

EDITORIAL

Perfecting the venerable SSC

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(George Mitchell Angelos)**Abstract**

Stainless steel crowns (SSCs) are the preferred restoration of pediatric dentists for children requiring a pediatric dental rehabilitation due to their low cost and durability. Despite low technique sensitivity SSC placement can be challenging in some clinical situations including when placed on primary canines. Primary canines restored with SSCs often result in premature contacts and posterior open bite making acquiring an "as the patient presented" (ATPP) occlusion difficult when providing a pediatric dental rehabilitation. Opening of the posterior occlusion due to premature canine contact in a dental rehabilitation is often viewed as unavoidable. This technique article describes a simple method to address this clinical situation and reviews basic principles and techniques for placing SSCs.

Keywords

Stainless steel crowns/SSCs; Dental rehabilitations; Ideal occlusion; Avoiding premature canine contacts

1. Introduction

Techniques for providing quality efficient dental rehabilitations under general anesthesia (GA) are often attained during residency, by word of mouth, in CE courses or from literature [1, 2]. While the primary occlusion is somewhat forgiving and "settles in", we should try to achieve ideal arch form with stainless steel crowns (SSCs) and a stable centric occlusion that is "as the patient presented" (ATPP). Opening of the posterior occlusion due to premature canine contacts in a dental rehabilitation is often viewed as unavoidable. The sequela, if any, of a primary occlusion/bite altered in a pediatric rehabilitation under GA likely depends on the degree the bite is opened. Almost nothing on this subject appears in the literature; however a recent article reported the occlusion re-equilibrates in 1 month after restoring all "posterior primary molars" with SSCs with no symptoms of temporomandibular joint dysfunction [3]. It is a matter of professional pride to see an ideal arch of correctly-sized, -spaced and -aligned SSCs after rehabilitation. The ATPP arch form is a roadmap for treatment that meets all clinical and radiographic standards for quality.

Even veteran pediatric dentists are challenged by crowding, interproximal decay, lack of remaining tooth structure, rotation of teeth, lost space, super-eruption of opposing teeth, tooth-size extremes, and restorative needs of adjacent teeth common in children with early childhood caries (ECC).

2. Basic principles

(1) Research supports use of SSCs in high-carries risk children, and children treated under GA, as the least expensive,

most durable restoration.

(2) Pre-crimped and contoured crowns generally need minimal manipulation or trimming as they are designed against tooth anatomical dimensions, unlike the older crowns which relied upon clinicians to fit.

(3) Actual SSC crown anatomy matters less than attention given to caries, pulpal management, and cement seal, which are prime drivers of longevity.

(4) Minimal preparation is often best, but attention to adequate reduction and enamel removal avoids under-preparation and placement of oversized SSCs resulting in ectopic eruption of first permanent molars, bulky crown appearance and gingival impingement. Excessive use of SSCs sizes 5–7 suggests under-preparation and over-sized SSCs.

(5) The "snap" of a SSC going on is a good gauge of fit, but not all crowns snap on, especially in crowded situations, when there is space loss, and when tooth shape varies from the SSC manufacturing die norm. Racial variations and extremes of tooth-size can affect "snap". Reduction of the buccal bulge on primary first molars may be required if all aspects of the prep are good and the crown still doesn't fit.

(6) Use the smallest permanent molar SSC for very large primary molars when a number 7 primary SSC is too small.

(7) Reduce the mesial-distal dimension of the SSC with Howe pliers by squeezing marginal ridges in very crowded cases.

(8) Targeted reduction of the lingual surface and/or reduction of the buccal bulge, and the mesial-buccal & distal-lingual surfaces to facilitate SSC rotation/alignment can help when placing SSCs on primary first molars.

3. Other SSC techniques

1. Trim 1–2 mm from the lingual of a SSC to enlarge it by essentially a half size.

2. Use a maxillary primary canine SSC for lower primary canines. The shorter clinical crown length of maxillary canine SSCs helps avoid premature contacts that open the bite, compromising a stable centric occlusion.

3. Use a maxillary primary first molar SSC from the same arch, when a SSC smaller than a size 2 is needed for the maxillary primary second molar (Fig. 1A). Some subgingival prepping may be required to fit the rounder-shaped maxillary primary first molar SSC on a maxillary primary second molar (Fig. 1B).

4. Use a maxillary primary first molar SSC from the contralateral side for a mandibular first primary molar that is very small/rhomboid-shaped, or when a SSC smaller than a number 2 is needed for the mandibular primary second molar. For example, using a SSC for tooth I to restore tooth S that is small/rhomboid shaped (Fig. 1C), using a number 6 SSC for tooth I when tooth T is small (Fig. 1D) or using number 4 SSCs for teeth L and S when teeth K and T are very small (Fig. 1E).

5. Use a number 7 primary second molar SSC for a permanent first molar when size permits, eliminating time required to trim, shape and contour permanent SSCs (Fig. 1F,G).

4. Trouble shooting

Even with these techniques, getting an ideal bite, *i.e.*, ATPP, with a stable centric relationship, is challenging when preparing multiple primary canines for SSCs. Failure to obtain ATPP is usually due to premature canine contacts resulting in a posterior open bite, sometimes causing wear-through of mandibular canine SSCs (Fig. 1H) over time. Restoring ATPP is likely of more importance when there is an anterior crossbite to minimize excessive forces on the anterior teeth and when using anterior Zirconium or composite crowns to avoid crown fractures and cement failures. A few millimeters of bite-opening is not problematic, but effects of excessive posterior bite-opening and/or excessive forces on canine teeth might have post-operative sequelae.

To obtain ATPP occlusion leads to rethinking the rules of occlusion. Typical denture setup technique is to position canine teeth first to obtain canine guidance and group function occlusion, but this isn't applicable to the primary dentition. However, preparing and seating of all primary canine SSCs first, allowing for confirmation of a stable centric relationship, void of canine interferences, before proceeding with the remaining dental rehabilitation, facilitates a more ideal occlusion.

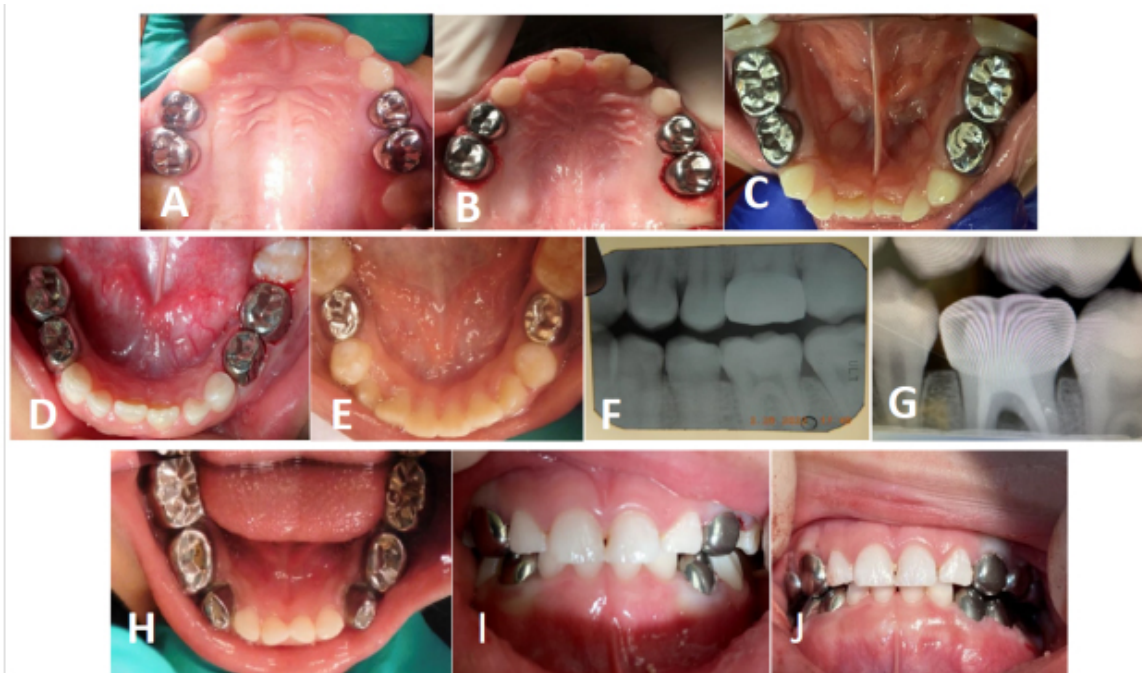


FIGURE 1. Clinical photos and x-rays. (A) Use of a maxillary primary first molar SSC from the same arch when a SSC smaller than a size 2 is needed for a maxillary primary second molar. (B) Subgingival prepping to fit the rounder-shaped maxillary primary first molar SSC on a maxillary primary second molar. (C) Use of a SSC for tooth I to restore tooth S that is small/rhomboid shaped. (D) Use of a number 6 SSC for tooth I when tooth T is small. (E) Use of number 4 SSCs for teeth L and S when teeth K and T are very small. (F) Use of a number 7 primary second molar SSC for tooth J for tooth 14. (G) Use of a number 7 primary second molar SSC for tooth K for tooth 19. (H) Wear-through of taller mandibular canine SSCs on teeth M and R. (I) The posterior occlusion is ideally seated after cementation of the 4 canine SSCs, using the shorter maxillary primary canine SSCs on teeth M and R. (J) The posterior occlusion is ideally seated after cementation of all posterior SSCs secondary to having first cemented all the canine SSCs.

5. Sequence of treatment

Begin by preparing all primary canine teeth that need SSCs. Try on all the canine crowns at one time, make needed preparation adjustments to avoid premature bite-opening contacts and confirm a stable centric relationship. It's advisable to prepare the mesial surface of primary first molars and distal surfaces of lateral incisors if these teeth are scheduled for crowns, saving time and avoiding damaging cemented canine SSCs when preparing adjacent teeth. Cement all primary canines at once, leaving space between adjacent teeth. Check occlusion to ensure a stable centric relation. A Walls #3 carver can be used to position SSCs to obtain necessary interproximal spacing. Photo (Fig. 1I) was taken after the 4 canine SSCs were cemented. The SSCs on teeth M and R are maxillary canine SSCs. Note the posterior occlusion is seated ideally. Once canine SSC cementation is completed, proceed with the remaining rehabilitation. Photo (Fig. 1J) was taken after all posterior quadrants were cemented and before preparing the maxillary anterior SSCs. The posterior occlusion is seated ideally.

6. Conclusion

The technique is fast, efficient and reproducible. It saves time and the frustration of trying to get the bite ideal which the conscientious practitioner strives to achieve. Opening the posterior bite due to premature primary canine contacts in dental rehabilitations is often viewed as unavoidable. An occlusion without premature contacts, with a stable centric occlusion ATPP, is more desirable and may reduce post-treatment "settling in" pain. This method merely changes the treatment sequence. To this author's knowledge, the technique has not been previously described.

AVAILABILITY OF DATA AND MATERIALS

Not applicable.

AUTHOR CONTRIBUTIONS

GMA—wrote the manuscript with assistance and review by PSC.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

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CONFLICT OF INTEREST

The author declares no conflict of interest.

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