

# What steps we follow for a smile make over?

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## Opinion

Smile is not a privilege for rich and wealthy people. As the years go by teeth begin to wear down and damage the smile. This gradual loss of tooth tissue is caused by normal function, dysfunction, decay or some diseases affected the oral cavity. There are four types of tooth wear: Abrasion which is the process of enamel loss owing to foreign objects or conditions.

Attrition which again there is loss of enamel due to teeth grinding. Erosion where food diets that contains sugar and acids wear away the enamel. Abfraction when the part of the tooth above the gum line is damaged due to brushing with excessive force or an excessive pressure applied to the teeth from biting, chewing, and teeth grinding. Another factor that compromises the overall look of the smile as we grow older is the loss of the enamel glaze which allows the yellow colour of the dentin to show and gives this aged look of the smile.

The smile make over is an emotional decision for the patient not based on pure logic but driven by his/her desire to change the overall look of the smile, show and feel younger and take his/her overall life to the next level.

When a dentist wants to change a patient's smile he/she has to deal with three challenges; aesthetics, function and biology. The restorations (veneers, crowns, implant-crowns) should look beautiful and natural, function properly in the oral cavity (chewing) and can be cleaned easily (brushing, flossing) so as the oral environment can be maintained clean. A well maintained and healthy oral cavity is an extremely decisive factor of the health and wellness of the whole body.

In my practices we follow a certain procedure, I have shaped a protocol, Aspros Smile Design, which I followed for every patient that wants a smile makeover so as I can have predictability; and remember this word because it is a keyword for this procedure.

At the consultation appointment we have an in depth talk with the patient. Basically we leave the patient to talk and we listen. We want to know what things the patient wants to change to his/her smile and whether we can fulfill these expectations. It's very important not to promise things to the patient which we cannot achieve or say yes thinking that during the treatment we can change the patient's vision for the smile she/he wants because this will not happen.

If the dentist feels that can accomplish the patient's expectations and the patient agree to the treatment plan then an appointment is arranged to start the design of the smile giving more attention to the functional factor. On that appointment we take two impressions (upper and lower jaw) with a bite registration to the CR (centric relation). We can take the bite registration with a leaf-gauge or with bilateral manipulation. Centric relation of the lower jaw against the upper jaw is the position where the properly aligned condyle-disc complex is located to the most superior and anterior positions of the temporal fossae regardless the vertical dimension and the position of the teeth. Centric relation is a stable and repetitive position of the lower jaw to upper and when we do major restoration work we always use the CR.

Then we do a registration with a face bow so as we can register the relation between the masticatory plane of the upper teeth and the horizontal plane.

We pure the impressions and we get the upper and lower cast and using the CR and face bow registration we set the casts in a semi adjustable articulator. From the articulation set-up we get valuable information that will help the team (dentist and ceramist) to take the right decisions for the proper design of the smile. We first see if there are any premature contacts that prevent the upper and lower teeth to come in contact and thus force the lower jaw to slide in different directions (right, left, forward, backward) to achieve maximal intercuspation which is the position of the mandible when teeth are brought into full interdigitation with the maximal number of teeth contacting. We can then remove these premature contacts in the articulator and of course in the mouth. After this we will get a maximal intercuspation in the CR which is a stable relation. We then check if there is a proper anterior guidance when while the lower jaw protrudes the four lower incisors come in an incisal edge to edge relation. If this doesn't occur we have to consider the designing the proper shape to the lower anterior or altering the palatal surfaces of the upper incisors mainly the centrals. The four lower anterior are very important to the forming of the envelope of function, which is a very important factor in the functional design of a smile. We then check the lateral right and left movement of the lower jaw to see if there is canine protection which means canine to canine contact and disassembled of the posterior teeth in both sides. If some minor contacts occur we can remove them in the articulator and go course in the mouth. We always have in mind, after we manage contact between the anterior teeth, that there are four main treatment options that we need to consider:

- Alteration of the shape of the teeth, selective grinding
- Alteration of the position of the teeth, orthodontics
- Restorative approach, prosthetics
- Move of the jaws bone or part of it, orthognathic surgery

After we finish with the functional study at the articulator we have to move to the aesthetic aspect, the design of the new smile which has to mimic the final outcome, how the new smile of the patient will look at the end. There are two ways to manage this; in the mouth where with flowable composite we design on the existing teeth how we want the smile to look like. From my own point of view this is not an easy procedure for a dentist that doesn't have experience in this procedure and there is a risk that the patient will not be happy with the design. This procedure is called mock up. A more predictable procedure is to send the articulator with the models to the ceramist who is going to design the new smile with wax, wax-up, having in mind the changes and the enquiries from the functional analysis we did at the articulator.

From the wax-up the ceramist will form a silicon key and the doctor with a temporary material can show the patient in the mouth how the new smile will look like.

If the patient is happy with what he/she sees then a long appointment is arranged for teeth preparations, temporaries and impressions. It's better from my clinical experience to suggest to the patient to take a sedative pill not only for pain, which is controlled with injections, but mainly to reduce the stress levels. Before we start the appointments we prepare our preparations silicon matrices so as we can be precise with the teeth reduction for the veneers or crowns preparations. I also recommend not spending a lot of time to perfect the preparations because the more time we spend the more tooth tissue we remove unnecessary and that compromises the longevity of the final restorations.

When we finish the preparations I suggest making the temporaries first and then taking impressions. Making the temporaries first we are allowed to see if our preparations are fine concerning the amount of tooth tissue we remove. Where the tooth tissue removal isn't adequate the temporary material won't cover the preparation and the prepared tooth will be exposed.

After we do the temporaries we leave them in a safe place, and start to pack cords in the sulcus of the preparations so as we can take the final impressions. If the gums are in an excellent condition we can apply some retractor material but most of the times we prefer to pack cord for a high level accuracy in our impressions. We take two impressions with additive silicon's (putty, heavy, and medium, light) depending of the technique we use.

After we finish we take two bite records on MI (maximal intercuspation) and a silicon impressions of the opposing arch. We then apply the temporaries. With some flowable composite we try to make them look perfect by filling some voids or giving a better shape to teeth that don't mimic exactly the wax-up ; then we spot etch , apply some bonding agent, load the temporaries or the teeth with flowable composite apply them on the Praia rations , remove the excessive material and light cure. We then take a brief look to the occlusion. At this time the dentist has to leave the operatory and give instructions to the assistant to make an appointment for the next or

the two three days after to review the temporaries. It isn't indicated to start making adjustments at that time.

After the ceramist finishes the permanent restorations and send to the office we arrange an appointment with the patient to insert the restorations. It will be a long appointment so it is better again to suggest sedative pills so as we can control the stress levels which may increase and cause unwillingness to the patient to cooperate. We have to be careful when we remove the temporaries not to "irritate" both the gums and the tooth tissue because in this situation the precise fitting of the permanent restorations may be adversely affected.

If there is any minor bleeding from the gums a situation that happens most of the time we apply some topical hemostatic agents and if we can't manage to control then we apply very carefully a whitening agent (H<sub>2</sub>O<sub>2</sub>). After all set we try the permanent restorations mainly to check the fit and secondary the "colour" which it will be different when we bond the restorations. We then treat the porcelain restorations with HF acid and silane and keep them in a safe place away from the sun light.

Then we treat the teeth ...protocol.... and one by one we load the restorations with "cement" - flowable composite if veneers or resin cement if porcelain or zirconia based crowns- and insert them in the mouth. With the help of the assistant we remove the excess cement. Special attention should be given to the removal of the excess of the proximal areas because of not done carefully it might debond the restorations especially the veneers. After the first round of the excess cement removal we spot light cure the restorations so as they can get a primary stability and that will help us to remove in detail all the excess. Special attention should be given not to cause bleeding during the excess removal and not to leave any cement sub gingival because that will be a source of chronic inflammation (gingivitis). After the procedure is finished we roughly check the occlusion, maybe take some photos and arrange an appointment in 1-2 days to check the occlusion again and take some photos.



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### Conflicts of interest

The author declares no conflict of interest.