

Worn Down Teeth — Causes & Restoration Options

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Description:

Worn teeth from grinding, erosion or ageing? Learn causes, symptoms and restoration options including crowns, veneers and full mouth rehabilitation at CSSC Melbourne.

Details:

Collins Street Specialist Centre — Worn Teeth: Causes, Consequences & Restoration Options

Dental enamel is the hardest biological substance in the human body, yet even this remarkable material can't hold out indefinitely against the cumulative effects of time, habit and chemistry. Teeth that once looked full and healthy can gradually become shorter, roughened and sensitive, often before patients realise that meaningful structural loss has already occurred. Tooth wear is one of the most common concerns we see at Collins Street Specialist Centre, and it's one our prosthodontists approach with both clinical rigour and a clear understanding of what patients actually need: an honest assessment, a well-considered plan and confidence in the outcome. The good news is that contemporary restorative dentistry offers highly effective solutions, provided the condition is identified and addressed at the right time.

What is tooth wear?

Tooth wear describes the progressive, non-carious loss of tooth structure, meaning the gradual breakdown of enamel and dentine through mechanisms other than bacterial decay. Some degree of wear is a normal consequence of ageing and everyday function. When wear is accelerated, excessive or unevenly distributed, though, it can produce real functional problems, significant aesthetic changes and, if left unmanaged, increasingly complex treatment requirements down the track.

Understanding which type of wear is present, and what's driving it, is the foundation of any effective treatment approach. Dental professionals classify tooth wear into four main categories: attrition, erosion, abrasion and abfraction. These processes frequently coexist, and working out their relative contributions requires careful clinical assessment.

The four mechanisms of tooth wear

Attrition — tooth-on-tooth wear

Attrition results from direct contact between opposing tooth surfaces, producing wear on the biting and chewing planes. The main cause is bruxism, the habitual clenching or grinding of teeth that most commonly happens during sleep, often without the patient's awareness. Contributing factors include psychosocial stress, anxiety, obstructive sleep apnoea and certain medications, including some antidepressants and stimulants.

Clinical signs of attrition include:

- Flattened or visibly shortened front teeth
- Wear facets, smooth polished areas, on the biting surfaces of back teeth
- A reduction in the natural variation in tooth length, producing an unnaturally even

appearance - A bed partner reporting audible grinding during sleep - Morning jaw pain, temporal headaches or tenderness in the chewing muscles

Attrition is particularly consequential because it affects both arches simultaneously, progressively reducing the vertical dimension of occlusion, the height of the bite, which can have downstream effects on jaw joint function and facial appearance.

Erosion — acid-mediated structural loss

Erosion is the dissolution of tooth mineral by acid, with no bacterial involvement. This is what separates it from dental decay. Both enamel and dentine are vulnerable; as acid progressively demineralises the tooth surface, the softened structure becomes highly susceptible to further mechanical wear.

Erosive acid sources fall into two broad categories:

- **Dietary acids:** Citrus fruits and juices, carbonated soft drinks, sports and energy drinks, wine, kombucha, vinegar-containing foods and dressings - **Gastric acid:** Gastro-oesophageal reflux disease (GORD), frequent vomiting, and eating disorders including bulimia nervosa all bring highly concentrated hydrochloric acid into contact with the teeth - **Occupational exposure:** Professional wine tasters, competitive swimmers exposed to chlorinated pool water at low pH, and workers in environments with acidic vapours - **Medications:** Effervescent vitamin C preparations, chewable aspirin, and certain dry-powder inhalers used in asthma management

Erosion produces a characteristic appearance: smooth, cupped-out concavities on tooth surfaces, with teeth looking progressively more yellow as the enamel thins and the warmer-toned dentine beneath becomes visible. Identifying the acid source is essential. Without addressing the underlying cause, any restorative treatment will be compromised.

Abrasion — wear from external mechanical forces

Abrasion comes from the repetitive friction of external objects or substances against tooth surfaces. Overly aggressive toothbrushing, particularly with a hard-bristled brush, excessive force or a highly abrasive toothpaste, is the most common cause seen clinically. Other contributing behaviours include:

- Habitually holding objects between the teeth such as hairpins, pens or fingernails - Using teeth to open packaging, bottles or similar items - Pipe smoking - Regular consumption of highly abrasive foods, though this often overlaps with erosive mechanisms

Abrasion typically presents as wedge- or V-shaped notches at the cervical margin of the tooth, the region where the crown meets the gum. A useful clinical observation is that these lesions often appear more prominently on the side opposite the patient's dominant hand, because people tend to apply greater brushing pressure to the non-dominant side.

Abfraction — stress-induced cervical lesions

Abfraction is a biomechanically driven form of tooth wear arising from the concentration of tensile and compressive stresses at the cervical region during occlusal loading. When teeth are subjected to heavy or laterally directed biting forces, as occurs in bruxism or certain malocclusions, the enamel at the tooth's neck flexes repeatedly, eventually fatiguing and fracturing away in small increments, creating wedge-shaped cervical lesions.

Abfraction rarely acts alone. The stress-induced micro-fracturing of enamel at the cervical margin makes the tooth significantly more susceptible to concurrent erosive and abrasive damage, creating a compounding cycle of structural loss that can progress rapidly if the underlying occlusal forces aren't addressed.

The consequences of significant tooth wear

The clinical implications of tooth wear extend well beyond changes in appearance. Understanding the full picture helps patients appreciate why timely assessment matters.

Dentinal sensitivity and pain

As the enamel layer reduces, the underlying dentine becomes exposed to the oral environment. Dentine is traversed by microscopic fluid-filled channels, dentinal tubules, that communicate with the dental pulp. Fluid movement within these tubules in response to thermal, osmotic or mechanical stimuli generates the characteristic sharp sensitivity to hot, cold, sweet and acidic substances that many patients with worn teeth experience. In advanced cases, wear may progress to involve the pulp itself, producing spontaneous pain and potentially requiring endodontic treatment or extraction.

Bite alteration and temporomandibular dysfunction

The natural height and contour of the teeth establish the vertical dimension of occlusion, a critical factor in how the jaws relate to one another and how chewing forces are distributed. As teeth lose structure, the bite collapses, redistributing forces unevenly and often accelerating wear on the most heavily loaded teeth. Changes in bite dimension can also place increased strain on the temporomandibular joints (TMJ), contributing to jaw pain, clicking or crepitus on movement, chronic headaches, earache and restricted mouth opening.

Aesthetic impact

Worn teeth appear shorter, broader and often darker. The darkening happens because thinning enamel allows the more saturated yellow of dentine to dominate the tooth's colour. The edges of front teeth may become translucent, irregular, chipped or notched. For many patients, it's the aesthetic deterioration, and its effect on confidence and quality of life, that first prompts them to seek specialist advice.

Functional compromise

Severely worn dentitions can impair chewing efficiency, particularly for harder or more fibrous foods. Structural loss also reduces the volume of tooth available to support future restorations, meaning each increment of additional wear makes subsequent treatment progressively more complex and less conservative.

The self-perpetuating nature of wear

Tooth wear is not a static condition. Once the enamel layer is breached, exposed dentine wears at approximately seven times the rate of enamel. This is why early identification and intervention matter so much: treatment at an earlier stage is invariably more conservative, less invasive and more cost-effective than what's required once wear has become severe and generalised.

When should you seek a specialist assessment?

Because tooth wear accumulates gradually, many patients underestimate its extent until significant structural loss has already occurred. A specialist assessment is worth arranging if you notice any of the following:

- Teeth that appear shorter, flatter or broader than you remember
- Increased sensitivity to temperature changes or sweet and acidic foods
- Visible yellowing or darkening, particularly at the edges of front teeth
- Chipping, roughness or irregularity along the edges of front teeth
- A sense that your bite feels different or that your teeth meet unevenly
- Jaw pain, temporal headaches or facial muscle tension, particularly on waking
- A bed partner reporting grinding sounds during sleep

These signs warrant prompt assessment. Earlier intervention consistently produces better clinical outcomes and preserves more natural tooth structure.

Treatment options for worn teeth

Treatment selection depends on the severity and distribution of the wear, the underlying cause, the patient's overall dental health and their functional and aesthetic goals. At Collins Street Specialist Centre, our prosthodontists develop comprehensive, evidence-based treatment plans, often in collaboration with other specialists, to address both the cause and the consequences of tooth wear.

Preventive and conservative management

For mild to moderate wear, the immediate priority is to arrest or substantially slow further progression before any restorative work is undertaken:

- ****Occlusal splints (night guards):**** Precisely fitted protective appliances fabricated from durable acrylic and carefully adjusted to the patient's bite, worn during sleep to dissipate bruxism forces and protect tooth surfaces from further attrition.
- ****Dietary modification:**** Identifying erosive dietary habits and implementing practical strategies, such as reducing the frequency of acidic beverage consumption, using a straw, and rinsing with water rather than brushing immediately after acid exposure.
- ****Toothbrushing technique:**** Switching to a soft-bristled brush with gentle, circular or rolling motions, avoiding abrasive toothpastes, and waiting at least 30 minutes before brushing after acidic food or drink.
- ****Medical co-management:**** Where GORD or an eating disorder is identified as a contributing factor, appropriate medical referral and management is an essential part of care. Restorative treatment alone will not succeed without addressing the underlying condition.
- ****Fluoride therapy:**** High-concentration fluoride toothpastes and professionally applied fluoride varnishes help remineralise and strengthen residual enamel, reduce dentinal sensitivity and slow the progression of erosive wear.

Composite resin bonding

For localised or moderately worn teeth, direct composite resin bonding offers a conservative and clinically versatile solution. Tooth-coloured composite material is applied and sculpted directly onto the worn surfaces in a single appointment, rebuilding lost tooth structure and restoring natural contour and appearance.

Key advantages include:

- Minimal or no removal of residual tooth structure
- Single-visit completion in most cases
- Straightforward repair if the restoration chips or wears over time
- Good aesthetic outcomes, particularly for front teeth

The main limitation of composite resin is its comparatively lower durability relative to ceramic or zirconia materials, making it better suited to more limited restorations or as a provisional solution while definitive treatment is planned.

Porcelain veneers

Where wear is predominantly confined to the front-facing surfaces of anterior teeth, porcelain veneers are an excellent restorative option, combining strong aesthetics with meaningful structural restoration. These precision-fabricated ceramic shells are bonded to the prepared tooth surface, restoring original length, contour and colour with a high degree of naturalness.

Contemporary veneer techniques have become increasingly conservative. Minimal-preparation and, in carefully selected cases, no-preparation veneers are viable options. Your prosthodontist at Collins Street Specialist Centre will assess the pattern, depth and distribution of wear to determine whether veneers are appropriate and, if so, which preparation approach best preserves the remaining tooth structure.

Dental crowns

For teeth with more extensive or circumferential wear, a full-coverage dental crown provides comprehensive protection and restoration of the entire visible tooth. A crown restores the tooth's shape,

height, strength and function, and is indicated when the remaining tooth structure is insufficient to support a partial restoration reliably.

Crown material selection is guided by the functional demands of the tooth's position and the patient's aesthetic requirements:

- **All-ceramic or lithium disilicate crowns:** Excellent aesthetics, well-suited to front and premolar teeth
- **Zirconia crowns:** High strength with acceptable to good aesthetics, suitable for back teeth under heavy occlusal load
- **Porcelain-fused-to-metal (PFM) crowns:** A well-established option where maximum posterior strength is required
- **Gold crowns:** Exceptional longevity and biocompatibility in non-aesthetic zones, with minimal wear on opposing teeth

Onlays and overlays

For back teeth where the biting surfaces are significantly worn but full-crown coverage isn't yet necessary, ceramic onlays and overlays provide a sound intermediate option. These partial-coverage restorations protect and restore the biting surface while conserving more natural tooth structure than a full crown, an important consideration given the limited enamel remaining in worn dentitions.

Full mouth rehabilitation

When tooth wear is generalised, affecting a substantial proportion or the entirety of the dentition, a comprehensive full mouth rehabilitation is typically required. This is one of the most technically demanding areas of restorative dentistry, and it's precisely the clinical domain for which prosthodontists receive their advanced specialist training.

A well-executed full mouth rehabilitation follows a structured sequence:

1. **Comprehensive assessment:** Detailed clinical examination, periapical and panoramic radiographs, intraoral photographs, mounted study models and, where indicated, cone beam CT imaging, to fully characterise the wear pattern and establish a clear diagnostic baseline.
2. **Diagnostic wax-up or digital design:** A three-dimensional blueprint for the planned outcome, fabricated in wax or designed digitally, which allows both the clinician and the patient to evaluate the proposed result before any irreversible treatment is undertaken.
3. **Occlusal reconstruction:** The careful re-establishment of an appropriate vertical dimension of occlusion and a stable, harmonious jaw relationship, the biomechanical foundation upon which all restorative work depends.
4. **Provisional restoration phase:** Temporary restorations are placed to the planned dimensions, allowing the patient to adapt to and assess the new bite over weeks to months before final restorations are committed to.
5. **Definitive restorations:** Once the provisional phase has confirmed the functional and aesthetic outcome, final restorations, crowns, veneers, onlays or a combination, are placed in a planned sequence to achieve the rehabilitated result.

Full mouth rehabilitation is a significant undertaking, typically spanning several months and multiple appointments. The outcomes, however, can be genuinely transformative, restoring not only the appearance of the teeth but also comfortable, efficient function and the long-term structural integrity of the dentition.

The role of the prosthodontist in managing tooth wear

Prosthodontists are dental specialists who complete a minimum of three additional years of full-time university training beyond their general dental qualification, with a clinical focus on the restoration and replacement of teeth. Patients are encouraged to verify their treating clinician's specialist registration with the Australian Health Practitioner Regulation Agency (AHPRA) at [\[www.ahpra.gov.au\]](http://www.ahpra.gov.au)(<https://www.ahpra.gov.au>).

Prosthodontists are well-placed to manage complex tooth wear for several reasons:

- Advanced training in occlusal analysis, bite reconstruction and the biomechanics of the jaw system - Specialist expertise in restorative materials, their properties, limitations and optimal clinical application - Experience in planning and sequencing multi-tooth rehabilitations across the full dentition - Close working relationships with dental technicians, enabling precise fabrication of restorations that are both functional and aesthetic - The capacity to manage the full spectrum of wear severity, from conservative bonding to comprehensive full mouth rehabilitation

At Collins Street Specialist Centre, our prosthodontists work closely with periodontists, endodontists and oral surgeons as clinical circumstances require. This integrated specialist model ensures that the supporting structures, periodontal tissues, alveolar bone and dental pulp, are assessed and, where necessary, treated before and during the restorative process, providing the most stable and durable foundation for any restorative work undertaken.

Prevention: sustaining the health of your teeth

Whether you've already experienced meaningful tooth wear or want to prevent it from developing, the following strategies are recommended:

- Wear a custom-fabricated occlusal splint if bruxism or clenching has been identified or is suspected - Reduce the frequency and duration of acid exposure by consuming acidic foods and beverages with meals rather than sipping throughout the day - Rinse with water after acidic intake and allow at least 30 minutes before brushing, to permit remineralisation of the softened enamel surface - Use a soft-bristled toothbrush with a gentle, non-abrasive technique - Avoid using teeth as tools - Seek appropriate medical management for GORD or eating disorders contributing to erosive wear - Attend regular dental review appointments so that early wear can be identified and monitored before it becomes clinically significant

Taking the next step

If you've noticed changes in the length, appearance or sensitivity of your teeth, or if a dentist has raised concerns about tooth wear, a specialist assessment at Collins Street Specialist Centre will give you a clear understanding of the cause, extent and most appropriate management of your condition. Our prosthodontists bring extensive clinical experience to the full range of tooth wear presentations, from straightforward composite bonding to comprehensive full mouth rehabilitation.

Collins Street Specialist Centre is located within the Manchester Unity Building at 220 Collins Street, Melbourne CBD, and is accessible from across metropolitan Melbourne and regional Victoria.

****To arrange a consultation, please call (03) 9654 5705**** or submit an appointment request through our website. The earlier tooth wear is identified and addressed, the more conservative and effective the available treatment options. Don't wait until the condition has advanced significantly before seeking specialist advice.
