

Open to the elements

Tooth pain occurs when dentine is painfully exposed. Diane Rochford looks at how knowing history and circumstance equips you well when assessing the best pathway to treatment



Aims and objectives

To provide the reader with an insight into managing dentine hypersensitivity using products available for home and in-surgery use

Expected outcomes

- Be able to define dentine hypersensitivity
- Understand the hydrodynamic theory
- Identify the causative factors
- Understand the importance of thorough evaluation and successful diagnosis
- Identify and put in place management strategies
- Understand the products available and how they work

Verifiable CPD hours: 1



Diane Rochford qualified as a hygienist from Guy's Hospital in 1996. She joined Dr Linda Greenwall's team in September 1996 where she assists with teaching on bleaching courses. Diane is also a clinical coach for Jameson Management.



Dentine hypersensitivity is defined as 'short, sharp pain arising from exposed dentin in response to stimuli typically thermal, evaporative, tactile, osmotic or chemical and which cannot be ascribed to any other form of dental defect or disease'. The hydrodynamic theory described by Brännström in the 1960s is the most widely recognised mechanism for dentine hypersensitivity. Thermal, tactile or chemical stimuli alters the fluid flow in the dentinal tubules, directionally or increases movement. Cold stimuli causes contraction of fluid, while heat causes expansion, causing pressure changes within the tubules. Causes of dentine hypersensitivity can be attributed to two processes – exposed dentine due to loss of enamel or gingival recession, and open tubules exposed to the oral cavity and the pulp. Erosion, abrasion, attrition and possibly abfraction lead to exposure. Enamel loss on the buccal cervical surface is frequently caused by erosion and abrasion. Aggressive brushing, acute necrotising ulcerative gingivitis, gingival trauma and periodontal procedures are all predisposing factors to gingival recession.

Management of dentine hypersensitivity

Patients may present at their hygiene visits complaining of sensitivity. As when dealing with periodontal disease or caries, it is helpful, for successful management and treatment, to establish a patient history relating to sensitivity. Following the information gathering and assessments (by the dentist or the hygienist or therapist)

the prescribing dentist can then make a diagnosis. Once a diagnosis of dentine hypersensitivity is made, create a treatment plan.

Non-invasive treatment

Treatment for dentine hypersensitivity is designed to block the dentinal tubules, causing fluid flow reduction or reduce the passage of nerve stimulus. Potassium nitrate is an effective desensitiser. Increased concentration of potassium around the nerve fibres causes depolarisation, avoiding repolarisation, blocking the passage of nerve stimulus. Fluorides and, more recently, in combination with amorphous calcium phosphate are frequently used to occlude the dentinal tubules, forming a protective layer.

Desensitising toothpastes

Available over the counter, these toothpastes contain fluoride along with another active ingredient for such as:

- Oral B Pro Expect – Stannous
- Colgate Sensitive Pro Relief – Arginine and calcium carbonate
- Sensodyne Pro Enamel – Potassium nitrate
- Sensodyne Repair & Protect – NovaMin

Topical agents for home use

These products are available to the dental profession with direction for use by a dental professional. Products can be applied directly to the tooth surface either with



a soft toothbrush, finger or applied to custom made trays and worn for 30-60 minutes. The patients shouldn't eat or drink for 30 minutes after application. These products predominately contain potassium nitrate and sodium fluoride, with the exception of Tooth Mousse and MI Paste which is ACP and casein phosphopeptides (CCP). Products available are :

- Ultradent UltraEz
- Philips ACP Relief Gel
- SDI Soothe
- Kin Sensi Kin Gel
- GC Tooth Mousse and MI Paste

In-surgery products

Available for application by a dental professional trained within their scope of practice to apply these therapeutic agents, varnishes and prophylaxis pastes should be applied following the manufactures instructions. Varnishes available:

- Premier – Enamel Pro
- Colgate – Duraphat
- Voco – Bifluorid 10
- Ultradent – Flor Opal

Invasive treatment

If the symptoms persist and other causes of pain are ruled out, more invasive techniques such as mucogingival surgery to provide root coverage or the application of resins to seal the exposed tubules may be necessary.

Summary

DH&Ts are key to the evaluation, education and treatment of dentine hypersensitivity patients. With an abundance of products available on the market for home care use, along with in-surgery products, we can help patients to successfully manage sensitivity that does not impact on their lives.

*The list of products is by no means exhaustive. There are many more products available. **DH&T**

- **References available on request**
- **See page 29 for one hour of CPD questions**

Examine the patient

- During the initial evaluation of the oral tissues, look for contributing factors causing dentine hypersensitivity
- Exclude other causes of dental pain such as: chipped or cracked teeth, fractured restorations, dental caries, gingival inflammation, post-restorative sensitivity

Initial management

1. Patient education – inform of risk factors. Refer to answers to initial questions
2. Review their diet and work to remove excessive dietary acids
3. Evaluate brushing habits. Advise against aggressive, overly frequent brushing. Patients may be advised to switch to a power brush
4. Recommend the patient brush 30-60 minutes after food/drinks especially those with a low pH. Wear of enamel and dentine is increased if brushing is carried out immediately
5. Follow up with the patient after an agreed and applicable period of time. If the symptoms persist, consider treatment

Questions to ask the patient

1. Describe the pain you are experiencing. Listen out for key words – short and sharp, frequency
2. Is there anything that initiates the pain? Listen out for key words – hot, cold, pressure, sweet, sour, toothbrushing.
3. Are there any significant changes to your diet? Ask more questions about diet such as the frequency of citrus fruit juices, carbonated or sports drinks, fruit especially acidic fruits.
4. Are there any changes in your general health or medication? Ask more questions specifically relating to stomach problems, acid reflux or excessive vomiting

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