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## A Basic Review Literature of Dental Pigmentation Effecting on Tooth Discolouration

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### Review Article

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### ABSTRACT

The aim of this examination was to evaluate the discolouration of tooth roots brought about by different viewpoints including the medications, propensities, absence of fundamental minerals and so forth and To decide the predominance of fulfilment with dental appearance and own tooth shading. An expanded open mindfulness in dental feel has brought about the wide accessibility of procedures of tooth fading, both in the dental seat and at home. This article audits the etiology of tooth discolouration both at the clinical and the atomic level, together with techniques for mitigating such discolouration. A significant part of the restorative and tasteful activities of financially accessible tooth whiteners, gels, oral washes and different dentifrices are dominantly reliant on their capacity to go about as oxidants henceforth it is prevalent to outline investigation of the oral environment by utilizing oral consideration items.

### INTRODUCTION

Tooth discoloration is caused by multiple local and systemic conditions. Extrinsic dental stains are caused by predisposing factors and other factors such as dental plaque and calculus, foods and beverages, tobacco, chromogenic bacteria, metallic compounds, and topical medications. Intrinsic dental stains are caused by dental materials, dental conditions and caries, trauma, infections, medications, nutritional deficiencies and other disorders, and genetic defects and hereditary diseases [1-8].

Factors modifying tooth colour

- Colour of enamel covering the crown
- Translucency of enamel
- Thickness of the enamel at different levels
- Age of the tooth
- Para functional habit of the patient

#### Common Causes of Tooth Discolorization

The common causes of tooth stain are mainly by three: Extrinsic (located on the surface of the tooth), Intrinsic (located within the tooth) and [9-12] both/others.

**Extrinsic**

Outside tooth surface staining can be created by either immediate or backhanded recoloring. These outside stains can for the most part be evacuated by a dental cleaning. Direct outer recoloring is created by natural mixes in nourishment and beverage which are fused into the tooth pellicle (tooth film) a case of direct recoloring is the espresso stain. Roundabout outer recoloring is connected with cationic germicides, (for example, chlorhexidine) and metal salts, (for example, iron). Non-metallic aberrant stains can be brought on by quaternary ammonium mixes, for example, chlorhexidine flushes. Metallic aberrant stains can be brought on by metallic salts, for example, iron supplements [13-15]. Since the stain is on the outside of the tooth, it can be expelled by scaling and/or cleaning. Be that as it may, after some time outward stain can get to be characteristic. Case of outward stains incorporate nourishment (e.g., espresso), tobacco, and plaque.

**Intrinsic**

Natural staining can be characterized as discolouration which is fused into the structure of either polish or dentine and which can't be evacuated by prophylaxis with tooth glue or pumice. It can be huge corrective, practical issue. Natural stains are expected because of inappropriate development or mineralization of tooth amid arrangement [16-18].

### TYPES OF SOME CAUSES OF INTRINSIC STAIN FACTORS

Metabolic clutters, systemic disorders, dentin absconds, antibiotic medication stains, fluorosis, injury, and finish hypoplasia. The accompanying rundown identifies different reasons for dental stains:

- Alkaptonuria causes a cocoa staining of the teeth.
- Congenital erythropoietic porphyria (red or cocoa) causes a red-chestnut staining.
- Congenital hyperbilirubinemia (blue chestnut and dim) will bring about a yellow-green staining because of hoisted levels of biliverdin in the blood.
- Systemic disorders frequently cause veneer hypoplasia (insufficient advancement) and setting of the finish.
- In Dentinogenesis imperfecta II, both the essential and perpetual teeth are influenced. They are opalescent when trans-lit up, and have cocoa or somewhat blue shading.
- In Dentinogenesis imperfecta I (Yellow or dim cocoa), connected with osteogenesis imperfecta IB, the teeth are additionally opalescent, yet the stylish issue may not be as extreme as in Dentinogenesis imperfecta I.
- In Dentinogenesis imperfecta III, the teeth are additionally opalescent.
- In dentinal dysplasia sort I, the essential and optional teeth may have a golden translucency.
- In dentinal dysplasia sort II, a chestnut staining is now and again watched.
- With antibiotic medication recoloring (dim chestnut to yellow-cocoa), the dentin and polish are recolored chestnut dark shading [19,20]. The most basic time to abstain from taking antibiotic medications is from 4 months in-utero until 7 years old.
- In fluorosis (hazy white yellow-chestnut dispatch), the subsequent dental staining ranges from powdery white to a cocoa dark appearance [21-23]. Fluorosis is brought on by unnecessary fluoride consumption.
- Trauma may bring about tooth staining. The reason for this is narrow breakage within the tooth, which permits hemosiderin to enter to dentinal tubules. In damaged essential teeth, the shading may turn out to be exceptionally dim because of the amassing of hemoglobin items [24-28]. Essential teeth with dim dark

shading frequently require endodontic treatment. In instances of finish hypoplasia, the improvement of the tooth germ was bothered by injury, contamination, or systemic unsettling influence.

- Amelogenesis blemished (yellow-cocoa) (with 14 subtypes) will bring about stains which differ from "snow-topped" veneer to yellow-chestnut finish.

### **Dental Health and Tooth Discoloration**

There are several causes of tooth discoloration, including:

- Foods/drinks
- Tobacco
- Poor dental hygiene
- Disease
- Medications
- Dental materials
- Advancing age
- Genetics
- Environment

## **CAUSES OF STAINS**

### **Coffee, Tea**

You likely think the fundamental driver of obscured teeth in the U.S. is a beverage you blend for yourself in the morning. All things considered, more than half of Americans beverage espresso consistently. You can tell from its shading that it's high in chromogens, and it's exceptionally acidic [29-34]. Together, these components turn white teeth yellow after some time. In the event that you have espresso or tea simply after Sunday supper, you're more averse to have recolored teeth than if you drink three mugs each morning.

### **Causes of Discolouration by Genetic Disorders**

A few hereditary issue influence tooth improvement (odontogenesis), and lead to the arrangement of teeth of unusual appearance and structure. Veneer hypoplasia and finish hypocalcification are case of faulty lacquer which conceivably gives a stained appearance to the tooth. Teeth influenced along these lines are likewise normally more helpless to further recoloring obtained all through life.

### ***Amelogenesis imperfect***

It is an uncommon condition influencing the development of polish (amelogenesis). The finish is delicate, the teeth seem yellow or chestnut, and surface stains develop all the more promptly.

### ***Dentinogenesis imperfect***

It is a deformity of dentin development, and the teeth might be stained yellow-cocoa, profound golden or blue-dim with expanded translucency. Dentinal dysplasia is another confusion of dentin.

Inborn erythropoietic porphyria (Gunther infection) is an uncommon inherent type of porphyria, and might be connected with red or chestnut stained teeth [35,36].

### **Hyperbilirubinemia**

Amid the years of tooth development may make bilirubin be consolidated into the dental hard tissues [37-41], bringing about yellow-green or blue-green staining. One such condition is hemolytic illness of the infant (erythroblastosis fetalis).

Thalassemia and sickle cell iron deficiency might be connected with blue, green or chestnut tooth staining.

A high extent of youngsters with cystic fibrosis have stained teeth. This is perhaps the aftereffect of presentation to antibiotic medication amid odontogenesis, however cystic fibrosis transmembrane controller has likewise been shown to be required in lacquer arrangement, recommending that the illness has some impact on tooth staining paying little heed to introduction to antibiotic medications [42-45].

## **PREVENTIONS**

There is no substitute to dental cleanliness to accomplish more white, cleaner teeth. Brushing teeth delicately at any rate twice every day with a delicate toothbrush [46-53], ideally brushing after every dinner does not have a substitute. Try not to smoke and don't drink pop, as both are terrible for teeth notwithstanding bringing about other wellbeing issues. Utilize a straw when drinking pop if by any means.

### **Home Remedies**

Numerous ordinary teeth brightening techniques contain unforgiving chemicals. Characteristic techniques, notwithstanding, brighten generally as successfully without the brutality. Hydrogen peroxide [54,55], preparing pop and lemon juice are among the most well-known home solutions for brightening teeth.

- Hydrogen Peroxide
- Baking Soda
- Lemon Juice

## **CONTRAINDICATIONS**

- Patients with high/ unrealistic expectations
- Decay and active peri-apical pathology (must be resolved first)
- Pregnancy/ breast feeding
- Sensitivity/cracks/exposed dentine
- Existing crowns/large restorations

## **TREATMENT**

Dental treatment of tooth staining includes distinguishing the etiology and actualizing treatment. Therapeutic treatment additionally might be justified, contingent upon the etiology of the tooth staining.

### ***Diet and Habits***

Outward recoloring created by sustenances, drinks, or propensities (eg, smoking [56-59], biting tobacco; see Causes and Pathophysiology) is treated with an exhaustive dental prophylaxis and end of dietary or other contributory propensities to avert further recoloring.

### ***Toothbrushing***

Compelling tooth brushing twice per day with a dentifrice forestalls extraneous recoloring. Most dentifrices contain a grating, a cleanser, and an antitartar specialist. Also, a few dentifrices now contain tooth-brightening operators [60-65].

### ***Professional Tooth Cleaning***

Some extraneous stains might be evacuated with ultrasonic cleaning, rotational cleaning with a grating prophylactic glue, or air-plane cleaning with a rough powder. Be that as it may, these modalities can prompt polish expulsion; in this way, their rehashed use is undesirable.

### ***Enamel Microabrasion***

This system [66-70] includes the revolving utilization of a blend of powerless hydrochloric corrosive and silicon carbide particles in a water-dissolvable paste. The resultant surface is smooth and has a coated appearance. Polish microabrasion is shown for the evacuation of shallow inborn tooth staining, including that created by fluorosis and decalcifications optional to orthodontic sections or groups. Finish microabrasion might be utilized as a part of conjunction with fading.

### ***Bleaching (Tooth Whitening)***

Early blanching procedures were produced very nearly a century back, and the greater part of the systems included a procedure of oxidation [71-75]. Today, with appropriate patient determination, fading is a protected, simple, and modest methodology that is utilized to treat numerous sorts of tooth staining. More often than not, dying is not demonstrated for the treatment of staining of the essential teeth. Dying incorporates 2 sorts of procedures: Vital fading and Non indispensable dying.

## **CONCLUSION**

More prominent disappointment with dental appearance or shading in more youthful ages may propose that apparent appearance is connected to intellectual components other than social or social ones. So the dental part of therapeutic consideration is more essential [76-81] these days and the sound teeth assumes an imperative part in grin appearance demonstrates the truth mind that at long last we finish up this to "Be consistent with your teeth and they won't be false to you".

## **REFERENCES**

1. Dioguardi M, et al. Endodontic re-treatment of a tooth with a floor perforation in a patient in treatment with oral bisphosphonate. J Gen Practice. 2016;4:252.
2. Shende PK, et al. Clove oil emulsified buccal patch of serratiopeptidase for controlled release in toothache. J Bioequiv Availab. 2016;8:134-139.
3. Rastogi R, et al. Ameloblastic transformation in dentigerous cyst of ectopic tooth in maxillary antrum – a rare entity. J Med Diagn Meth. 2016;5:209.
4. Mohan S, et al. Ectopic third molar in the maxillary sinus. Natl J Maxillofac Surg. 2012;2:222-224.

5. Teshome A, et al. Knowledge, attitude and practice of mothers towards canine tooth bud removal and associated factors among mothers visiting dental clinic of gondar university hospital, ethiopia. *J Community Med Health*. 2016;6:396.
6. Hassanali J, et al. Removal of deciduous canine tooth buds in Kenyan rural maasai. *East Afr Med J*. 1995;72:207-209.
7. Jafri SAH. Changing trend for restoration of fractured tooth. *Pediatr Dent Care*. 2015;1:e101.
8. Dashrath K, et al. Root morphology and tooth length of maxillary first premolar in nepalese population. *Dentistry*. 2015;5:324.
9. Vertucci FJ and Gegauff A. Root canal morphology of the maxillary first premolar. *J Am Dent Assoc*. 1979;99:194-198.
10. Rwenyonyi C, et al. Root and canal morphology of maxillary first premolar teeth in a ugandan population. *Open Journal of Stomatology*. 2011;1:7-11.
11. Vannet BV, et al. The evaluation of sodium lauryl sulphate in toothpaste on toxicity on human gingiva and mucosa: a 3d in vitro model. *Dentistry*. 2015;5:325.
12. Tellefsen G, et al. How do dental materials react on tooth brushing? *Dentistry*. 2015;5:341.
13. Soham B, et al. Effects of fluoridated toothpaste and mouth rinse on salivary ph in children- an in vivo study. *J Oral Hyg Health*. 2015;3:192.
14. Akande OO, et al. Efficacy of different brands of mouth rinse on oral bacterial load count on healthy adult. *Afr J Biomed Res*. 2004;7:125-128.
15. Lee EG, et al. Delayed implant placement after extraction socket reconstruction and ridge augmentation using autogenous tooth bone graft material: case reports. *Dentistry*. 2013;3:174.
16. Chiapasco M, et al. Augmentation procedures for the rehabilitation of deficient edentulous ridges with oral implants. *Clin Oral Implants Res*. 2016;17:136-159.
17. Deshpande S. Investigation of tooth wear and its associated etiologies in adult patients visiting dental institute in India. *Dentistry*. 2015;5:271.
18. Mazumdar M, et al. Evaluation of the Safety and efficacy of complete care herbal toothpaste in controlling dental plaque, gingival bleeding and periodontal diseases. *J Homeop Ayurv Med*. 2013;2:124.
19. Lassemi E, et al. Anesthetic efficacy assessment of two mental nerve block techniques for tooth extraction. *Anaplastology*. 2013;S6:003.
20. Mikami Y. Advances in tooth regeneration techniques. *Dentistry*. 2012;2:e105.
21. Abuhaloob L and Abed Y. Knowledge and public perception of dental fluorosis in children living in palestine. *Oral Hyg Health*. 2014;2:133.
22. Kiran Kumar D. Patterns and distribution of dental caries and dental fluorosis in areas with varying degrees of fluoride ion concentration in drinking water. *Oral Hyg Health*. 2013;1:108.
23. Newbrun E. Effectiveness of water fluoridation. *J Public Health Dent*. 1989;49:279-289.
24. Janich K, et al. Management of adult traumatic brain injury: a review. *J Trauma Treat*. 2016;5:320.
25. Marciano R, et al. A review of head trauma at columbus childrens hospital: perspectives from pre- and post-level 1 trauma center certification. *Clin Pediatr*. 2016;1:107.
26. Groves TR and Allen AR. Src family kinase inhibitors and their role in the treatment of traumatic brain injuries. *J Trauma Treat*. 2016;5:322.

27. Elklit A, et al. Attachment and posttraumatic stress disorder in multiple trauma samples. *J Psychiatry*. 2016;19:370.
28. Solomon Z, et al. Complex trauma of war captivity: a prospective study of attachment and post-traumatic stress disorder. *Psychol Med*. 2008;38:1427-1434.
29. MacDonald HZ, et al. Longitudinal association between infant disorganized attachment and childhood posttraumatic stress symptoms. *DevPsychopathol*. 2008;20:493-508.
30. Sharmin D and Vignesh R. Management of multiple traumatic injuries in a single patient - a case report. *Dentistry*. 2016;6:372.
31. <http://www.omicsonline.com/open-access/dicolouration-of-glassionomer-cement-at-different-fluoride-concentration-levels-2247-2452.1000577.pdf?aid=26350>.
32. Debta P, et al. Evaluation of infiltration of immunological cells (tissue eosinophil and mast cell) in odontogenic cysts by using special stains. *J Clin Cell Immunol*. 2010;1:103.
33. Harel VS, et al. Detection of semen stains in rape cases by a very high powered uv-vis light source, facilitated conviction of accused person. *J Forensic Res*. 2015;6:290.
34. Hooft P and van de Voorde H. Evaluation of the modified zinc test and the acid phosphatase test as preliminary screening methods in sexual assault case material. *Forensic SciInt*. 1992;53:135-141.
35. Patil AT. Editorial opinion for volume 1 issue 2: an incredible journalolympics. *Pediatr Dent Care*. 2016;1:e102.
36. Tanchyk A. And on the eighth Day, God visited a dental office. *Dentistry*. 2016;6:e118.
37. Tory S. The use of a dental dam during implant placement – a novel case report and review. *Dent Implants Dentures*. 2016;1:109.
38. Patil A, et al. An update on dental outlook for autism. *Autism Open Access*. 2016;6:176.
39. Daneswari V, et al. Emergency management of an accidental ingestion of a dental foreign body in pediatric patient using rigid esophagoscopy - a case report. *Pediatr Dent Care*. 2016;1:111.
40. Lohe VK and Kadu RP. Dysphagia: A symptom not a disease. *Oral health case Rep*. 2016;2:117.
41. Oswal K and Dhoble A. Developing infrastructure for tobacco cessation in india through dental task force. *Oral health case Rep*. 2016;2:115.
42. Suzuki S, et al. Factors associated with regular dental attendance among white-collar workers. *Dentistry*. 2016;6:374.
43. Nathan JE. The Evolution and changing patterns of behavioral management of challenging childhood dental anxiety: a crossroad. *Dentistry*. 2016;6:e117.
44. Yoneda M, et al. Oral bacteria and bowel diseases – mini review. *J Gastrointest Dig Syst*. 2016;6:404.
45. Takabayashi M, et al. Evaluation of root canal obturation by micro-computed tomography for endodontic training in dental students. *Dentistry*. 2016;6:368.
46. Peters OA, et al. Changes in root canal geometry after preparation assessed by high-resolution computed tomography. *J Endod*. 2011;27:1-6.
47. Keles A, et al. Removal of filling materials from oval-shaped canals using laser irradiation: a micro-computed tomographic study. *J Endod*. 2015;41:219-224.
48. Bubteina N and Garoushi S (2015) Dentine Hypersensitivity: A Review. *Dentistry* 5:330.

49. Srivastava N, et al. A comparative evaluation of efficacy of different teaching methods of tooth brushing in children contributors. *Oral Hyg Health*. 2013;1:118.
50. Nandlal B, et al. Change in skills observed with a novel brushing technique based on sequence learning; evaluated through video bio-feedback system in children. *Oral Hyg Health*. 2013;1:115.
51. García-Godoy F. Oral health as part of the socialization process. *Acta Odontol Pediatr*. 1986;7:11-13.
52. Tooth Brushing Technique. Maulana Azad Institute of Dental Sciences, New Delhi, India.
53. Saleh Ahammad AJ. Hydrogen peroxide biosensors based on horseradish peroxidase and hemoglobin. *J Biosens Bioelectron*. 2013;S9:001.
54. Lo Giudice G, et al. Effects of photoactivation in bleaching with hydrogen peroxide.spectrophotometric evaluation. *Dentistry*. 2011;1:111.
55. Guan YH, et al. The measurement of tooth whiteness by image analysis and spectrophotometry: a comparison. *J Oral Rehabil*. 2005;32:7-15.
56. Fernandes PG, et al. Periodontal intrabony defects and the treatment with enamel matrix derivative and a synthetic bone substitute in humans: a clinical and radiographic case series. *J Interdiscipl Med Dent Sci*. 2015;3:185.
57. Gomez-Clavel JF, et al. Changes in demineralized enamel around brackets detected by laser fluorescence following fluoride treatment. *Dentistry*. 2015;5:290.
58. Passos VF and Santiago SL. Methodologies to analyze the micromorphological alterations of enamel subjected to abrasion/erosion. *Dentistry*. 2014;4:255.
59. Gisovar EF, et al. Comparing the shear bond strength of six adhesive systems to enamel of primary teeth. *Dentistry*. 2014;4:269.
60. Ramakrishna Y, et al. Enamel deproteinization after acid etching-is it worth the effort? *Dentistry*. 2014;4:200.
61. Kemaloglu H, et al. Scanning electron microscopy investigation of enamel surface treated with different bleaching agents. *Dentistry*. 2014;4:222.
62. Brauchli LM, et al. Bond strengths of metal, ceramic and polymer brackets in combination with different enamel preconditioning methods. *Dentistry*. 2011;1:104.
63. Barkmeier WW, et al. Effects of enamel etching time on bond strength and morphology. *J Clin Orthod*. 1985;19: 36-38.
64. Brauchli LM, et al. Laser conditioning of enamel with the erbium yag and the CO<sub>2</sub> laser. *Bond Strength and Surface Structure*. *Dentistry*. 2011;1:106.
65. Baygin O, et al. The effect of different techniques of enamel etching on the shear bond strengths of fissure sealants. *Dentistry*. 2011;1:109.
66. Yazici AR, et al. A two year clinical evaluation of pit and fissure sealants placed with and without air abrasion pretreatment in teenagers. *J Am Dent Assoc*. 2006;137:1401-1405.
67. El Halim SAMA. Effect of three bleaching agent on surface roughness of enamel (in-vivo study). *Dentistry*. 2012;2:133.
68. Hassib NF, et al. Unusual enamel hypoplasia associated with teeth mobility in a 13 year old girl with wilson disease. *J Genet Syndr Gene Ther*. 2012;3:118.
69. Poleník P. Zinc in etiology of periodontal disease. *Med Hypotheses*. 1983;40:182-185.

70. Tovar S, et al. Oral complications associated with D-penicillamine treatment for Wilson disease: a clinicopathologic report. *J Periodontol.* 2010;81:1231-1236.
71. <http://www.omicsonline.com/open-access/a-comparative-evaluation-of-microleakage-around-class-v-cavities-restored-with-different-tooth-colored-restorative-materials-2247-2452.1000554.pdf?aid=23554>.
72. Pföhler C, et al. Fading due the unfading: repeated anaphylaxis caused by amaranth grains. *J Allergy Ther.* 2015;6:205.
73. Washiya K, et al. New method to restore fading papanicolaou specimen using an optical clearing agent. *J Cytol Histol.* 2014;15:219.
74. Gill GW. Staining, compendium on cytopreparatory techniques. Chicago, 1974.
75. Bhat YJ, et al. Serum Iron, Ferritin and Calcium Levels in premature canities. *Hair Ther Transplant.* 2016;6:142.
76. Li Y, et al. Polymorphisms in the osteoprotegrin gene with risk of osteoporosis and urinary calcium level in a chinese population. *J Osteopor Phys Act.* 2016;4:176.
77. Aslam MN and Varani J. The Western-Style Diet, calcium deficiency and chronic disease. *J Nutr Food Sci.* 2016;6:496.
78. Naveed S, et al. Survey on prevalence of vitamin d as well as calcium deficiency plus awareness about osteopenia and osteoporosis in females. *J Bioequiv Availab.* 2016;8:175-178.
79. Alhaddad B, et al. The management of crown fracture of immature teeth by mta and calcium hydroxide: case reports. *Dentistry.* 2015;5:347.
80. Rice SJ, et al. Cystinuria revisited: presentations with calcium-containing stones demands vigilance and screening in the stone clinic. *Med Surg Urol.* 2014;3:140.
81. Gandi P, et al. Comparative study on remineralizing ability of casein phosphopeptide amorphous calcium phosphate and  $\beta$ -tricalcium phosphate on dental erosion: an in vitro atomic force microscope study. *Dentistry.* 2015;5:321.