

ESTHETIC AND PRACTICAL METHOD USING GLASS COMPOSITE VENEERING MATERIAL TO FABRICATE ARTIFICIAL SOFT TISSUE ON FULL ARCH TITANIUM IMPLANT BRIDGES

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Problem statement: Many of our edentulous patients choose an implant supported bridge to replace their lost teeth and associated oral structures. However, many of them are not completely satisfied with the presentation of the artificial soft tissue.

Purpose: Technicians are finding it hard to achieve optimal esthetic results on these full arch restorations. The prosthesis commonly looks like a denture. In the past, relatively satisfying results have been achieved by using artificial soft tissue made from ceramic. Although the ceramic artificial soft tissue does look acceptable, a glass composite material looks much more natural.

Materials and Methods: Two similar restorations were used. The first case was a Titanium Procera® Implant Bridge with ceramic fused to metal crowns. Vita Titankeramik® was used to restore the soft tissue. The second case was Titanium Procera® Implant Bridge with ceramic fused to metal crowns. belleGlass® composite material was used to restore the soft tissue.

Introduction

Over the past years, technology has developed enough so that patients do not have to hide their anterior dental restorations, but be comfortable enough with it, so that people do not have to notice the difference between their natural dentition and artificial dental structures. In the quest to achieve the best esthetic result for patients, cost effectiveness and practical solutions for their oral health and well being are important factors to keep in mind as well. With the use of Procera® Technology, a very good balance between the above mentioned challenges were achieved.

The basic construction of the Procera® Implant Bridges has stayed the same over the past four years. The substructure is scanned using the Procera® scanning software, and the structure is then milled in Sweden. When the Titanium framework arrives back at the laboratory, it is trimmed to our manufacturing specifications and parameters. After trimming,



Procera® Implant Bridge (Titanium).

we proceed with the manufacturing of the individual metal substructures for ceramic veneered to metal crowns. We do it in this fashion to achieve maximum esthetic results, and the crowns can be replaced individually if a repair to it is needed without having to remove and repair the whole prostheses. The soft tissue is then fabricated to look as natural as possible.

Materials and Methods

Two similar restorations were used. The first case was a Titanium Procera® Implant Bridge with ceramic fused to metal crowns. Vita Titankeramik® was used to restore the soft tissue.



Ceramic opaque (palatal).



Ceramic opaque (labio-buccal).



Ceramic gingival opaque.



Ceramic soft tissue restoration.

LABORATORY

The second case was Titanium Procera® Implant Bridge with ceramic fused to metal crowns. belleGlass® composite material was used to restore the soft tissue.

When we manufactured our first Titanium Procera® Implant Bridge (PIB) in 2003, we encountered a few minor problems with regards to the restoration of the ceramic soft tissue. The natural dentition has inter-dental papillae, this effect is not easily reproduced with ceramic, as the material is difficult to manipulate and fire without support. One major factor of concern was the high volume of Titanium oxide accumulation on the framework after each firing cycle. This makes for a time consuming process, removing the oxides after each firing cycle. The firing cycles also tempers the Titanium, making it very difficult to polish. Another drawback of the use of the ceramic material is the lack of diversity of the colours. It is nearly



Glass composite gingival opaque (left)

Glass composite gingival opaque (right)



Glass composite gingival opaque.



Glass composite soft tissue restoration.



Ceramic soft tissue restoration (maxilla).



Ceramic soft tissue restoration (mandible).



Ceramic soft tissue restoration (maxilla).

impossible to get the exact colour needed as there are limited options. The degree of difficulty in mixing the correct colours and achieving the effects of veins also posed some problems.

As a result of these counterproductive procedures, a more productive method had to be developed. It is clear that a low thermal process is necessary to avoid these problems. After research and trials had been done, it was decided to use a product by Belle de Saint Claire: belleGlass™ HP Dark and Light gingiva. This is a dual cure system which means that the material is initially cured with a UV light and subsequently in a low temperature (141°C) oxygen-free environment. By using these products, much time and effort is saved by not having to spend it on removing the excess oxides.

LABORATORY

The composition and workability of the material makes it easy to predict the shade, saturation of colour and natural colouration effect of the material before and after the final processing has taken place.

It is difficult to get a natural papillae effect with ceramic because it cannot support itself in a sufficiently natural position to accomplish the natural peaks necessary to assist in the creation of a natural emergence profile.

In contrast to this, belleGlass™ does not crack, break or collapse on itself when the crowns are removed, thus the papillae can be built to the perfect natural height, and produces a favourable effect.

Problems with access holes were difficult to hide when using



Glass composite soft tissue restoration on the mandible with a temporary prosthesis on the maxilla.



Glass composite soft tissue restoration on the mandible with a temporary prosthesis on the maxilla.



Esthetic solution to problematic implant angulation which could not be restored successfully using ceramics.

a ceramic gingival material. The use of a glass composite makes it easy to disguise these problems to the effect where it is almost impossible to notice the problem area. When the final product is placed in the mouth, the glass composite material looks very natural in comparison to the ceramic.

Results

The Procera® Implant Bridge with the ceramic soft tissue shows an acceptable result. The Procera® Implant Bridge with the glass composite soft tissue resulted in a more esthetic, natural and satisfying final product. The glass composite material shows the same resistance to plaque accumulation as the ceramic material.

Conclusion

The ceramic veneering material appears to have a lower esthetic value than the glass composite material.

The above article has been adapted from the poster entitled: "Esthetic and Practical Method Using Glass Composite Veneering Material to Fabricate Artificial Soft Tissue on Full Arch Titanium Procera® Implant Bridges," which won First Prize in the Young Ceramist category at the 2007 Nobel Biocare World Congress, Las Vegas



Intraoral view of Procera® Implant Bridges with detailed replacement of glass composite gingival tissue.



Another beautiful smile created utilising Procera®Technology and belleGlass™ as an artificial replacement of lost gingival tissue.