**Dentin Hypersensitivity**

**Part 1 Dr. Huda Jasim Jebur**

Dentine sensitivity (DS) or dentinal hypersensitivity (DH) is one of the most commonly encountered clinical problems. DH has been defined as “pain derived from exposed dentin in response to chemical, thermal tactile or osmotic stimuli which cannot be explained as arising from any other dental defect or disease”.

**Common terms which are used refer to dentin hypersensitivity**

* Cemental Hypersensitivity/ Sensitivity
* Dentin Hypersensitivity/ Sensitivity
* Dentinal Hypersensitivity/ Sensitivity
* Cervical Hypersensitivity/ Sensitivity
* Root Hypersensitivity/ Sensitivity

**-Prevalence and Epidemiology**

DH is a painful clinical condition with an incidence ranging from 4 to 74%. The variations in the reports may be because of difference in populations and different methods of investigations. The methods employed are usually patient questionnaires or clinical examinations.

A slightly higher incidence of DH is reported in females than in males. While DH can affect the patient of any age, most affected patients are in the age group of 20–50 years, with a peak between 30 and 40 years of age. Regarding the type of teeth involved, canines and premolars of both the arches are the most affected teeth. Buccal aspect of cervical area is the commonly affected site.

**-DH is developed in two phases**:

* Lesion localization
* Lesion initiation

In the first phase, dentinal tubules, due to loss of enamels, are exposed by attrition, abrasion, erosion, and abfraction. However, dentinal exposure mostly occurs due to gingival recession along with the loss of cementum on the root surface of canines and premolars in the buccal surface.

In the second phase, for the exposed dentin to be sensitized, the tubular plugs and the smear layer are removed and consequently, dentinal tubular and pulp are exposed to the external environment.

**-Etiology of DH**

**1. Enamel Loss**

1. Attrition
2. Erosion
3. Abrasion
4. Abfraction

**2. Cementum Loss**

The most common clinical cause for cementum wear and exposed dentinal tubules is gingival recession.

**Gingival Recession is caused by:**

**1-Chronic Trauma**

– Oral hygiene (toothbrushing)

– Habits (tobacco smoking & chewing)

**2- Predisposing Anatomic Factors**

– Thin gingiva

– Prominent roots

– Dehiscence

– Fenestrations

– Frenum pulls

– Roots moved outside alveolar housing by orthodontics

**3-Physiologic Factors**

– Hormonal fluctuations

– Poor nutrition

– Aging

**4- Periodontal Diseases**

– Periodontitis

**5-Periodontal Therapy**

– Scaling and root planning

– Surgery

**-Mechanism of DH**

Three main mechanisms of dentin sensitivity are proposed:

1. Direct Innervation (DI) Theory
2. Odontoblast Receptor (OR) Theory
3. Fluid Movement/Hydrodynamic Theory

**Regarding the first theory**; DI, it has been reported that the nerve’s endings enter dentin through pulp and extends to DEJ and the mechanical stimuli directly transmit the pain. However, there is little evidence to prove this theory; because there is little evidence that can support the existence of nerve in the superficial dentin; where dentin has the most sensitivity.

**In the OR theory**, odontoblasts act as receptors of pain and transmit signals to the pulpal nerves. But this theory has also been rejected since the cellular matrix of odontoblasts is not capable of exciting and producing neural impulses. Furthermore, no synopsis has been found between odontoblasts and pulpal nerves.

**Hydrodynamic Theory** for sensitive dentine. This theory is the most widely accepted theory for DH. The theory has been proposed based on the movement of the fluid inside the dentinal tubules. The theory claims that tubules are open between dentine surface which is exposed to the environment and pulp.

It is believed that DH is made as the result of movement of the fluid inside the dentinal tubules, which is further due to the thermal and physical changes, or as the result of formation of osmotic stimuli near the exposed dentine. The movement of fluid stimulates a baroreceptor and leads to neural discharge. The process is called the hydrodynamic theory of pain.

**“Nothing is more honorable than a grateful heart.” — Seneca**