

Stains - Shy to smile

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Abstract: Stained teeth can occur as we age, but some common food, drinks and mouthwashes can stain teeth and pearly whites lost their shine. Intensely colored foods and beverages tend to be biggest offenders. Discoloration varies with etiology, appearance, severity and other factors. Stains may be localized on the surface of tooth or may be intrinsic.

Keywords: Intrinsic stains, Extrinsic stains, microabrasion, Bleaching.

Introduction

No doubt discolored teeth are obstacle to a confident smile. Either a person stops to smile or chances are he must be visited to dentist for cure. Some have experimented with many market products like toothpaste, bleaching kit or solution. In some cases scaling is sufficient and some may require more advanced treatment and regular follow-up.

Classification of stains-

Intrinsic stains- A number of metabolic disease and systemic factors are known to effect the developing dentition and causes discoloration. These are as

Amelogenesis imperfect- AI is a group of hereditary disorder which effects amelogenesis affecting both deciduous and permanent dentition. In this hereditary condition, enamel formation is disturbed with regard to mineralization or matrix formation and is classified accordingly The appearance depends upon the type of amelogenesis imperfecta, varying from the relatively mild hypomature 'snow-capped' enamel to the more severe hereditary hypoplasia with thin, hard enamel which has a yellow to yellow-brown appearance .

Dentinogenesis imperfect - The genetically determined dentine defects may be in isolation or associated with a systemic disorder. The teeth are usually bluish or brown in colour, and demonstrate opalescence on transillumination.

Fluorosis – classified as mild, moderate and severe form. Mild form of fluoride mottling ,exhibit in white opaque flecks near the incisal edges with the surface remaining smooth and intact. Moderate form of fluoride exhibit as mottling with ridges of hypoplasia and white and brownish enamel. Severe form of fluoride include hypoplasia and discoloration with associated cracking and chipping of the enamel(from sapp JP, Eversole L, Wysocki G, Contemporary oral and maxillofacial pathology, ed 2, st Louis, 2004 Mosby)

Pulpal haemorrhagic products - tooth discoloration can be caused by blood components, by-products from hemolysis of red blood cells, pulp tissue remnants, filling materials or sealer.

Aging- In this case discoloration is due to formation of secondary dentine.

Tetracycline Stains.

Extrinsic discoloration- The causes of extrinsic staining can be divided into two categories; those compounds which are incorporated into the pellicle and produce a stain as a result of their basic colour, and those which lead to staining caused by chemical interaction at the tooth surface. These are classified as (Gorlin and Goldman, 1971)

Metallic

Non metallic

Non metallic- Adsorbed onto tooth surface deposit in plaque or acquired pellicle. Aetiological agents are dietary, food, beverages-mostly cola, coffee, tea, frequent tobacco smoking, mouthrinses, and medicaments. Poor oral hygiene is also one cause of surface discoloration. Chromogenic bacteria are also responsible for discoloration mainly *Actinomyces* sps, *Bacteriodes melaninogenicus* causes black to orange discoloration.

Metallic stains - Metallic extrinsic stains are due to occupational exposure to metallic salts and medicine (Addy and Roberts 1981). Various salts e.g Iron causes black discoloration, other salts used in dentistry silver nitrate causes grey, stannous fluoride golden brown stain. (Ellingsen et.al,1982)

Characteristic of surface stains-

Occur primarily between teeth and on the surface of cracked teeth.

Typically dark brown –Black color due to frequent intake of strong chromogenic substances.

Easily cleaned by dentist and daily brushing.

Characteristic of intrinsic stains-

White splotches on the enamel surface and bands of brownish gray across the teeth which is caused by faulty hardening of tooth before birth or interruption of normal enamel formation by medications or disease. e.g. by tetracycline, fluorine and old silver filling. Removal of intrinsic stains require more aggressive treatment.

Management of stains -

Proper diet and habit-Extrinsic staining which is caused by foods, beverages, beetlenut chewing can be controlled by reducing intake of these with additional oral prophylaxis.

Tooth brushing- Brushing twice a day with a dentifrice helps to prevent the extrinsic staining. Most dentifrices contain an abrasive, a detergent and an anti-tartar agent.

Professional tooth cleaning- Some extrinsic stains may be removed with ultrasonic cleaning, rotary polishing with an abrasive prophylactic paste, or air- jet polishing with an abrasive powder.

Polishing- polishing is the simplest, cheapest method of stain removal. Microabrasion is the advanced form of polishing which uses acid polishing paste.

Microabrasion- It is a procedure in which a microscopic layer, of enamel is simultaneously eroded and abraded with a special compound usually containing 18% of HCL. Leaving a perfectly intact surface behind.

Indication-Developmental intrinsic stains and discoloration limited to superficial enamel only. Enamel discoloration due to hypomineralization and hypermineralization. Decalcified lesions from stasis of plaque and orthodontic bands. Multicolored superficial stains and some irregular surface texture.

Contraindication- Age related staining, deep enamel hypoplastic lesions. Areas of deep enamel and dentine stains, amelogenesis and dentinogenesis imperfecta and tetracycline staining.

Advantages- Minimum discomfort to the pt. It can be easily done in less time by operator. Useful in removing superficial stains. But it is not effective for deeper stains.

Bleaching – Bleaching is a conservative and less expensive way to treat mild to moderate surface and intrinsic stains. Teeth with yellow stain are easiest to treat. Bleaching uses strong oxidizing agent. Hydrogen peroxide is used in dentistry as a whitening material at different concentrations from 5%–35%.The bleaching agents that are most commonly used for whitening of root-filled teeth are hydrogen peroxide, carbamide peroxide, and sodium perborate. Hydrogen peroxide is the active ingredient in currently used tooth bleaching materials. It might be applied directly or can be produced by a chemical reaction from carbamide peroxide or sodium perborate.

Indication-Generalized staining;

Ageing;

Smoking and dietary stains such as those of tea and coffee;

Fluorosis;

Tetracycline staining;

Traumatic pulpal changes.

Contraindication-

Patients' high expectations;

Decay and periapical lesions;

Pregnancy;

Pt. having emotional or psychological problems are not right choice for bleaching.

Dentine hypersensitivity- Hypersensitive teeth need extra protection before going for bleach. Teeth with hypoplastic marks and cracks.

Extensively restored teeth- These teeth are not good candidate for bleaching because they do not have enough enamel for respond. Elderly patients with visible recession and yellow roots.

Various classification of bleaching;

1. In office bleaching

2. Home bleaching.

In office bleaching- In office bleaching is required where close monitoring is required and pt. desire quick result. In office tooth bleaching uses high conc. of hydrogen peroxide (30%). Heat or light can be used for activation of H_2O_2 . Contact time and concentration of active ingredients are critical factors. There are few system which even does not require light or heat system e.g. illumina with 15% H_2O_2 . In office bleaching is done with carbamide peroxide gels or hydrogen peroxide at high concentrations (15%–35%). The whitening gel is applied by means of a bleaching tray and is placed directly on the tooth, which is isolated with rubber dam or with other techniques.

Home bleaching

In 1989 by Haywood and Heymann using 10% carbamide Peroxide in a custom made tray worn at night. Whitening agents that are recommended by their manufacturers for night-time use include the following: Opalescence PF (Ultradent Products) 10%, 15%, and 20% carbamide peroxide; Nupro White Gold (DENTSPLY Professional) 10% and 15% carbamide peroxide; Nite White Turbo (Discus Dental) 6% hydrogen peroxide; and Pola-Night (Southern Dental Industries) 10%, 16%, and 22% carbamide peroxide. Many current systems use light activation in conjunction with hydrogen peroxide. Examples include the following: LaserSmile (Biolase Technology) 37% hydrogen peroxide; ArcBrite (Biotrol) 30% hydrogen peroxide; Brite-Smile (BriteSmile) 15% hydrogen peroxide; Rembrandt Lightning Plus (Johnson & Johnson) 35% H_2O_2 . It is interesting to note that clinical trials repeatedly show that light and heat do not increase the efficacy of tooth whitening and are not necessary for vital tooth bleaching.

Non vital bleaching technique-The oldest bleaching technique described in 1848, used chloride of lime. There are a number of non vital bleaching technique.

1-Walking bleach and modified walking bleach

2-non –vital power bleaching

3-inside-outside bleaching

Walking bleach technique-Described by Spasser 1961.It involves sealing a mixture of sodium perborate with H_2O into the pulp chamber of the tooth. Further it was modified using a combination of 30% H_2O_2 and sodium Perborate. Prior to bleaching non-vital tooth should be radiographed to access the apical seal, obturation, and tissues.

Non vital power bleaching- H_2O_2 gel (30-35%) is placed in the pulp chamber and activated either by light or heat. Temperature is between 50 and 60°C for 5 min. Gel is removed by washing with water. The tooth is dried and walking bleach technique is used until the desired results are achieved.

Inside-outside bleaching- This technique is a combination of internal bleaching of non-vital technique with the home bleaching technique.

Conclusion

Although it is difficult to predict the result of bleaching teeth for every individual, there are some guidelines gained from various studies, reports and personal experience. For instance, it is relatively predictable to bleach teeth of older patients with small pulps and various accumulated dietary stains as well as the ageing discoloration caused by secondary dentine deposition. It can be concluded from this review that bleaching is an important and valuable adjunct in tooth whitening procedure. Proper diagnosis, selection of bleaching materials, placement techniques, and an understanding of the biologic interaction with soft and hard tissues are all factors that determine not only immediate success but also long-term success, safety, and patient satisfaction as well.

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