

3MSM Health Care Academy

Art meets science: preserving structure and function with Glass Ceramic Onlays.

Dr Giuseppe Marchetti, DDS, Italy

Aesthetic inlays and onlays are a viable restorative alternative for moderately broken-down posterior teeth and an integral means of restoring teeth. More recent advances in adhesive technology plus the increase in aesthetic material options – for example, composite resins, ceramics and hybrid ceramics – enable clinicians to use conservative preparations to place restorations that are effectively reinforcing the remaining tooth structures. Although the directly placed resin restoration is the most conservative posterior restoration in contemporary dentistry, the aesthetic inlay and onlay restorative alternative, attempts to minimise the inherent polymerisation shrinkage properties of direct light-cured resins. Only the thin layer of luting resin is subject to polymerisation shrinkage at restoration placement. In this case, a minimally invasive onlay procedure is applied successfully to create a very favourable aesthetic result.

A patient presented with failing amalgam filling in lower molars. Because there was a good amount of existing tooth structure, the decision was made to use a minimally invasive approach. Glass ceramic onlays were used to achieve function with good aesthetics.



Figure 1: Initial situation with failing amalgam fillings.



Figure 2: Removal of amalgam and caries.



Figure 3: Final view of cleaned cavities.



Figure 4: Application of the 3M™ Scotchbond™ Universal Adhesive in self-etch mode on dentine. Rub for 20 seconds and then air thin for 5 seconds or more to remove the solvent. This is visually indicated when the rippling of the surface is no longer apparent.



Figure 5: Followed by light cure of adhesive for 10 sec with 3M™ Elipar™ DeepCure-S LED Curing Light.



Figure 6: Application of 3M™ Filtek™ Bulk Fill Flowable Restorative* in order to render the cavity suitable for impression.



Figure 7: Final view after flowable composite light curing & polishing.

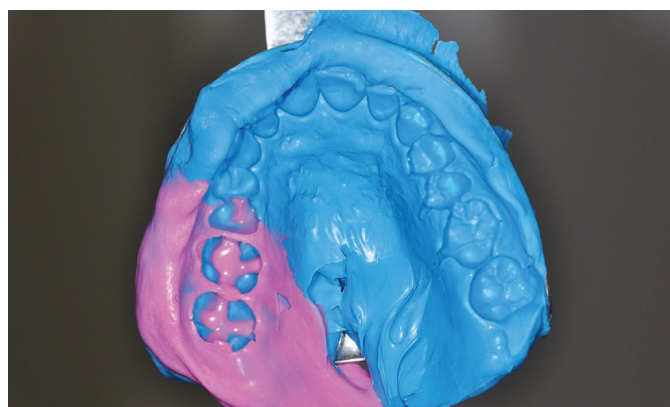


Figure 8: Impression with 3M™ Imprint™ 4 VPS Impression Material (light and heavy body).



Figure 9: Ceramic onlays on the laboratory cast.



Figure 10: Ceramic onlays ready for cementation.

*Product not available in Australia or New Zealand, however 3M™ Filtek™ Supreme XTE Flowable could be used as an alternative.

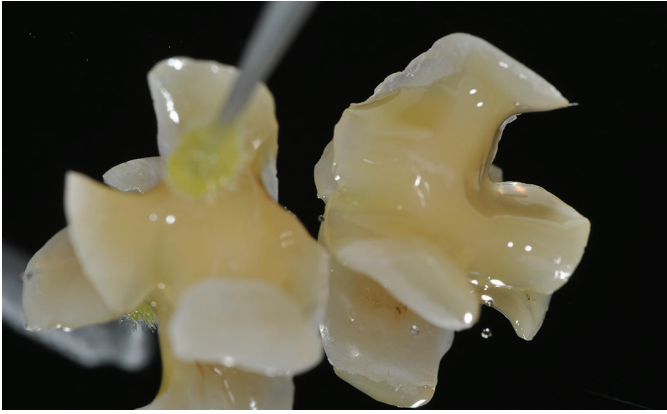


Figure 11: After etching with hydrofluoric acid, ensure all etching residues are completely removed. Apply 3M™ Scotchbond™ Universal Adhesive to the inner surface of the onlay, rub for 20 seconds, then air thin for 5 seconds to remove the solvent.



Figure 12: Apply 3M™ RelyX™ Ultimate Adhesive Resin Cement to adhesively cement the onlays.



Figure 13: Isolation of neighbouring teeth and cementation of the first onlay. Apply 3M™ Scotchbond™ Universal Adhesive to the surface of flowable material, rub for 20 seconds, then air thin for 5 seconds or more to remove the solvent before applying 3M™ RelyX™ Ultimate Adhesive Resin Cement.



Figure 14: View after cementation of both onlays and excess cement removal.



Figure 15: Checking occlusion after light curing or allowing the material to self cure per Instructions For Use (IFU).



Figure 16: Final restorations in place.



Dr Giuseppe Marchetti, DDS, Italy

Dr Giuseppe teaches the degree course in Dentistry and Masters Degree in endodontics and Restorative Dentistry, at the University of Siena. He also teaches at the Faculty of Medicine, Master of Science in Dentistry at the “Université the Méditerranée” in Marseille (France). He is an active member of StyleItaliano Group, IAED (Italian Academy Of Aesthetic Dentistry) and IAC (Italian Academy Of Conservative) and is a specialist of restorative and prosthetic, with a special interest in aesthetic dentistry. He is the author of publications on the subject of restorative dentistry and his techniques are studied and appreciated in Italy and internationally.

Contact:

👤 Dr Giuseppe Marchetti, DDS, Italy
Co-owner of Studio Dentistico Marchetti
✉️ drgmarchetti@hotmail.com

Contact 3M

Australia

3M.com.au/dental

New Zealand

3M.co.nz/dental

Scientific Affairs

Stephen Langdon

Email: sdlangdon@mmm.com

3M Health Care Academy



3M Oral Care

3M Australia Pty Limited
Building A, 1 Rivett Road
North Ryde, NSW 2113
Ph: 1300 363 454
www.3M.com.au

3M New Zealand Limited
94 Apollo Drive
Rosedale, Auckland 0632
Ph: 0800 80 81 82
www.3M.co.nz



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