

# **Pediatric stainless steel crowns for long-term caries management**

Dr. Margaret Moore

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As pediatric dentists, we know that our communication methods when discussing procedures, especially more in-depth restorative procedures that may be a first-time experience for our younger patients, must be tailored to our patient's age and retention level. Through simplified narration, treatment demonstrations and descriptions, we connect with our pediatric patients to help make their visits as quick, easy, comfortable and carefree as possible.

Treatment of caries in the primary dentition is an integral part of pediatric healthcare, and prefabricated stainless steel crowns provide an effective solution where amalgam could potentially fail. Stainless steel crowns are extremely durable, relatively inexpensive, subject to minimal technique sensitivity during placement, and they offer the advantage of full coronal coverage.<sup>1</sup> Parents often accept this type of restorative treatment when they learn that a stainless steel crown can help maintain space in the mouth for the eruption of permanent teeth, and that this procedure provides a reliable solution for a high-risk or uncooperative child until that tooth is lost at a natural age.

When communicating with our young patients about the stainless steel crown procedure, our hygienists refer to

the decay in their primary teeth as “sugar bugs” that need to be removed. The stainless steel crown will act as a shield to protect the area against more harmful bugs. We demonstrate the various steps in the procedure first to show how everything works: we place the rubber dam on a finger to establish its functionality as a “raincoat” in the mouth. Using our hand piece, we show the kids how the “water gun” is used to give “sugar bugs” a shower before we put them to sleep.

Following the hand demonstration, we repeat these descriptions during the intraoral procedure, as we remove the decay and then fit prefabricated stainless steel crowns from 3M, which are designed to accurately duplicate the anatomy of primary and first permanent molars—pre-crimped at the cervical margin to give good retention and a “snap” fit. The stainless steel alloy surface helps maintain gingival health after the restorations are seated, without compromising affordability.

With many patients, we may add a prescription-strength at-home fluoride toothpaste, such as 3M™ Clinpro™ 5000 1.1% Sodium Fluoride Anti-Cavity Toothpaste, depending on the patient's age and caries risk.

## Fast and effective

Spare children from having to hold still any longer than necessary. These crowns are easy to trim, adapt and place. A pre-crimped cervical margin provides good retention and a snap fit. The crown readily duplicates the anatomy of primary molars, and adjustment is quick and easy.

## Child friendly

Designed to repair and protect primary or first permanent molars.



Lifelike height, contour and occlusal surface—with 72 crown sizes to choose from.

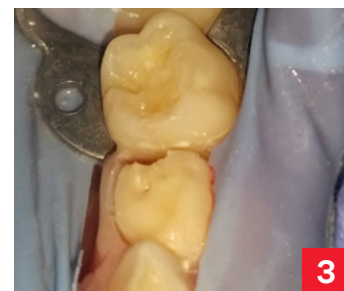
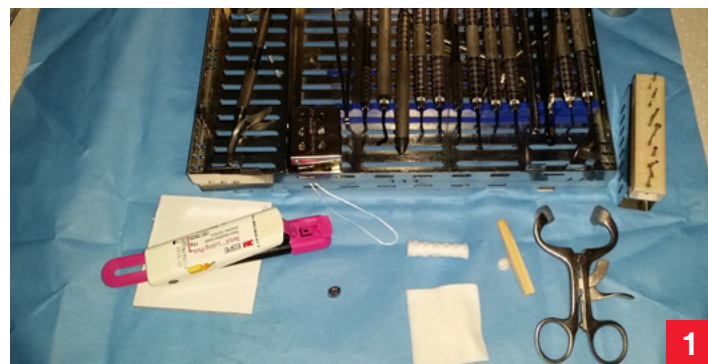
## Case Presentation

The patient was a 7-year-old male with fair oral hygiene that presented with decay around tooth #L that required a stainless steel crown.

Prior to the procedure, we set up our tray with the stainless steel crown, instruments and 3M™ RelyX™ Luting Plus Resin Modified Glass Ionomer Cement (Fig. 1). The first step in the stainless steel crown treatment is to reduce the occlusal surface while maintaining good contour, achieving approximately 1.5 mm of clearance. Then a rubber dam is placed (Fig. 2). The mesial and distal contact points are cleared and a smooth taper from occlusal to gingival is obtained that is free of ledges or shoulders. All caries are removed and the line angles rounded off, avoiding unnecessary reduction beyond the minimal amount required for caries removal (Fig. 3).

Correct crown size is selected, choosing the smallest crown that will fit and contouring or adapting the crown as needed. Stainless steel crowns from 3M exhibit a lifelike height, contour and occlusal surface and are generally an excellent match for natural dentition without much adjusting. To seat the crown on a prepared tooth, it's placed lingually and rolled over the preparation to the buccal margin; firm pressure is applied to seat the crown, listening for the “click” created by the snap-fit feature. The marginal gingiva will blanch slightly with a well-fitting crown as it seats, and we find that good retention and a cement seal is created when the margin is located approximately 1 mm subgingivally.

RelyX Luting Plus cement is used to cement the crown—offering sustained fluoride release beyond the initial procedure (Fig. 4). Excess cement should be seen flowing out of the margins to ensure enough material has been utilized. With the 3M™ Elipar™ S10 LED Curing Light, we tack cure the excess cement surrounding the seated crown (Fig. 5) before removing the cement in the gel phase. Finally, the crown is checked (Fig. 6), and we ensure that the patient is comfortable biting with the crown (Fig. 7).



## Case Presentation

Prefabricated stainless steel crowns from 3M are an important part of long-term caries management in patients who still have their primary teeth. As pediatric dentists, we often liken crowns to “shields,” demonstrating their excellent strength in the protection against caries and superior longevity compared to multi-surface amalgam fillings. Carefully communicating the benefits and functions of stainless steel crowns with young children (and their parents) can help make treatment and placement more accepted and comfortable.

### Reference

<sup>1</sup> Pediatric Preformed Metal Crowns - An Update. Sangameshwar Sajjanshetty, vP. S. Patil, Deepa Hugar, K Rajkumar. Journal of Dental & Allied Sciences 2013; 2(1):29-32



### About the author

Dr. Margaret Moore (“Dr. Margaret”) graduated from dental school at the Medical College of Georgia. She completed two additional years of training to become a pediatric dentist and is now a diplomat of the American Board of Pediatric Dentistry. As a parent herself, Dr. Margaret understands parents’ desire to be involved in their children’s dental care decisions. She always encourages parents to ask questions and be present during dental visits. Dr. Margaret resides in Georgia with her husband Cory.

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

# Clinpro™ 5000

## 1.1% Sodium Fluoride Anti-Cavity Toothpaste

### HIGHLIGHTS OF PRESCRIBING INFORMATION INDICATIONS AND USAGE

Clinpro 5000 Anti-Cavity Toothpaste is indicated for use as part of a professional program for the prevention and control of dental caries.

### DOSAGE AND ADMINISTRATION

- Use once daily in place of conventional toothpaste unless instructed otherwise by a physician or dentist.
- Apply a thin ribbon or pea-sized amount of Clinpro 5000 Anti-Cavity Toothpaste using a soft-bristled toothbrush and brush teeth for at least two minutes.
- After brushing, adults should expectorate. Children 6 to 16 years of age should expectorate and rinse mouth thoroughly with water.

### DOSAGE FORMS AND STRENGTHS

White toothpaste containing 1.1% sodium fluoride

### CONTRAINDICATIONS

Do not use in children under 6 years of age unless recommended by a dentist or physician.

### WARNINGS AND PRECAUTIONS

- Do not swallow.
- Keep out of reach of children under 6 years of age.
- Repeated ingestion of high levels of fluoride may cause dental fluorosis.

### ADVERSE REACTIONS

Allergic reactions and other idiosyncrasies have been rarely reported.

To report SUSPECTED ADVERSE REACTIONS, contact 3M ESPE Dental Products Division at 1-800-634-2249 or www.3MESPE.com, or FDA at 1-800-FDA-1088 or www.fda.gov/medwatch.

### USE IN SPECIFIC POPULATIONS

#### Pregnancy

Prescribing physicians and dentists should consider total fluoride exposure (dental care plus food, water and other sources) when prescribing the product for use in pregnant women or women who may become pregnant.

#### Nursing Mothers

Prescribing physicians and dentists should consider total fluoride exposure (dental care plus food, water and other sources) when prescribing the product for use in women who are nursing.

#### Pediatric Use

The primary adverse effects of fluoride are fluorosis of dental enamel and of the skeleton; these effects occur at exposures below those associated with other adverse health effects. The population most at risk for dental fluorosis is children during the period of tooth formation, i.e. from birth to 8 years of age. For this population, the Institute of Medicine (IOM) established Fluoride Upper Limits of intake based on the risk of dental fluorosis. In populations with permanent dentition, skeletal fluorosis is the greatest risk from excessive fluoride. For this population the Institute of Medicine established Fluoride Upper Limits based on the risk of skeletal fluorosis.<sup>1</sup>

#### Population

Infants 0-6 months old  
Infants 7-12 months old  
Children 1-3 years old  
Children 4-8 years old  
Children > 8 years old

#### IOM Fluoride Upper Limit

0.7mg/day  
0.9mg/day  
1.3mg/day  
2.2mg/day  
10mg/day

Prescribing physicians and dentists should consider total fluoride exposure (dental care plus food, water and other sources) when prescribing the product for use in children.

#### Geriatric Use

No studies of Clinpro 5000 Anti-Cavity Toothpaste have been conducted to determine whether subjects aged 65 and over respond differently from younger subjects.

#### OVERDOSAGE

Ingestion of large amounts of fluoride may result in abdominal pain, stomach upset, nausea, vomiting and diarrhea. These symptoms may occur at overdoses of 5 mg/kg of body weight. Fluoride doses of 16 mg/kg have been fatal.

#### Treatment for Overdose of Clinpro 5000 Toothpaste

Ingested fluoride dose	Amount for 10kg (22 pound) child*	Recommended action to take
Less than 5mg/kg	This equals less than ½ ounce (or less than and 3 teaspoons).	Do not induce vomiting. Give 1-2 glasses of milk and observe for symptoms of stomach upset. If symptoms persist more than a few hours, seek medical attention or contact a poison control center.
5mg/kg or more	This equals about ½ ounce (about 1 tablespoon) or more.	Do not induce vomiting. Give 1-2 glasses of milk and seek medical attention or contact a poison control center.
15mg/kg	This equals 1 ounce or ¼ of the tube.	Seek immediate medical attention. Do not induce vomiting. Give 1-2 glasses of milk.

\*The amount to reach the fluoride dose will be proportionately larger with older children and adults. A thin ribbon or pea-sized amount of Clinpro 5000 Anti-Cavity Toothpaste weighs approximately 0.3 g and contains approximately 1.5 mg of fluoride ion. A 4 oz. tube contains 564 mg of fluoride ion.

1. IOM. Dietary Reference Intakes: The essential guide to nutrient requirements. National Academies Press 2006.

#### Storage

This product is designed to be stored and used at room temperature. Do not freeze or expose to extreme heat. See outer package for expiration date.

Manufactured for:

**3M ESPE**  
Dental Products  
St. Paul, MN 55144-1000 USA  
Revision date: 01/11/2012

#### Rx Only

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This is a summary of the prescribing information. For complete prescribing information, please visit [www.3M.com](http://www.3M.com).



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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