Quick delivery of aesthetic indirect composite inlays/ onlays

There has been a paradigm shift in dental treatment towards minimal intervention and conservation of the tooth structure. In the past, restoration of the tooth structure involved significant tooth reduction to attain retention. Advances in adhesive and material technology have ensured longevity of restorations even with minimal preparation.

A conservative treatment option for a large posterior cavity would be an inlay or onlay. The most widely accepted materials for inlays/onlays previously were gold, non-precious alloys and ceramic. As it was a major challenge to achieve a good fit and modification at the time of delivery, often a crown was prepared instead leading to greater tooth reduction. With the recent advances, indirect composite materials offer indistinguishable aesthetics, ease of handling and short fabrication time combined with outstanding physical properties. Therefore, inlays and onlays are becoming popular by overcoming the limitations associated with ceramics which are brittle, abrasive and less tolerant to multidirectional masticatory forces. New generation of indirect composite materials like Ceramage, containing 73% zirconium silicate fillers, features a comprehensive range of basic and effect colours enabling the dental technician to create aesthetic inlays and onlays that match the surrounding tooth structure.

In this article, I would like to share a simple, step-by-step method of fabricating an inlay/onlay using Ceramage that helps to understand the application and aesthetic possibilities of indirect composites.

Figure 1 : Prepare the working die and block out the undercuts. Apply a single layer of Ceramage Spacer, a latex-based separating material that changes from white to colourless when completely dry.

Figure 2 : Apply Ceramage SEP, a separating agent for easy removal of the restoration from the die.

Figure 3 : Place a thin layer of the Ceramage T (translucent shade) or A2B (dentin shade) and adapt it to the floor and cavity walls ensuring that no gaps formed. The flowable opaque shades are useful in case of deep discoloration. Light cure for 1 minute in the Solidilite light curing unit.

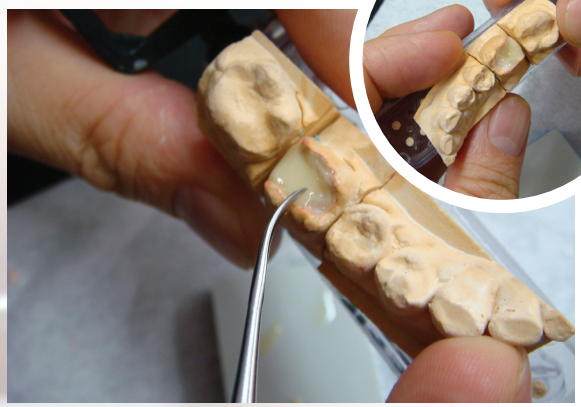

Figure 4 : Incrementally build-up the dentin with Ceramage A2B (dentin shade) and sculpt the basic occlusal anatomy. Light cure in the Solidilite for 1 minute.

Figure 5 : Use Ceramage OC (occlusal effect shade) on the cusps to achieve a more natural effect

Figure 6 : Carve the occlusal surface of the restoration to mimic the undulations, pits and fissures to attain the final occlusal anatomy of the molar.

Figure 7 : Remove the die from the cast and check the proximal area.

Figure 10 : Carve the occlusal grooves with the fissure carver included in the kit. The trigonal tip of the fissure carbide helps to easily create the natural anatomy of pits and fissures.

Figure 8 : Apply Ceramage Oxybarrier on the restoration to ensure complete polymerization and facilitate easy finishing and polishing. Light cure in the Solidilite for 5 minutes for a final complete polymerization.

Figure 9 : Contour the restoration with Dura Green stone. Finish and polish the restoration with the Ceramage polishing kit specially designed to attain a glazed-like polish. It is important to pay special attention while polishing for long-term colour stability of the restoration.

Figure 11 : Remove surface irregularities with an impregnated Silicone polisher (HR2) and pre-polish the restoration using the grit impregnated Pivot brush SC with Dura Polish (a wax-based aluminum oxide polishing paste).

Figure 12 : Polish the restoration using Pivot brush first with Dura-Polish followed by Dura-Polish Dia (a wax-based diamond polishing paste). Repeat the above sequence 3 times to attain a smooth surface. Always use low speed while polishing for the best results.

Figure 14 : Use a sharp instrument to separate the restoration from the die and remove the Spacer from the internal surface. An aesthetic inlay/onlay created using Ceramage, matches the adjacent teeth.

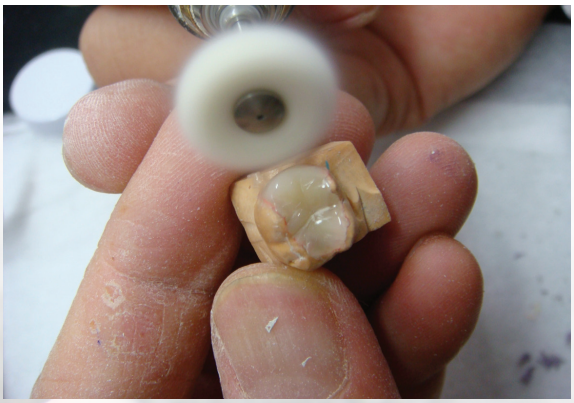

Figure 13 : Finally use a Felt wheel to buff the entire restoration to a glazed-like polish.

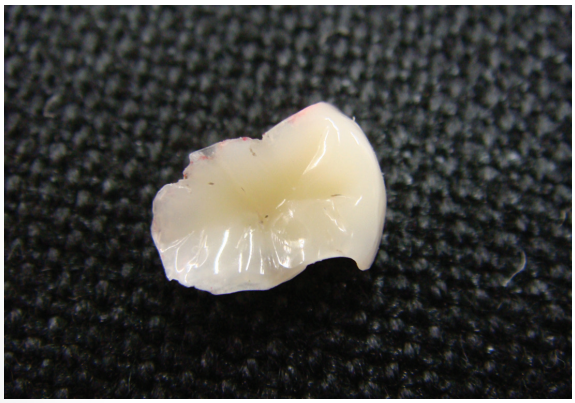

Figure 15 : An aesthetic inlay/onlay restoration created with Ceramage. Touch up the margins if required and clean the restorations prior to delivery

CONCLUSION:

Innovative materials and technologies available today have made it possible to adopt a conservative approach and select inlays and onlays for the treatment of large posterior cavities. A simple, comprehensive and hassle-free indirect composite system like Ceramage enables the creation of inlays or onlays with porcelain-like aesthetics, achieved through its extensive range of basic and effect shades, within a short delivery time while ensuring greater resistance to staining. Moreover, indirect composites are easy to modify, repair and even characterize or stain intraorally making it a user-friendly and popular treatment option for inlays and onlays.

ABOUT THE EXPERT

Jovi Ng is a certified Dental Technician graduated from the Miyazaki Dental Technician College and the Wasada Institute of Dental Technology in Japan. He is a dental ceramist with 18 years of experience and has traveled extensively throughout the Asia-Pacific conducting lectures, courses and workshops in the field of dental technology. He is a member of the Japan Dental Technician Association.