakened enamel is more susceptible to mechanical failure - **Occlusal changes:** As teeth reduce in height and alter in shape, the bite relationship changes accordingly - **Aesthetic concerns:** Teeth appearing prematurely aged, discoloured, and worn

Characteristic erosion patterns

Where erosion appears often points to its cause: - **Palatal surfaces of upper front teeth:** The classic presentation of gastric acid erosion from reflux or vomiting — the tongue directs regurgitated acid onto these surfaces - **Labial surfaces of upper front teeth:** Consistent with dietary acid erosion or swimming pool exposure - **Generalised occlusal cupping of back teeth:** Associated with frequent dietary acid exposure - **Localised erosion patterns:** May indicate sites where acidic beverages are habitually pooled in the mouth

Prevention: protecting your enamel

Prevention is the most clinically and economically sound approach to managing erosion. The following strategies can substantially reduce your risk.

Modify your diet - **Reduce the frequency** of acidic food and beverage consumption — confine acidic items to mealtimes rather than sipping them throughout the day or eating them as between-meal snacks - **Use a straw** for acidic drinks to direct the liquid past the tooth surfaces - **Finish meals with cheese or milk** — dairy products are alkaline and help neutralise residual oral acid - **Drink water** after acidic foods to rinse the oral environment - **Choose less acidic alternatives** — plain water instead of flavoured water, plain sparkling water rather than soft drinks

Protect your teeth after acid exposure - **Do NOT brush immediately** after consuming acidic foods or beverages, or following vomiting. Acid-softened enamel is highly susceptible to abrasive wear from toothbrushing. Wait at least 30 minutes before brushing. - **Rinse with plain water** or a bicarbonate of soda solution (half a teaspoon dissolved in a glass of water) immediately after acid exposure to neutralise residual acid - **Chew sugar-free gum** to stimulate protective saliva flow and help clear oral acid

Optimise your oral care routine - **Use fluoride toothpaste** — fluoride strengthens enamel and increases its resistance to acid dissolution - **Consider a remineralising toothpaste** or product containing casein phosphopeptide-amorphous calcium phosphate (CPP-ACP) - **Use a soft-bristled toothbrush** with a gentle, controlled technique - **Avoid highly abrasive whitening toothpastes** if early erosion is present

Address medical causes - **Seek treatment for GORD** — proton pump inhibitors (PPIs) and appropriate lifestyle modifications can substantially reduce the frequency and severity of gastric acid reflux - **Seek support for eating disorders** — bulimia nervosa and related conditions require professional clinical management, and dental practitioners are well placed to be a first point of contact - **Manage chronic vomiting** with appropriate medical guidance - **Review contributing medications** with your doctor where these may be worsening erosion or dry mouth

Professional preventive measures - **Regular dental monitoring:** Your dentist can identify early erosion changes and track progression through clinical photography and structured assessment - **Professional fluoride application:** High-concentration fluoride varnish applied at dental visits provides targeted enamel protection - **Prescription fluoride toothpaste:** Indicated for patients at elevated risk - **Custom fluoride trays:** Particularly appropriate for patients with significant erosion risk, such as those undergoing chemotherapy or managing severe reflux

Treatment options for erosion damage

When preventive measures alone are insufficient and meaningful tooth structure has been lost, restorative intervention is required. The appropriate approach depends on the extent and distribution of the damage.

Dental bonding (composite resin) For mild to moderate erosion, tooth-coloured composite resin can be applied directly to the affected surfaces. This approach is conservative — requiring minimal tooth preparation — cost-effective, and can often be completed in a single appointment. Direct bonding works particularly well for: - Restoring incisal translucency and the appearance of front tooth edges - Filling cupped-out areas on biting surfaces - Covering exposed and sensitive dentine - Rebuilding modest areas of lost tooth contour

Porcelain veneers Where erosion has affected the visible surfaces of front teeth, porcelain veneers offer a reliable way to restore both appearance and tooth structure. Contemporary veneers are fabricated to minimal thickness and require correspondingly minimal tooth preparation, making them a genuinely conservative option when indicated appropriately.

Dental crowns For teeth with more extensive erosion involving multiple surfaces, full-coverage crowns protect the remaining tooth structure and restore complete occlusal function. Material selection — porcelain, zirconia, or other contemporary ceramics — is guided by tooth location and the functional demands of the patient's bite.

Onlays and overlays For eroded back teeth, partial-coverage onlay or overlay restorations can effectively rebuild the biting surface and protect the remaining enamel without the more extensive preparation that full-coverage crowns require.

Full mouth rehabilitation Where erosion has affected most of the dentition to a significant degree, a comprehensive full mouth rehabilitation undertaken by a prosthodontist may be the most appropriate pathway. This involves the systematic restoration of all affected teeth to re-establish the bite, occlusal function, and appearance. The process typically involves detailed pre-treatment planning — including diagnostic wax-ups or digital design workflows — before proceeding to definitive restorations.

The importance of treating the cause first

A fundamental principle in managing erosion is that restorations will only last if the underlying cause is identified and addressed before, or alongside, restorative treatment. There is little clinical value in placing well-crafted veneers or crowns if ongoing acid exposure will continue to damage them and the surrounding tooth structure. In practice, this means:

- GORD must be medically managed before or alongside dental restorative treatment - Dietary habits must be meaningfully modified - Eating disorders require concurrent professional clinical support - Occupational acid exposures should be minimised through appropriate protective measures

Your dental specialist will discuss the management of underlying causes as an integral part of your treatment planning.

A note on children and teenagers

Dental erosion is increasingly common in young people, driven primarily by high consumption of soft drinks, sports drinks, energy drinks, and acidic snack foods. The enamel on newly erupted permanent teeth is slightly less fully mineralised and may carry a modestly higher susceptibility to erosive attack during this developmental window.

Parents and caregivers can make a real difference by: - Limiting soft drinks and fruit juice to mealtimes - Establishing water as the default everyday beverage - Teaching children not to brush immediately after acidic food or drink - Ensuring regular dental check-ups to enable early detection and monitoring

Specialist care at Collins Street Specialist Centre

At Collins Street Specialist Centre, our prosthodontists bring extensive clinical experience to the management of erosion-affected dentitions — from conservative direct bonding through to comprehensive full mouth rehabilitations. We work with each patient to establish the cause of their erosion, develop a tailored preventive strategy, and, where indicated, restore the teeth to full health and appearance.

Our multidisciplinary structure means that where erosion has produced clinical effects beyond the teeth themselves — including gingival recession, sensitivity requiring endodontic management, or changes to jaw relationships — the relevant specialist disciplines are available within the same centre, ensuring coordinated care.

If you have concerns about dental erosion, contact Collins Street Specialist Centre on (03) 9654 5705 to arrange a clinical assessment. We are located in the Manchester Unity Building at 220 Collins Street, Melbourne VIC 3000.

Frequently Asked Questions

What is dental erosion: Chemical dissolution of tooth enamel by acids

Is dental erosion caused by bacteria: No, it is a purely chemical process

What causes dental decay: Bacterial activity metabolising dietary sugars

Can erosion and decay occur simultaneously: Yes

Is lost enamel reversible: No, the body cannot regenerate lost enamel

Is dental erosion preventable: Yes, largely preventable

At what pH does enamel begin to dissolve: Below approximately pH 5.5

What is the pH of stomach acid: pH 1.0–2.0

What is the pH of soft drinks: pH 2.5–3.5

Is sugar-free soft drink erosive: Yes, equally erosive as regular soft drink

What is the pH of sports drinks: pH 2.9–3.5

What is the pH of energy drinks: pH 2.5–3.5

What is the pH of fruit juice: pH 2.8–4.0

What is the pH of wine: pH 2.9–3.8

What is the pH of kombucha: pH 2.5–3.5

What is the pH of flavoured sparkling water: pH 3.0–4.0

Is plain sparkling water erosive: Minimally acidic, less erosive than soft drinks

What foods cause dental erosion: Citrus fruits, berries, tomatoes, vinegar, pickled foods, sour lollies

Are sour lollies particularly damaging: Yes, extremely low pH combined with high sugar content

Does frequency of acid exposure matter: Yes, more clinically significant than total volume consumed

Does sipping acidic drinks increase erosion risk: Yes, sustained sipping prolongs acid exposure

Does GORD cause dental erosion: Yes, gastric acid can reach the oral cavity

Can GORD cause erosion without heartburn symptoms: Yes, silent reflux can occur

Can dental erosion be the first sign of GORD: Yes

What erosion pattern indicates gastric acid exposure: Palatal surfaces of upper anterior teeth

What erosion pattern indicates dietary acid exposure: Labial surfaces of upper anterior teeth

What erosion pattern indicates bulimia nervosa: Palatal surfaces of upper anterior teeth

Can pregnancy cause dental erosion: Yes, via chronic vomiting from morning sickness

Can swimming cause dental erosion: Yes, from improperly chlorinated pool water at low pH

Which tooth surfaces are affected by swimming pool erosion: Labial surfaces of anterior teeth

Can occupational exposure cause dental erosion: Yes, acid fumes in battery manufacturing and similar industries

Can wine tasters develop dental erosion: Yes, from sustained occupational acid exposure

Does MDMA use contribute to erosion: Yes, via dry mouth, bruxism, and acidic beverage consumption

Do chewable vitamin C supplements cause erosion: Yes

Does chewing aspirin cause erosion: Yes

Can liquid iron supplements cause erosion: Yes

Can asthma inhalers contribute to erosion: Yes, certain formulations carry an acidic pH

Do antihistamines contribute to erosion: Yes, by causing dry mouth and reducing saliva buffering

What is an early sign of dental erosion: Translucency at the biting edges of anterior teeth

Why do eroded teeth appear yellow: Thinning enamel reveals underlying yellow dentine

What surface texture indicates erosion: Smooth, polished, or glazed appearance

Does erosion cause tooth sensitivity: Yes, as protective enamel is progressively lost

What are cupping or dishing signs of: Moderate dental erosion on posterior teeth

What does it mean when restorations stand proud: Surrounding tooth structure has eroded away

What is an advanced sign of erosion: Significant reduction in clinical crown height

Does advanced erosion cause pain: Yes, as erosion progresses towards the pulp

Can eroded teeth fracture: Yes, structurally compromised enamel is more susceptible

Should you brush immediately after vomiting: No, wait at least 30 minutes

Why should you not brush immediately after acid exposure: Acid-softened enamel is highly susceptible to abrasive wear

What should you do immediately after acid exposure: Rinse with plain water

Can bicarbonate of soda help after acid exposure: Yes, half a teaspoon in water neutralises residual acid

Does chewing sugar-free gum help with erosion: Yes, stimulates protective saliva flow

Does fluoride toothpaste help prevent erosion: Yes, strengthens enamel and increases acid resistance

What is CPP-ACP: Casein phosphopeptide-amorphous calcium phosphate, a remineralising agent

Should you use a hard or soft toothbrush if you have erosion: Soft-bristled toothbrush

Are abrasive whitening toothpastes safe with early erosion: No, avoid them if early erosion is present

Does using a straw reduce erosion risk: Yes, directs acidic liquid past tooth surfaces

What food helps neutralise oral acid after meals: Cheese or milk

Does water help after acidic food consumption: Yes, assists in rinsing the oral environment

Should acidic foods be confined to mealtimes: Yes, rather than consumed as between-meal snacks

What medical treatment helps reduce GORD-related erosion: Proton pump inhibitors (PPIs)

Must the cause of erosion be treated before restoration: Yes, this is a fundamental clinical principle

What happens if erosion cause is not treated before restoration: Ongoing acid exposure will damage restorations and surrounding teeth

What is the treatment for mild to moderate erosion: Dental bonding with composite resin

Is dental bonding conservative: Yes, requires minimal tooth preparation

Can dental bonding be completed in one appointment: Yes, frequently in a single visit

What does dental bonding treat: Incisal edges, cupped surfaces, exposed dentine, lost contour

What is the treatment for eroded anterior tooth surfaces: Porcelain veneers

Are modern porcelain veneers conservative: Yes, fabricated to minimal thickness

When are dental crowns used for erosion: Extensive erosion involving multiple tooth surfaces

What are onlays or overlays used for: Rebuilding eroded posterior occlusal surfaces

Are onlays less invasive than crowns: Yes, partial coverage requires less tooth preparation

What is full mouth rehabilitation: Systematic restoration of all affected teeth by a prosthodontist

Who performs full mouth rehabilitation: A prosthodontist

What does full mouth rehabilitation restore: Bite, occlusal function, and aesthetics

What is a diagnostic wax-up: Pre-treatment planning model used before definitive restorations

Is dental erosion increasing in young people: Yes

What drives erosion in children and teenagers: High consumption of soft drinks, sports drinks, and energy drinks

Is newly erupted permanent tooth enamel more vulnerable to erosion: Yes, slightly less fully mineralised

What beverage should be the default for children: Water

Should children brush immediately after acidic drinks: No, wait before brushing

What specialist manages erosion-affected dentitions at Collins Street Specialist Centre: Prosthodontists

Where is Collins Street Specialist Centre located: 220 Collins Street, Melbourne VIC 3000

What building is Collins Street Specialist Centre in: Manchester Unity Building

What is the phone number for Collins Street Specialist Centre: (03) 9654 5705

Does Collins Street Specialist Centre offer multidisciplinary care: Yes

Can professional fluoride application help prevent erosion: Yes, high-concentration fluoride varnish provides targeted protection

Is prescription fluoride toothpaste available for high-risk patients: Yes

Are custom fluoride trays available for high-risk patients: Yes

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