

EFFICIENCY COMES WITH CASE SELECTION AND APPLYING THE PROPER PROTOCOL.

Maximizing the aesthetic result of tooth whitening can be achieved by answering three questions.

When it comes to dental aesthetics, one important consideration is tooth color. It is nowadays well understood that tooth coloration can be caused by intrinsic and/or extrinsic staining. The success of dental whitening, whether in office or at home, is directly related to two important parameters:

- ▶ Proper case selection
- ▶ Precision in executing the whitening protocol.

Maximizing the aesthetic result of tooth whitening can be achieved by answering three questions.

1) WHO IS A GOOD CANDIDATE FOR TOOTH WHITENING?

Even if many cases of intrinsic staining can be addressed combining tooth whitening procedures with other types of treatment (**Figure 1**), the people that would benefit firsthand this conservative aesthetic treatment are those having extrinsic staining issues going deep into enamel. As such we should first consider tooth colorations related to food (red fruits, tomato sauce, colorful spices such as curry or paprika, etc.), drinks (tea, coffee, wine, etc.), tobacco or marijuana use, excessive use of certain mouth rinsing products (Chlorhexidine) or the activity of certain chromogenic bacteria. In those cases, the staining would concern more or less the whole tooth and with time the deposits, that would first induce a superficial discoloration, would then

affect deeper aspects of the tooth structure. In such cases, neither simple oral hygiene technics nor in-office polishing measures would be enough to remove the staining. In those examples, the chromophores that are responsible for the color change can easily be oxidated by hydrogen peroxide within the tooth. This oxidation associated with an opacification of enamel, that also comes with tooth whitening, will significantly enhance the aesthetic outcome. Natural loss of brightness due to normal tooth aging also gives interesting results but one has to remember that the brightness of a tooth surface is directly related to enamel such that the thicker the enamel, the brighter the tooth (**Figure 2**).

This explains why teeth look whiter at a younger age. It also explains why teeth whitening procedures could be less successful with older patients and/or young patients with a thinner enamel.

2) IN OFFICE OR AT HOME, WHAT IS THE BETTER OPTION?

Tooth whitening is the application of a chemical agent (hydrogen or carbamide peroxide) directly to the tooth surface to increase its color value. It can be an in-office treatment or performed at home by the patient. Each technic has its pros and cons. Because the product is used at high concentration, in-office results are more impressive as they are acquired



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ABOUT THE AUTHOR

Dr. Ali Salehi graduated in 2008 with a Bachelor of Dental Surgery from the Faculty of Dental Medicine of the Strasbourg University (France). During his Master course, he has also been trained at the dental clinic of the Johannes Gutenberg University in Mainz (Germany). In 2007, he also got a Master of Biological and Medical Sciences from the University of Strasbourg Medical School. From 2008 until 2015, he worked as a clinical faculty at the Department of Prosthodontics of the University of Strasbourg. From December 2015 until December 2019, he then became a part-time Assistant Professor in the same department, parallel to working in his own private practice from 2011 until 2021.

Dr Salehi has written many articles in French and international peer reviewed journals and contributed to a book focusing on different subjects such as dental photography, smile analysis, dental ceramics and cementation procedures (Restaurations esthétiques encéramique collée - O. Etienne, L. Anckenmann - 2016). He has also been teaching for the master of smile aesthetics of the Strasbourg University until 2021 and has been involved with many companies such as Ivoclar, GC, DMG, 3M, SDI on different educational projects. He has also been teaching about direct and indirect restorations, cementation procedures, dental bleaching, dental photography and smile design analysis in various countries such as Germany, Switzerland, Belgium, North Africa, Vietnam, etc.

Since 2023, Dr Salehi is an Advanced Standing Student at NYU college of dentistry in the process of getting his DDS in order to get licensed to practice in the United States and be able to accomplish what he was doing back in Europe but this time on this side of the pond.



HOME WHITENING:

faster. However, these results are less stable with a faster relapse, an unpleasant patient experience and the need to block the dental chair and dental staff when other types of treatment could be performed. At home tooth whitening uses low concentration hydrogen peroxide which means a longer treatment time to acquire a nice result and the need for the patient to be compliant when performing the procedure. However, the advantages of at home dental whitening are a more stable result that lasts longer in time and a much more pleasant patient experience. The dental chair would be just used for quick follow ups to make sure everything is fine.

3) WHAT PROTOCOL TO MAXIMIZE MY RESULT?

The results of tooth whitening are directly related to the concentration of hydrogen peroxide and its application time. As such, it is considered that the use of lower concentration hydrogen peroxide products to be used for at home whitening during 2-3 weeks produces similar color changes to that of higher concentration products used for in-office whitening in one session (Figure 3). Considering the advantages of at home whitening (stability of the result over time and patient experience), we prefer to guide our patients towards this type of treatment. However, to maximize the result, it is mandatory to properly follow the procedure.

Important steps prior teeth whitening:

- ▶ Full dental checkup prior to any whitening procedure to make sure there are no contraindications such as cavities, gingival inflammation, ill-fitting old restorations, etc.
- ▶ Professional adult prophylaxis and polishing of the teeth to remove

any residual dental plaque and superficial discolorations.

- ▶ Impressions for working casts on which customized nightguard trays will be made (Figure 4)

At home teeth whitening procedure:

- ▶ Place a small drop of gel into every compartment of the tray for the teeth undergoing treatment
- ▶ Seat the tray, with the gel around the teeth
- ▶ Wipe away excess gel in mouth with a tissue or dry soft brush
- ▶ After treatment, remove tray
- ▶ Rinse tray and mouth
- ▶ Brush teeth

For effective results, it is important to tell the patient not to eat, drink nor smoke during the treatment. Also avoid smoking immediately after treatment (wait for at least two hours). Moreover, Foods and drinks containing strong colors should be avoided for at least 48 hours after the treatment period or consumed in moderation. Last point is to use gel at room temperature.

The treatment guidelines regarding the seating time (correlated to concentration) given by the manufacturer should be precisely followed and this treatment should be prescribed for at least 2 weeks and up to 3 weeks to ensure an ideal result (Figure 5). Literature indicates that in more extreme cases, like grade 1 or 2 tetracycline discoloration, this treatment could go as far as 6 months.

A major element of whitening treatments is documentation. It is mandatory to make sure to take before and after pictures and regularly check in with the patient during the treatment period to improve the patient experience and be able to objectively monitor and assess the result.

Respecting all these points is what makes the difference between a home professional whitening treatment and a home OTC whitening treatment. This will set a secure and efficient environment for patients to properly address some of their unaesthetic discoloration issues.



Figure 1:

Aesthetic improvement of a fluorosis case using a combination of at home whitening treatment (PolaNight 10% Carbamide Peroxide, SDI), micro-abrasion and erosion infiltration (Icon, DMG).



Figure 2:

Dental structure thickness. The value (brightness) of a tooth is correlated to the thickness of the enamel. Thicker enamel means brighter tooth and also patient with better chance of nice whitening result.

HOME WHITENING:



Figure 3:

The use of lower concentration hydrogen peroxide products to be used for at home whitening during 2-3 weeks produces similar color changes than the higher concentration products used for in-office whitening in one session.

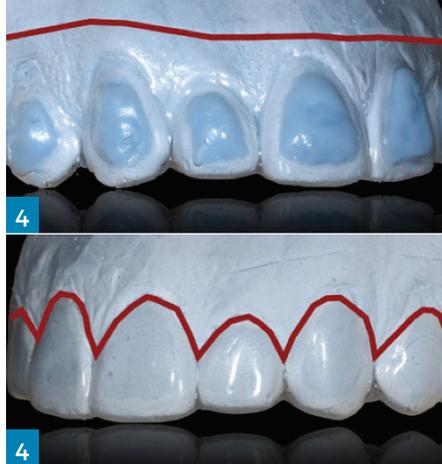


Figure 4:

To prevent gingival irritation due to hydrogen peroxide, the tray needs to be trimmed appropriately with a line of cut that will depend on whether reservoirs have been placed or not.

Images courtesy of Dr François Reitzer



Figure 5

Before and after result obtained with PolaNight 10% Carbamide Peroxide 2-3h per night during 3 weeks.



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