

Stainless Steel Crowns in Pediatric Dentistry : A Review Article

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Abstract

No other factor plays a more significant role in pediatric dentistry than the restoration of deciduous dentition till its normal time of exfoliation. Premature loss of deciduous tooth might lead to wide range of implications. The stainless steel crown is the best restorative material for the treatment of badly broken down primary teeth. In this review article we discuss the role of stainless steel crowns in pediatric dentistry.

Keywords: Deciduous dentition, Stainless steel crowns, Pediatric dentistry.

Introduction

Preformed metal crowns, also referred to as stainless steel crowns were introduced to pediatric dentistry by Humphrey in 1950.⁽¹⁾ Since then they have become an invaluable restorative material in the treatment of badly broken primary teeth. They are generally considered superior to large multisurface amalgam restorations and have a longer clinical lifespan than two or three surface amalgam restorations.^(2,3)

Stainless steel crown is an often underused and underappreciated restoration for the primary dentition. It is durable, relatively inexpensive, and easily and quickly placed. It is subjected to minimal technique sensitivity during placement and offers the advantage of full coronal coverage.

Stainless steel crowns has a strong advantage or relative lack of sensitivity to oral conditions during placement and cementation. In an uncooperative, crying child, it is often possible to place a well-fitting crown without compromising longevity or quality of the restoration. Therefore, inability to efficiently control saliva is an indicator for choosing the stainless steel crown as the restoration of choice. However its main disadvantage is the silver metallic appearance.

Types of Stainless Steel Crowns

Pretrimmed Crowns: These crowns have straight, noncontoured sides but are festooned to follow a line parallel to the

gingival crest. They still require contouring and some trimming.

Precontoured Crowns: These crowns are festooned and are also precontoured. Some trimming and contouring may be necessary but usually is minimal. If trimming of these crowns becomes necessary, the precontour will be lost and the crown will fit more loosely than before trimming.

Preveneered Crowns: These are the stainless steel crowns that have resin-based composite bonded to the occlusal and buccal surfaces to create a more aesthetic posterior crown. They are more expensive than regular stainless steel crowns, require more tooth reduction, and allow for only minimal crimping for crown adaptation.

Indications

1. Restoration of primary or young permanent teeth with extensive carious lesions. First primary molars with mesial interproximal lesions are included (Fig. 1 & 2).
2. Extensive decalcification around an already restored tooth where there is a high risk of recurrent caries.
3. Where an amalgam is likely to fail in a primary molar, e.g. a class II cavity where the proximal box is extended beyond the anatomic line angles.^(4,5)
4. After pulp therapy, it is considered to be the restoration of choice.
5. Developmental defects, eg amelogenesis imperfecta, dentinogenesis imperfecta, hypocalcified teeth.^(5,6)
6. Excessive tooth wear from bruxism
7. As an abutment to space maintainers or prosthetic appliances (Figure 3).
8. Disabled individuals with poor oral hygiene.
9. Attachments for habit-breaking and orthodontic appliances
10. Strong consideration should be given to children who require general anesthesia for dental treatment.⁽⁷⁾

Contraindications

1. Patient unable to co-operate with treatment.

2. Primary tooth approaching exfoliation, i.e. X-ray shows over half the primary tooth root resorbed.
3. Patient with nickel hypersensitivity.
4. In teeth where esthetics is the main concern.

Technique for Placement

Effective local anaesthetic should be given as the preparation will extend subgingivally with some inevitable trauma of the gingiva. Occlusal reduction is carried out to obtain clearance of approximately 1 mm.

The mesial and distal contact points are cleared and a smooth taper from occlusal to gingival should be obtained free of ledges or shoulders. All caries is removed and the line angles rounded off.

Stainless steel crowns are not close fitting so the preparation does not have to be precise. The gingival finishing line should be a feather edge with no ledges or steps detectable, a reasonable taper mesially and distally will help to achieve this. If a step or ledge is present.

The operator will have difficulty seating the crown and may be tempted to trim it unnecessarily, it is the ledge or step which should be removed. No preparation is usually needed on the buccal or lingual surfaces of primary molars except where there is a pronounced mesio-buccal convexity. The stainless steel crowns are flexible enough to spring over minor contours.⁽⁴⁾

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 multiple crown placement easier.⁽⁴⁾ The finishing line should be approximately 1 mm below the gingival margin.

The correct sized crown is selected by measuring the mesio-distal width between the contact points of the neighbouring teeth with calipers or if teeth are missing the mesio-distal width of the matching tooth in the opposite arch can be measured. It is advisable to choose the smallest crown that will fit.

When fitting a crown for a second

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primary molar, where the first permanent molar has not yet erupted care must be taken when measuring the available mesio-distal dimension for the crown. If the stainless steel crown encroaches on the space needed for eruption of the permanent molar, its eruption path may be distorted.

To seat the crown on a prepared tooth it is placed lingually and rolled over the preparation to the buccal margin. A crown will often make an audible “click” as it springs into place over the gingival undercut area. Firm pressure is usually needed to seat the crown.

The marginal gingivae will be seen to blanch with a well fitting crown as it seats. The crown margin should be located approximately 1 mm subgingivally both to give retention and a good cement seal. If excess gingival blanching is seen then the crown will need to be trimmed.

It may be helpful to scribe a line on the crown along the gingival contour with a sharp scaler or bur, the crown can then be trimmed to 1 mm below the scribe line. The occlusion should be checked and the crown removed with a sharp excavator. Trimming can be done with crown scissors. After trimming the crown will have a larger cervical opening so must be crimped to regain its retentive

contour.

Crimping Pliers are recommended for crimping stainless steel crowns.

Once the adjustments are completed the crown margins should be thinned slightly and smoothed with a large “heatless” stone. Final polishing can be done with a rubber wheel.

The crown is now ready to be cemented. Glass ionomer, polycarboxylate or zinc phosphate cements can be used. Stainless steel crowns are not a tight fit except at the margin so a larger than normal volume of cement should be mixed.

As the crown is seated over the tooth excess cement should be seen to flow out from the margins. If excess cement is absent from the margins it is an indication of an inadequate volume of cement. Excess cement is removed and in the interproximal area a dental floss can be passed beneath the contact point to remove excess cement from this region^(4,6).

Finally the crown is checked for occlusion. The patient should be advised that there may be some temporary gingival discomfort when the local anaesthetic wears off.

Summary

The dentist treating children should recognize the durability, preventive aspect,

and cost-effectiveness of the stainless steel crown as a restorative choice for the primary dentition. Stainless steel permanent molar crown is a functional and economical restoration which can give excellent long term performance and patient comfort, without jeopardizing future treatment plans for a permanent cast restoration.

References

1. Humphrey WP: Use of chromic steel in children's dentistry. Dent Surv 26: 945-947, 1950.
2. Dawson LR, Simon JF, Taylor PP: Use of amalgam and stainless steel restorations for primary molars. J Dent Child 48 (6): 420-422, 1981.
3. Einwag J, Dunninger P: Stainless steel crown versus multisurface amalgam restorations: an 8 year longitudinal study. Quintessence Int 22 (5): 321-323, 1996.
4. Nash DA: The nickel-chromium crown for restoring posterior primary teeth. J Am Dent Assoc. 102; 44-49, 1981.
5. Brook AH and King NM: The role of stainless steel crowns, Part I Properties and techniques. Dent Update, 9: 25-30, 1982.
6. Duggal MS and Curzon MEJ: Restoration of the broken down primary molar: 2. Stainless steel crowns. Dent Update, 16: 71-75, 1989.
7. Seal NS: The use of stainless steel crowns. Pediatr Dent 24 (5): 501-505, 2002.
8. McDonald, Avery, Dean: Dentistry for the Child and Adolescent 8th Ed. Elsevier publication 2007.
9. Pinkham, Casamassimo, Fields, McTigue, Nowak: Pediatric Dentistry. Infancy Through Adolescence. 4th Ed. Elsevier publication. 2005.





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