PORCELAIN TO TITANIUM:

WHAT ARE THE BENEFITS?

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Day to day operations in a laboratory are very demanding. We are all searching for improved efficiency and more satisfaction for our efforts. The stronger the benefit for our clients, patients and ourselves, the more fulfilled we are.

To that end, we should always be looking for more effective ways to create our restorations. The better we develop our products, the more options we can give to the dentist in order to help him grow his practice. For this reason, our laboratory began looking very carefully into titanium, its benefits and cost saving properties and how to create beautiful esthetics when utilizing the material.

In our facility, we have been fortunate enough to own and use the Nobel Biocare NobelProcera™ scanning system. With regard to titanium copings, we are able to scan our model and get our coping back within two days through this CAD/CAM system. There is no need for waxing, divesting, investing or degassing. With the elimination of these steps, we save time and energy!

In going over our Pros vs. Cons with Titanium restorations, here are some things to consider:

**Pros**
- Lightweight
- Has an ADA assigned Insurance Code 2794 – between high noble and noble crowns
- Biocompatible
- Excellent Esthetics possible
- Cost Efficient

**Cons**
- Sandblasting necessary after each Baking
- Co Efficiency must be Controlled
- Time and Cooling Temperature must be carefully monitored
Case Description

(Fig 1) is an image of a 3 unit titanium bridge, scanned using the NobelProcera scanner. In (fig. 2) the 3 titanium copings were milled by the scanning center in New Jersey and sent to LSK for a long-span bridge. Copings will be ground with a KOMET carbide burr especially designed for use with titanium.

For best results, the coping should be ground in one direction only (fig. 3). Next, the coping should be sandblasted (fig. 4) and then cleaned in the ultrasonic machine with distilled water for five minutes (fig. 5).

For a perfect titanium restoration, follow carefully the instructions which come with GC Initial’s Porcelain Ti™ kit (fig. 6). Apply a thin layer of the titanium bonder (bottom view – fig. 7) to the copings, and expect this kind of appearance after firing (top view – fig. 7).

(Fig 8 – left side) is the GC Initial™ Titanium opaque powder for mixing. The top right view (fig. 8) demonstrates appearance after the first firing and the bottom right (fig. 8) is after the second application and firing. GC Initial™ Titanium porcelain powder is available in a full range of colors, with seven demonstrated in (fig. 9). After the application of regular dentin powder, the model has this appearance (fig. 10). With enamel layering application, the appearance changes to (fig 11). First firing after dentin/enamel application produces this result (fig. 12). After the second build-up (fig. 13) the technician will expect an appearance similar to this one, and with a layering of enamel modification (fig. 14) anticipate this kind of a look.

The final restoration (fig. 15) with mirror images below and side-by-side (fig. 16) fully demonstrate the beauty of porcelain layering over titanium.
Conclusion

CTE - Nobel Biocare Titanium Copings = 10.16

CTE - GC Initial Titanium Porcelain = 8.60

This equals a difference of 1.6 between a Nobel Biocare Titanium coping and GC Initial™ Titanium Porcelain, which is why we have to remember to control our long term cooling temperature and cooling temperature rate when we are use our ovens to bake these restorations.

For your own situation, you might want to consider the following:

Cost effectiveness – will using this product help my financial bottom line?

Product line – is the addition of a porcelain/titanium restoration going to attract clients? Are my existing accounts interested?

Win/Win for doctor, patient and technician – will they agree? How do I market it?

Remember the bonding material and its importance – it makes all the difference between a well-bonded restoration and one that doesn’t bond at all

Look into using GC Initial Ti™ Bonder before applying your opaque. You will get the best possible results and grown your business at the same time!
Fig. 1) Milled copings from Nobel Biocare’s NobelProcera scanning unit

Fig. 2) 3 unit bridge copings ready to be ground with KOMET carbide burr

Fig. 3) Coping should be ground in one direction only

Fig. 4) Sandblast the inside of the copings after each baking to ensure proper fit

Fig. 5) Clean the copings in distilled water in the ultra sonic unit for 5 minutes

Fig. 6) Follow all instructions carefully for a perfect restoration
Fig. 7) Application of a thin coat of titanium bonder (top) will produce this appearance after firing (bottom)

Fig. 8) Left: Initial Ti™ Opaque Upper right: After first firing appearance
Lower right: After second firing appearance

Fig. 9) GC Initial Ti™ offers a variety of colors, seven of which are shown here

Fig. 10) Dentin application D-C3 Ti

Fig. 11) Enamel application Ti TO

Fig. 12) First firing appearance after dentin/enamel application
Fig. 13) Second build-up

Fig. 14) Enamel Modifier applied

Fig. 15) Final Restoration mirror image

Fig. 16) Side-by-side mirror image