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Stainless steel crowns for restoration of primary teeth: a minimally invasive, time-saving technique

Dr. Katie Peterson

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Highly reliable, prefabricated 3M™ Stainless Steel Crowns have delivered consistent performance for over 40 years. Manufactured with a life-like height, contour and occlusal surface, they accurately duplicate the anatomy of primary and first permanent molars in a selection of sizes—and they are pre-crimped at the cervical margin to give good retention and a "snap" fit.

Prefabricated 3M Stainless Steel Crowns are ideal for a number of cases, including those in which the prognosis for long-term success of traditional restorations like composite or amalgam is reduced by a high possibility of restorative fracture or recurrent caries. For young children with primary molars, prefabricated crowns are our treatment of choice, especially for multi-surface lesions in primary molars. The age of the patient, overall hygiene, the extent of caries and the number of teeth affected are always components of treatment planning. For high-risk caries patients, stainless steel crowns have been proven superior to multi-surface amalgam restorations with respect to both lifespan and replacement rate[1], and placement time is also fast compared to other techniques.

3M Stainless Steel Crowns are designed to provide long-term coverage of primary molar teeth and long-term provisional coverage of permanent molar teeth. They are a viable method of single-unit temporization for both short- and long-term coverage, with proven fit and performance backed by long-term clinical history. The realistic anatomical shape of a 3M Stainless Steel Crown for primary molars means that minimal adjustment is necessary to obtain good retention. There is good conformity with the patient's occlusion, and the smooth stainless steel alloy surface helps maintain gingival health and patient comfort.

Reliable and consistent, stainless steel crown treatments are also efficient, cost-effective and minimally invasive. They provide excellent long-term strength without compromising affordability.

Case Presentation

This 4-year-old female patient presented with six cavitated lesions and one incipent lesion. We treated the right side, interproximal caries #A, #B and #S, with stainless steel crowns.

All of the patient's posterior teeth were either planned for full coverage or had already been filled—and her six-year molars had not yet erupted—so a sealant application was not necessary for this restoration. However, we typically place 3M™ Clinpro™ Sealant and 3M™ Vanish™ 5% Sodium Fluoride White Varnish with Tri-Calcium-Phosphate when treating primary and permanent molars with deep grooves. The sealant negates the need to pumice the teeth a second time, while the varnish delivers a sustained dose of fluoride.

In preparation for our crown restorations, we lay out the 3M Stainless Steel Crowns, including several sizes of each tooth number crown, for easy access (Figs. 1 and 2). We also prepare our instruments (Fig. 3), selecting a crown pusher to ensure the crown is fully seated and a spoon instrument to help remove the crown once it's placed, to ensure the fit before it's cemented.


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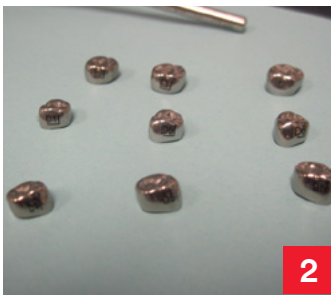
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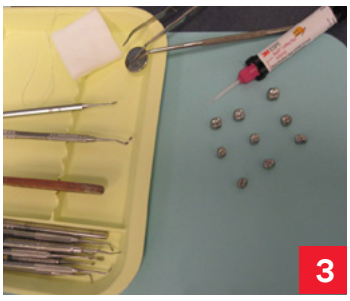
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The initial stages of tooth preparation are performed under rubber dam isolation (Fig. 4). The first step in tooth preparation is to reduce the occlusal surface while maintaining good contour. The mesial and distal contact points are cleared and a smooth taper from occlusal to gingival should be obtained that is free of ledges or shoulders. All caries are removed and the line angles rounded off (Fig. 5). In my experience, half or more of the tooth preparation is completed simply by caries removal. No preparation is usually needed on the buccal or lingual surfaces of primary molars except where there is a pronounced mesio-buccal convexity as seen on some primary first molars.

The stainless steel crowns are flexible enough to spring over minor contours. However, when multiple crowns are to be placed in the same quadrant, the adjacent proximal surfaces of the teeth being prepared should be reduced slightly more than usual. This will make placement of multiple crowns easier.

The correct-size crown is selected by measuring the mesio-distal width between the contact points of the neighboring teeth with calipers. I find it advisable to choose the smallest crown that will fit. If the crown is too large it can be time-consuming to adjust it to obtain good retention. To seat the crown on a prepared tooth, it is placed lingually and rolled over the preparation to the buccal margin (Fig. 6).

A crown will often make an audible "click" as it secures into place over the gingival undercut area. Firm pressure is usually needed to seat the crown. When the crown is ready to be cemented, we use 3M™ RelyX™ Luting Plus Automix Resin Modified Glass Ionomer Cement (Fig. 7), which we like because it offers a tack cure feature for easy clean-up. After the crown is seated over the tooth, excess cement may be tack cured and easily removed with an explorer. Finally, the crown is checked for occlusion (Fig. 8). The last photo shows both teeth #A and #B that were treated at this visit.

Conclusion

Placement of 3M™ Stainless Steel Crowns is a reliable and cost-effective treatment for primary and first permanent molars that has been trusted by dentists for decades. Both durable and comfortable, crowns can often be fitted in less time than would be needed to complete some conventional multi-surface restorations. The pre-crimped and trimmed crowns allow for fast and easy placement and accurately duplicate the dental anatomy for better fit and performance.


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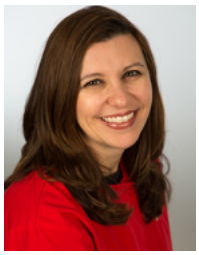

About the author

Dr. Katie Peterson ("Dr. Katie") is a graduate of DePauw University and the Indiana University School of Dentistry. She is a member of the American Dental Association, Indiana Dental Association, and an affiliate of the American Academy of Pediatric Dentistry. With more than a decade of experience, Dr. Katie became enchanted with the pediatric patient population early in her career and has focused on the care and treatment of young patients ever since. She has worked at the westside office since 2005, as an associate then lead dentist, before acquiring both practices. This has allowed her to sharpen her leadership skills and create a staff that shares her vision of "patient first."

Dr. Katie has received honorarium from 3M Oral Care.

Reference

[1] Einwag, J. and Dünninger, P. (1996). Stainless steel cr own versus multisurface amalgam restorations: An 8-year longitudinal clinical study. *Quintessence International, 27*:321–323.

3M Oral Care
2510 Conway Avenue
St. Paul, MN 55144-1000 USA

Phone 1-800-634-2249
Web 3M.com/dental

3M Canada
Post Office Box 5757
London, Ontario N6A 4T1
Canada

Phone 1-888-363-3685

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