Journal of Odontology

OPEN ACCESS Freely available online

Commentary

Defects in Enamel and Dentin of Tooth

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DESCRIPTION

A frequent issue, tooth staining prompts individuals to seek therapy to have the discoloration removed. It can affect primary and secondary teeth, and it can affect people of all ages. Dental discolouration has a complex aetiology and various stains can adhere to various tooth surfaces. The anatomy of the tooth has led to this outcome. Men are more likely than women to have intrinsic discolouration, which worsens with age. 21% of women and 31% of males may be impacted. The surface of the tooth is then subjected to a series of physical and chemical interactions.

Color of natural healthy teeth

Teeth have several colours. Depending on the thickness, the gingival, incisal, and cervical regions have different colours. reflection of several colours and translucent dentin and enamel. Healthy teeth's dentin, which is also affected by the following factors, determines the majority of its colour.

- The hue of the crown's enamel-covered surface.
- The enamel's translucency, which changes depending on the degree of calcification.
- The enamel's thickness, which varies from being thicker at the tooth's cervical third to being thinner at the occlusal or incisal border.
- The dentin's colour, thickness, and structural characteristics.
- The presence of secondary or tertiary damage to the dentin.
- Restorations already made.

Classification of discoloration

Many scientists categorise staining as intrinsic or extrinsic. There is some ambiguity surrounding the precise definitions of these terms: extrinsic discoloration is defined as occurring when a substance stains or harms the enamel surface of teeth, while intrinsic staining is defined as occurring when a substance penetrates the internal tooth structure. These definitions use the terms staining and discolouration interchangeably. Extrinsic staining, however, shall be referred to in this context as stains that are simply eliminated by routine prophylactic cleaning. Here, endogenous staining that has been integrated into the tooth matrix and cannot be eliminated by prophylaxis is referred to as intrinsic staining. Some discoloration is multifactorial and contains both forms of stains. For instance, nicotine stains are extrinsic stains that develop into intrinsic stains on teeth.

Developmentally defective enamel and dentin defects of enamel development can be caused. Enamel flaws can be either hypoplastic or hypocalcific. On the buccal surfaces of teeth, there is a prominent brownish or yellowish region called enamel hypocalcification. The surface is undamaged, and the enamel is properly made. Many of these white and brown discolorations can be eliminated with microabrasion and whitening. Developmentally deficient enamel is known as enamel hypoplasia. The tooth's surface is flawed and porous, making it easily stained by substances in the oral cavity. The success rate of bleaching the enamel surface will depend on how severe and extensive the dysplasia is. Chemical exposure causes some enamel white hypoplastic lesions.

The increased fluoride uptake with the growing enamel layers is what results in this discoloration. Fluoride intake can come from too much fluoridated water, too many fluoride supplements, or too many fluoride containing toothpastes. It manifests as irregularly shaped and sized white or brown patches within the surface enamel. However, stain acquisition is posteruptive. The teeth are not pigmented when they first erupt, but over time, because of their porous surface, they absorb the colourful compounds that are present in the oral cavity. Fluorosis can cause three different types of staining: simple fluorosis, opaque fluorosis, and fluorosis with pitting. While opaque fluorosis shows up as grey or white specks on the tooth surface, simple fluorosis shows up as brown pigmentation on a smooth enamel surface. Fluorosis with pitting is characterised by imperfections in the enamel surface and a darker looking tint.

Tetracycline is a bacteriostatic antibiotic with a broad spectrum that is used to treat a number of ailments. Antibiotics known as tetracyclines are a family of similar substances that work well against both gram-positive and gram-negative bacteria. Tetracycline use during odontogenesis is known to result in unattractive discolouration of both primary and secondary

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Received: 25-Aug-2022, Manuscript No. JOY-22-19578; **Editor assigned:** 29-Aug-2022, Pre QC No. JOY-22-19578 (PQ); **Reviewed:** 05-Sep-2022, QC No. JOY-22-19578; **Revised:** 19-Sep-2022, Manuscript No. JOY-22-19578 (R); **Published:** 26-Sep-2022, DOI: 10.35248/JOY.22.6.631.

Citation: Gim M. (2022) Defects in Enamel and Dentin of Tooth. J Odontol. 6: 631.

dentitions. The degree of discolouration varies depending on the tetracycline type utilised. Tetracycline's chelation with calcium ions in hydroxyapatite crystals causes the staining effects. Most prominently in the dentin. Enamel and dentin have tetracycline integrated into them. The terminal capillaries of the tooth pulp are where the chelated molecule enters the mineralizing predentin-dentin junction. Photooxidation, which happens when the tooth is exposed to light, is the cause of the brown discoloration.

Dental caries

A darkened look may be caused by dental cavities in the vicinity of stagnant bacterial growth or leaking restorations because the breakdown products react with the decalcified dentin, arrested caries exhibits a brown hue similar to the pellicle.

Orange-yellow stains are brought on by eugenol. The colour may seem grey or pink due to endodontic debris and pulpal remains. The use of discolouring endodontic materials, such as those with silver as a component of the endodontic sealer, has been linked to the darkening of tooth crowns following root canal therapy. A study revealed that while there was no penetration into the enamel, all endodontic sealers examined led to dentin discolouration. Three weeks after the endodontic sealer was applied, this discolouration was noticeable. However, the root canal materials that are now on the market offer little to no proof of their staining capacity.

Variations to the surface and subsurface of the teeth cause colour changes. The tooth anatomy has an impact on the manifestation's severity. Structural toughness, as well as usage and abuse with advancing age, the following issues arise:

The enamel alters:

Both thinning and textural changes could occur.

Deposition of dentin:

The tooth appears darker as a result of pulp stones, secondary and tertiary dentin deposition, and dentin ageing.

Variations in saliva:

As people age, their salivary composition and content may change. When there is enough enamel to whiten, whitening procedures are typically successful in this age group.