A wise man once said, no one is perfect. In the world of direct composite restorations, it is not fatal to make a mistake with a less than ideal restoration from time to time. However, we should learn from our mistakes and not fail twice the same way.

In this article I will put one of my own mistakes, which I'm sure most of our readers can relate to, out there so that you can understand my way of thinking to find out the reasons for the suboptimal result. The path to the optimal result will give you some useful hints and point out some crucial factors to look for in Class IV direct composite resin restorations.
Fig. 1 – Initial Situation. The patient presented with insufficient Class IV restoration on tooth 21. The incination of the front teeth is not ideal either, this did not disturb the patient however.

Fig. 2 – Frontal close-up view of the initial situation.
Fig. 3  Img. 3 – Lateral close-up view of the initial situation.
Fig. 4 – Lateral close-up view of the initial situation. Insufficient Class IV restoration is evident.

Fig. 5 – After rubber dam isolation, I removed the old restoration.
Fig. 6 – Residual decayed tissue was removed and a short bevel was prepared.
Fig. 7 – The cavity and the superficial enamel is cleaned with 30 microns Al2O3 to provide a better bond. The neighbouring teeth were protected with a matrix.
Fig. 8 – Control of fit for the silicone key. TIP: the border of the future restoration is marked in the silicone index. This helps to place the proper amount of material. HINT: note the incisal border of the silicone key. This way it is difficult to control the amount of incisal composite. The silicone must be cut until the incisal edge to have proper visual control of the material.
Fig. 9  Img. 9 – Control of fit for the cross-sectional silicone index. This index helps to control material thickness.
Fig. 10 – A cut was made on the silicone key to insert a transparent strip for approximal build up.

Fig. 11 – Simultaneous layering of the palatal and approximal enamel layer after the bonding procedure. TIP: The joint region between the tooth and the restoration can be reinforced with flowable composite. This also ensures a perfect seal between tooth and restoration.
Fig. 12 – Palatal enamel shell in situ. At this stage, some like to leave the silicone index in place. We do not prefer this method as it would make it difficult to control the amount of material. Now comes up the previous hint, Error #1: You can see the extent of incisal enamel, which is a little exceeding and will make the restoration appear grayish after polishing.
Fig. 13 – Opaque dentin and dentin in situ.
Fig. 14 – Control of space for enamel material. Error #2: It is very important to hold the LM Misura instrument in such a position to create a proper angle to ensure accurate measurement. Here, the space for enamel is thicker than ideal and also the dentin has to cover the bevel more.

Fig. 15 – After placement of the final enamel layer.
Fig. 16 – Finished restoration. 1st attempt. The excessive translucency of the incisal part is becoming evident after polishing.
Fig. 17 – Check-up after one week. The restoration is not perfect, the reason for this are the inappropriate material thickness and the evident transition line between tooth and restoration. I offered an immediate correction/remake; however the patient was not concerned about the result and decided not to undergo immediate correction.
Fig. 18 – Lateral close-up view of restoration.
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Fig. 19

Img. 19 – Lateral close-up view of restoration.

Fig. 20

Img. 20 – 18 months following the first restoration. The patient finally had the time and possibility to remake the restoration.
Fig. 21 – After local anesthesia and rubber dam placement, the old restoration was removed, except a very thin palatal enamel layer. I made sure to remove also the incisal part and create a longer bevel without unsupported enamel parts to ensure perfect transition between tooth and restoration.
Fig. 22 – The enamel and composite surface was etched for 30 seconds. The small enamel defect on tooth 11 was also restored. TIP: In such cases I always over etch the border to avoid any future marginal discolorations.

Fig. 23 – The right amount of dentin mass was checked from the incisal view as well. The dentin composite is extended almost to the end of the bevel. NOTE: Proper extension of dentin composite and thickness of enamel is material-related!
Fig. 24 – Dentin layer in situ. With current materials and StyleItaliano philosophy, one dentin shade is sufficient to achieve ideal result most of the times.
Fig. 25 – A very thin opalescent material was layered between the dentin mamelons to emphasize incisal translucency.

Fig. 26 – After placement of enamel layer. TIP: gradually spreading one bulk of enamel mass over the whole vestibular surface of the restoration with a brush helps to avoid air bubbles.
Fig. 27 – Final enamel layer is polymerized for 1 minute under glycerine gel to avoid inhibition of oxygen layer formation.
Fig. 28 – During finishing, I marked the developmental grooves with a pencil for better visualization.

Fig. 29 – The polished restoration before removal of the rubber dam. Now we have to wait for rehydration of the teeth to evaluate final result.
Single central Class IV restorations can be challenging to master in routine clinical practice. It is normal not to get the perfect result for the first time in every single occasion. Proper visual documentation helps to analyze the reasons for failures and gain knowledge about proper implementation of materials and techniques. With this knowledge and improved simplified composite systems, our daily work gets easier and more predictable.