

Stainless Steel Crowns in Pediatric Restorative Dentistry: Applications and Advantages

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Dear Editor,

Many children suffer from dental caries as the most common infectious disease (1-3). Consequently, proper dental restoration is one of the most critical issues in pediatric dentistry. Stainless steel crowns (SSCs) are characterized by full crown coverage and increased caries prevention through protecting the entire tooth; they are also more durable than multi-surface amalgam restorations (4). SSCs are prefabricated shells in different sizes, composed of metals such as iron, nickel, and chromium.

Despite major advancements in the development of modalities in pediatric dentistry (such as laser technology) (5), there are certain circumstances which necessitate the application of SSCs. In general, crowns are routinely used for restoring pulp-treated teeth. The concept of full coverage is to eliminate the risk of breaking tooth to buccal and lingual halves due to reduced dentin strength.

Another indication of SSCs is dental treatment under general anesthesia. In dental rehabilitation under general anesthesia, the approach is to restore teeth more with SSCs and less with other dental materials (4). Children with hypophosphatemia, who develop spontaneous dental abscesses, are also among cases requiring SSCs (6). Other indications include heritable dental defects, such as amelogenesis imperfecta, dentinogenesis imperfecta, and environmentally-induced defects such as enamel hypoplasia.

In pediatric dentistry, the strategy is to deliver efficient treatment and simultaneously reduce the time of operation (7). Application of SSCs reduces the time of operation and promotes the child's cooperation. In fact, compared to other restoration methods, SSCs placement is less disturbing for the patient.

Despite various advantages of crowns, microleakage occurs in the marginal area due to the prefabricated entity. In *in vitro* studies, microleakage has been reported with respect to the extent of trace material (eg, dye) penetration in

the interface between the tooth and the material (8). However, this drawback is not critical, compared to various advantages of crowns. In general, restoration cannot jeopardize the treatment and guarantees the life span of primary teeth.

Parental satisfaction plays a fundamental role in dental health care. Esthetically, parents may not consent to a crown-included treatment plan; therefore, dentists can alleviate their concern by explaining the benefits of SSCs. Children also agree with their parents and accept the plan by receiving proper and age-appropriate information from the parents. To mask the metallic appearance of crowns, a modification, called pre-veneered SSC, is available. These crowns have a composite-bonded veneer to produce a more pleasant appearance, although they require more preparation and are more expensive.

The high cost of SSCs is another reason for rejecting this restoration method; in this regard, cost-effectiveness should be taken into account. Accordingly, dentists have to explain that restorations other than SSCs may result in good outcomes for only one-surface or two-surface restorations. Parents should be also informed that although SSCs are more expensive compared to other restorations, treatment is certainly worth the cost.

Studies have measured post-treatment pain following dental treatments (9). In fact, immediate post-treatment pain and discomfort are inevitable consequences of SSCs. It has been revealed that SSCs cause significantly more discomfort than extraction in patients (10). Nevertheless, post-operative pain can be well controlled by pain killers.

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