

Dentine hypersensitivity – underdiagnosed, undertreated?

Around 40% of the global population have dentine hypersensitivity, yet the majority of sufferers are unaware that their condition is easily identified and treated. The responsibility now lies with the dental community to raise awareness of the condition and its management, as experts at the latest World Dental Congress, Vienna, Austria, 2002, explain.



“Although dentine hypersensitivity may affect up to one in three adults, few of them turn to dentists,”

revealed Professor Jolán Bánóczy (Semelweis University of Medicine, Budapest, Hungary) in her opening remarks in a symposium at the latest World Dental Congress, Vienna, Austria (2–5 October 2002).

Professor Andrej Kielbassa (Freie Universität, Berlin, Germany) highlighted epidemiologic data that shows dentine hypersensitivity remains vastly underreported and undertreated.

“Hypersensitive teeth are far more prevalent than the dental profession has realised up to now,” he said.

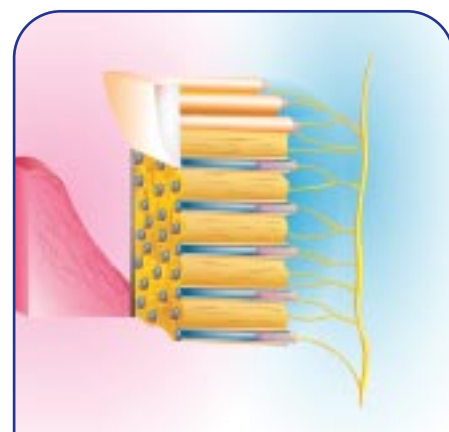
“The dental practitioner should routinely check for dentine hypersensitivity to avoid underdiagnosis.”

Causes and concerns

Professor Martin Addy (University of Bristol Dental School, UK) revealed that ‘sensitive’ dentine has up to eight times more dentinal tubules open at the dentine surface.



More importantly, the tubule diameter is double that of normal dentine, so that even mild stimuli provoke large increases in fluid flow – and hence pain (see figure above).



Gingival recession or enamel loss lead to exposed dentine. Erosion, with or without abrasion, is a key factor in opening tubules leading to hypersensitivity.

The key feature of dentine hypersensitivity – exposure of dentinal tubules – can arise through erosion, abrasion, attrition and abfraction. Erosion, said Professor Addy, appears to be the most significant factor, acting in synergy with the other mechanisms to bring about substantial loss of enamel and dentine, and readily opens dentinal tubules.

Featured topics

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Canadian experts reach consensus on hypersensitivity management

Key features of dentine hypersensitivity

- ✓ Defined as a short, sharp pain arising from exposed dentine in response to thermal, evaporative, tactile, osmotic, or chemical stimuli.
- ✓ Majority of sufferers aged 20–50.
- ✓ Surveys reveal 36% of consumers suffer from sensitive teeth, with females more commonly affected than males (41% and 35%, respectively).
- ✓ Dentine hypersensitivity is underdiagnosed and undertreated.

Prevention of dentine hypersensitivity

Suggestions for professionals

- ✓ Avoid overinstrumenting the root surfaces during calculus removal and scaling/root planing.
- ✓ Avoid over-polishing exposed roots during stain removal.
- ✓ Avoid violating the biologic width when placing crown margins.
- ✓ Consider use of trays to deliver anti-sensitivity agents during bleaching procedures or in chronic sensitivity.
- ✓ Avoid placing subgingival restorative margins that may retain plaque.
- ✓ Review patient regularly for signs of erosion, abrasion and abfraction.

Advice for patients

- ✓ Practice good oral hygiene techniques.
- ✓ Use only pea-sized amount of toothpaste.
- ✓ Avoid hard-bristled toothbrushes.
- ✓ Avoid brushing teeth immediately after consuming acidic foods or drinks.
- ✓ Avoid excessive flossing or incorrect use of other interproximal cleaning devices.
- ✓ Avoid brushing with excessive pressure for prolonged periods of time.
- ✓ Avoid picking at the gums or using toothpicks inappropriately.

Management strategies

Turning to treatment, Professor Addy warned that, as with caries and periodontal disease, failure to consider causation in the management of dentine hypersensitivity

“failure to consider causation, may result in recurrence of the condition, or at worst, failure of treatment”.

Once the cause is determined, treatment options can be considered. Professor Kielbassa outlined current treatment strategies, which range from educating patients on diet and oral hygiene, supported by the use of a desensitizing toothpaste, to the professional application of high-fluoride varnishes or lacquers.

Periodontal and hygiene considerations



Dr Connie Drisko
(University of Louisville School of Dentistry, US)

noted that, while the prevalence of sensitive teeth is around 40% in the general population,

among periodontal patients, hypersensitivity rises to an estimated 73–98%.

Thus, it is possible that periodontal disease and its treatment may be a significant source of dentine hypersensitivity.

“Obvious causes of gingival recession and exposed roots include a past history of periodontal therapy, including scaling and root planing, crown lengthening, and pocket elimination surgery,”

Dr Drisko explained.

She added that gentle but thorough instrumentation with a power-driven scaler is as effective as hand instrumentation in removing plaque, calculus, and endotoxins. Post-operative sensitivity can be diminished by careful subgingival instrumentation and avoidance of overzealous scaling coronal to the gingival margin. During instrumentation, bacteria may be ‘forced’ into the tubules, further aggravating the condition.

Frequency of dentate adults who responded positively to having or ever having sensitive teeth (pain or discomfort caused by cold, hot, sweet, sour foods/drinks or toothbrushing)

Region/Country	% Sensitive teeth sufferers (current or previous)		
	Male	Female	Total
North America	31	42	37
Europe	39	50	45
Others	50	54	52
Overall estimate	35	41	36

Frequency of respondents who have consulted a dentist due to sensitive teeth

Region/Country	% Ever consulted a dentist due to sensitive teeth
North America	60
Europe	47
Others	34
Overall estimate	48

Restorative and operative considerations



Taking into account the restorative and operative aspects of dentine hypersensitivity, it should be noted that it is not always necessary to undertake restorative

techniques. Dr Van Haywood (School of Dentistry, Medical College of Georgia, US) outlined the range of potential agents, restorative materials and procedures that can be used (see Box above).

He emphasised that desensitising toothpastes are the most common, professionally endorsed and self-applied approach for sensitive teeth that do not have or require a restoration. These toothpastes offer the patient "a lifetime approach to controlling sensitivity".

Use of a dentifrice with potassium nitrate has been proven beneficial to most patients in dentine hypersensitivity. Potassium formulations now contain fluoride for life-long caries protection. They may offer additional benefits and, along with their availability in a range of flavours, this can enhance patient compliance for everyday use. When restoration is indicated, preventing sensitivity can be

Treatment options	
Reversible	Non-reversible
1. Desensitizing toothpastes.	1. Glass ionomer cements.
2. Fluoride gels, rinses, and varnishes.	2. Resins, filled or unfilled.
3. Protein precipitants.	3. Periodontal flaps or grafts.
4. Oxalates of ferric, aluminium, and potassium.	4. Pulp extirpation and root canal filling.
	5. Extraction.

achieved through base placement or sealing dentin tubules with a prime and bond system.

"Follow-up care, accompanied by reinstruction and continued home-use of desensitizing toothpastes meeting the patients' general demands, will keep the patient free of pain,"



concluded Professor Kielbassa.

Desensitizing toothpastes applied in bleaching trays might improve efficacy still further, advised Dr Van Haywood.

The bleach effect

The growth of at-home bleaching has also contributed to the increase in dentine hypersensitivity, he added, with controlled

clinical trials showing that sensitivity occurs in 55–75% of users. Anecdotal reports suggest that dentine hypersensitivity may be reduced or prevented by using a desensitizing toothpaste for several weeks prior to exposure to the bleaching agent.

Of note, sensitivity has been reported in around 15% of subjects wearing only the bleaching tray, suggesting dentine hypersensitivity is not exclusively related to the peroxide whitening agent.

"The advent of tray-delivered desensitizing agents containing potassium has greatly aided the dentist in taking a more active approach to managing sensitivity,"

Dr Van Haywood concluded.

The proceedings of this symposium have been published in the International Dental Journal, 2002, p366–394. Publication was made possible by a grant from GlaxoSmithKline.

Canadian experts reach consensus on hypersensitivity management

A treatment algorithm to help dental professionals diagnose and manage dentine hypersensitivity has been created by the Canadian Advisory Board on Dentine Hypersensitivity. The expert panel, representing a broad range of specialties and practice types, reached their consensus at a recently convened meeting in Toronto, chaired by Dr. James Brookfield, a general practitioner from Kirkland Lake and a past-president of the Canadian Dental Association.

Using the findings of a recent Educational Needs Assessment Survey of Canadian dental professionals, the panel identified knowledge gaps in the management of dentine hypersensitivity, reviewed the extensive literature on the condition and input their own diverse clinical experiences.

Among the Consensus Recommendations are a thorough differential diagnosis of pain, education to reduce risk factors – especially

of erosive-abrasive potential such as dietary acids and toothbrushing immediately after meals – and, depending upon the extent and severity of the pain, to use the treatment algorithm when considering therapies.

The meeting was made possible by a grant from GlaxoSmithKline. The algorithm will be featured in a future edition.