

DENTAL DYSCHROMIAS AND THEIR REAL CHANCES OF REHABILITATION AFTER BLEACHING

¹SIGUNE WENKE BROOS, ²ILEANA DUMA

¹PhD candidate, "I. Hațieganu" University of Medicine and Pharmacy of Cluj-Napoca, "I. Hațieganu" University of Medicine and Pharmacy of Cluj-Napoca

Abstract: Today, the interest of all age groups is highly focused on the frontal area, as at this level, all the deviations from normal are considered unaesthetic and inconvenient. In this context, a great importance is given to the dental bleaching as a means of influencing the aesthetic aspect, the main interaction remaining the dental dyschromias.

Keywords: dental discolorations, causes, present methods of teeth bleaching

Rezumat: În prezent, interesul tuturor grupelor de vârstă se focalizează puternic asupra zonei frontale, întrucât la acest nivel toate abaterile de la normal sunt considerate deranjante și inestetice. În acest context se acordă o importanță tot mai mare albirii dentare ca mijloc de influențare al aspectului estetic, principala indicație rămânând discromiile dentare.

Cuvinte cheie: discromii dentare, cauze, metode actuale de albire a dinților

INTRODUCTION

Dental dyschromias constitute a clinically visible deviation from the normal dental colour. They differ according to etiology, location aspect, seriousness and possibilities of treatment. The reasons for their occurrence are multiple, with the possibility of differentiating between the extrinsic dental dyschromias and the intrinsic ones, the latter being differentiated according to the moment of action belonging to the causing agent regarding odontogenesis. Nowadays, there are a lot of possibilities to take action against dyschromias. In the last decade, the treatment of teeth bleaching increased its under control use. The treatment of teeth whitening can be done in several ways, one differentiating between the vital and devital (according to the state of vitality of the teeth that are being treated) external and internal whitening (according to the area where the whitening agent works) and home-bleaching and in office-bleaching or chairside-bleaching, hybrid-bleaching, walking-bleaching, whitening using Over-the-Counter products like: whitening bands or foils systems, paint-on creams, whitening toothpaste (according to the technique used and the place where the whitening process is taking place). The scale of whitening products is extremely varied; the active substance that is used even today is hydrogen

peroxide or carbamine peroxide. Nevertheless, dental bleaching represents a method that cannot guarantee in all cases a 100% satisfactory whitening (1,2,3,4,5,6,7,8).

Dental dyschromias can affect one tooth, or the entire dentition.(9)

Extrinsic discolorations occur due to the presence of the deposits of organic origin at the level of the dental surfaces. These can be brought about by:

1. food;
2. drugs;
3. certain oral cosmetics or cleaning products.
1. The colouring agents taken from different types of fruits (berries) vegetable (red beet) or spices may determine the occurrence of dyschromias after their intensive or repetitive use. The same goes for some types of fruit juices or tea made from different plants; these can lead to the occurrence of dyschromias, as well. Coffee and tea, due to their content of polycarbonates, may also determine the appearance of external discolorations. Tannin in the red vine and the tar from the wood products also belong to this category.
2. The prolonged oral administration of products based on iron or nitrogen can lead to the occurrence of grey-black colorations at the level of the dental surfaces.
3. The long term use of mouth waters based on hexachloride-digluconates or tin fluoride determine the appearance of brown-black colorations. In such cases, the main indication is the home whitening. The result will be usually satisfactory in 100%, both for the patient and for the doctor.(10).

Intrinsic discolorations can be brought about by the wrong use of fluoride, the administration of drugs, progressive dystrophies, physiological process of growing old, iatrogenic factors, traumatic factors, pulp affections or certain systemic affections.

Below, we will discuss about the types that are most frequently met in practice.

Dyschromias brought about by antibiotics: molecules of tetracycline and its derivatives present a high affinity for Calcium, forming the chelates, which are irreversibly deposited at the level of the rough dental tissues. Dimethyl-tetrachloride colours the enamel of the

CLINICAL ASPECTS

teeth in yellow-brown or grey-black, accompanied by a degree of fluorescence. The complex Ca-Tetracycline-orthophosphate, after the dental eruption, the exposure to light, becomes oxidised and loses fluorescence due to the loss of phosphorus and thus, the colour changes from yellow to brown or black. The degree of colouristic change depends on the medium doses reported to the body weight and also on the length of administration. The deposits are more accentuated at the level of the dentine, than at the level of the enamel.(16)

Phenoxymethylpenicillin leads to grey-brown colorations, while amoxicillin leads to grey colorations.

The indicated whitening methods are those with grooves. In the majority of cases, a visible discoloration could be detected, but one must consider the duration of the treatment which can be of months or weeks. In some cases, the election method is the local in-office whitening. Also, the combined whitening home and in office methods can lead to good results.(11,17,18,19)

Dyschromias due to some localized mineralized defects: in these situations, the chairside technique can be used or eventually the home whitening method.

In the cases when the surrounding enamel is yellow, an adaptation of the colour may be obtained. Otherwise, the whitening cannot be considered as an election method in such a case.(20)

Dyschromias due to the age: with age, the enamel becomes more transparent, the contents of water and the organic components at the level of the enamel are decreasing. The teeth become yellow or slightly brown, even grey at the level of incision's edge, according to the colour of dentine. By thickening the dentinal wall, yellow brownish colorants may occur. In this type of discoloration, the home whitening is the most indicated method. The result is usually 95% satisfactory, not only for the patient but also for the doctor.(10).

Iatrogenic discoloration: this type of discoloration is due to the deposit of pigments at the level of the rough dental substance made up of different materials, such as:

- certain types of materials of final coronary obturations, like the amalgam. The amalgam of silver determines the occurrence of grey colorations, while the copper amalgam brings about blue-black colorations;
- certain materials of endodontic obturations, like: iodoform, eugenic acid, endomethasone, gutta-percha etc;
- chemically unstable pulp and extra pulpe pivots.

This type of dyschromias may also occur through the decomposition of the pulp tissues that remain at the level of the access cavity. Transitory haemorrhages at coronary level may also produce dyschromias.(21,22,23,24).

Discolorations due to pulp affections: this discoloration can be met not only in the vital pulp but also in the devital one. It may be found in inflamed pulps (of caries origin or traumatic one), due to an uncomplicated traumatism with the opening of the pulp room or due to a pulp infection, as a result of dental sclerosis.

In the case of intrapulpal haemorrhage, the product that leads to dyschromia is the iron sulphur of black colour.

In the case of pulpal necrosis, the product of protein degradation gives a brown grey aspect to the teeth. This process also occurs in the case of an incorrect preparation of the pulp room.

The intensity of the discoloration depends on the age of the teeth. The younger the tooth, the larger the dentinal tubes are, as well as more open, while the coloration is more accentuated.(10, 23)

Both in the iatrogenic discolorations and also in the pulpal ones, the walking-bleaching is the most successfully used technique. A combined whitening method may also be used– the internal whitening and the external whitening, home-bleaching, in-office-bleaching or the chairside-bleaching.

According to the etiology and intensity of dyschromias, good and very good results may be obtained.(23,24,25).

DISCUSSIONS AND CONCLUSIONS

Nowadays, the bleaching techniques as well as the materials used by dentists are varied, each having its own use in different dental dyschromias. Still, it is extremely important for one to know precisely the type of bleaching needed, the way it works and influences the dental-periodontal tissues, as well as the possible secondary effects which can appear, either immediately or not long after the bleaching treatment was done, so as to be able to choose the best bleaching method for each type of dyschromia. Moreover, it is indicated to use as much as possible the least aggressive variants, regarding the dental tissues, even if the aesthetic effects are sometimes obtained slower or with more difficulty.

REFERENCES

1. Fasanaro TS. Bleaching teeth: history, chemicals and methods used for common tooth discolorations. *J Esthet Dent* 1992;(4):71-78.
2. Nathoo SA. The chemistry and mechanisms of extrinsic and intrinsic discoloration. *J Am Dent Assoc* 1997;(127):6-10.
3. Attin T, Kielbassa AM. Die Bleichbehandlung-ein fester Bestandteil ästhetischer Zahnheilkunde. *Zahnaertztl Mitt* 1995;(85):2674-2681.
4. Gegauff AG, Rosenstiel SF, Langhout KJ, Johnston WM. Evaluation tooth colour change from carbamide peroxide gel. *J Am Dent Assoc* 1993;(124):65-72.
5. Goldstein RE, Garber DA. Complete dental bleaching. Quintessence, Chicago-Berlin-London-Tokyo-Sao Paulo-Moskau-Prag-Warschau, 1995.
6. Goldstein RE, Kiremidjian-Schumacher L. Blesching: is it safe and effective? *J Prosthet Dent* 1993(63):325-328.
7. Tam L. Vital tooth bleaching: review and current status. *J Can Dent Assoc* 1992;(58):654-663.
8. Haywood VB. Overview and status of mouth guard bleaching. *J Esthet Dent* 1991;(3):157-161.

CLINICAL ASPECTS

9. Zantner C. Weissere Zaehne-eine Bewertung der Weissmacher Zahnpasten. *Zahnaerztl Mitt*, 2006.
10. Attin T. Praxis Coach Bleaching praxis Verlag Heidelberg, 2002.
11. Zahnarztinformationskatalog. WhiteSmile. 2003.
12. Chiapinelli JA, Walton RE. Tooth discoloration resulting from long-term tetracycline therapy: a case report. *Quintessence Int* 1992;(23):539-541.
13. Wallman IS, Hilton HB. Teeth pigmented by tetracycline. *Lancet* 1962;(1):827-829.
14. Haywood VB, Heymann HO. Response of normal and tetracycline-stained teeth with pulpal-size variation to night guard vital bleaching. *J Esthet Dent* 1994;(6):109-114.
15. Denehy GE, Swift EJ Jr. Single tooth home bleaching. *Quintessence Int* 1992;(23):595-598.
16. Cherlea V. Tratamentul endodontic. Ed. Național 2000.
17. Attin T. Die Aufhellung verfaerbter, avitaler Zaehne mit der Walking-Bleach-Technik. *Dtsch Zahnaerztl Z* 2001;(56):78-89.
18. Chong YH. Single discoloured tooth: an alternative treatment approach. *Quintessence Int* 1993;(23):233-235.
19. Swift EJ Jr. Treatment of a discoloured, endodontically treated tooth with home bleaching and composite resin. *Pract Periodontics Aesthet Dent* 1992;(4):19-21.