

Pediatric dentistry stainless steel crowns

Lecture 8

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STAINLESS STEEL CROWNS

Primary incisors or canines that have **extensive proximal lesions** involving the incisal portion of the tooth may be **restored** with stainless steel crowns.

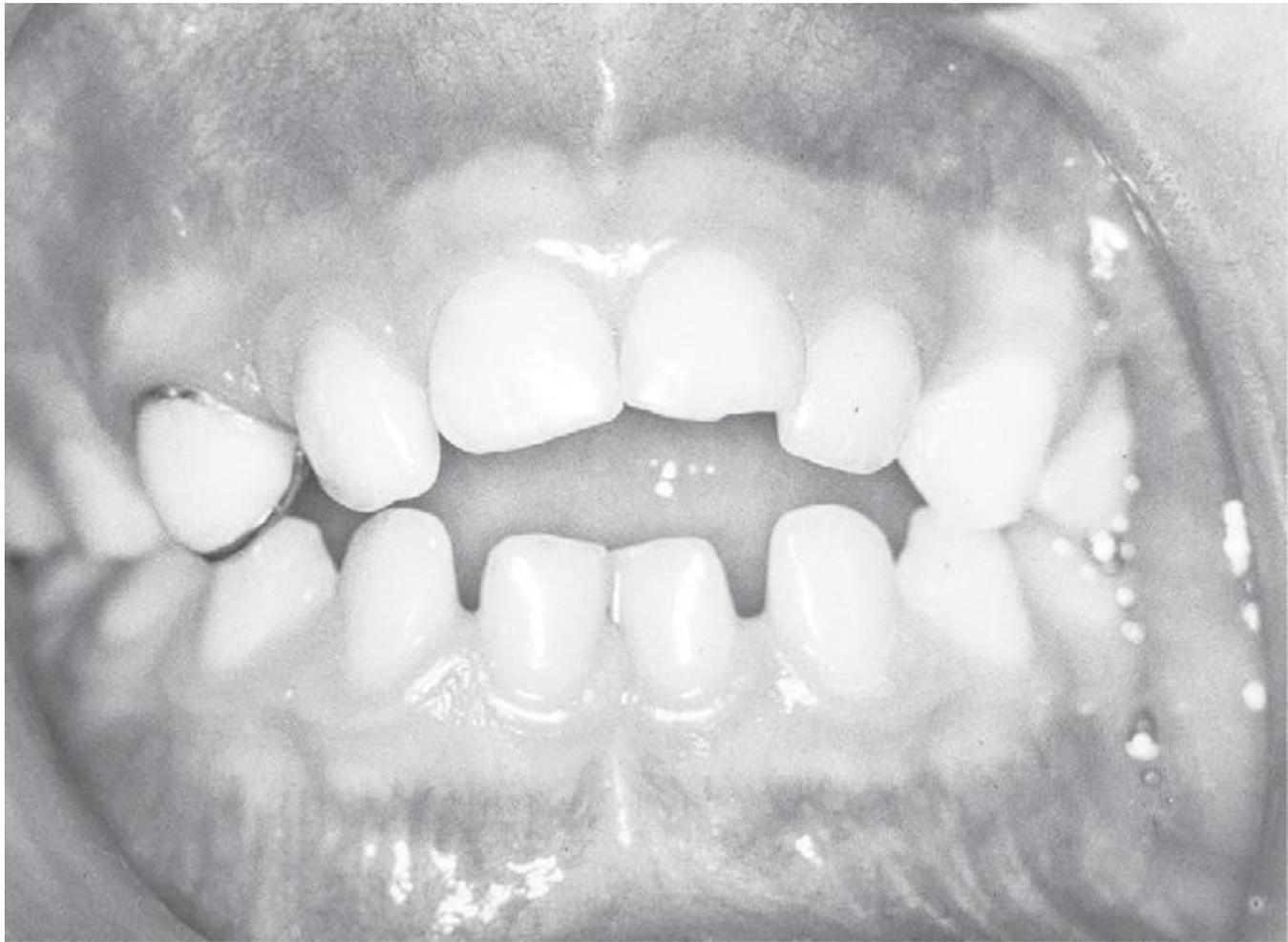
A steel crown of appropriate size is **selected**, **contoured** at the cervical margin, **polished**, and **cemented** into place. Although the crown will be well retained even on teeth that require removal of extensive portions of carious tooth structure, the **esthetic** requirements of some children may **not be met** by this type of restoration.



Most of the labial metal may be cut away, leaving a labial “window” that is then restored with composite resin. This restoration is called an open-face stainless steel crown.







Several brands of stainless steel crowns with **esthetic facings** pre-veneered to the labial surfaces are also **available** to **restore** primary **anterior** teeth.







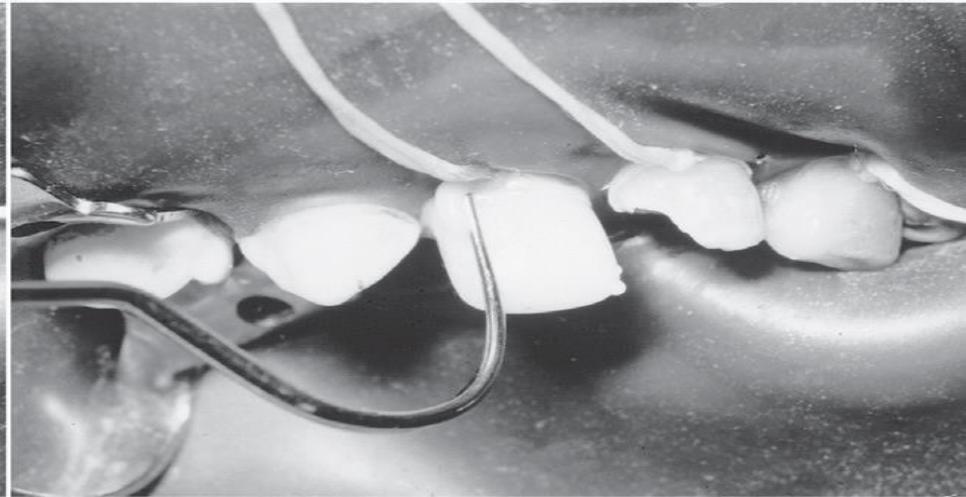
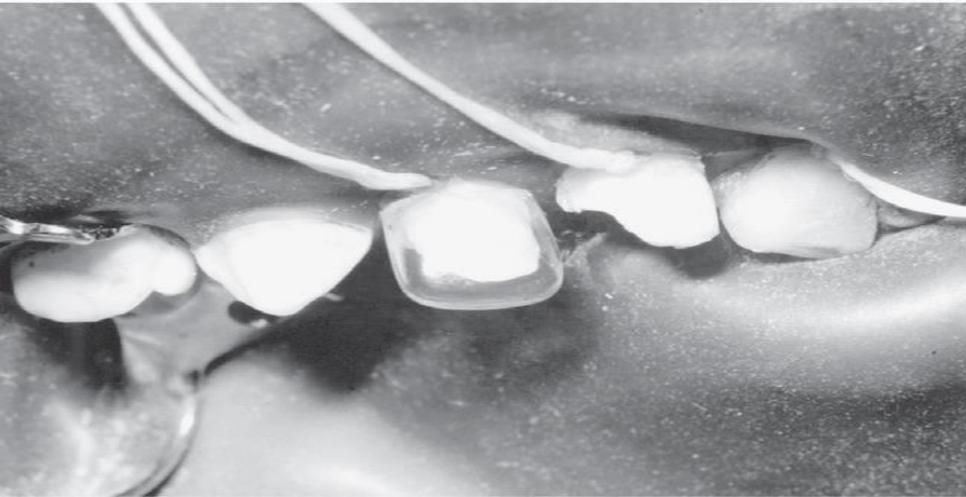
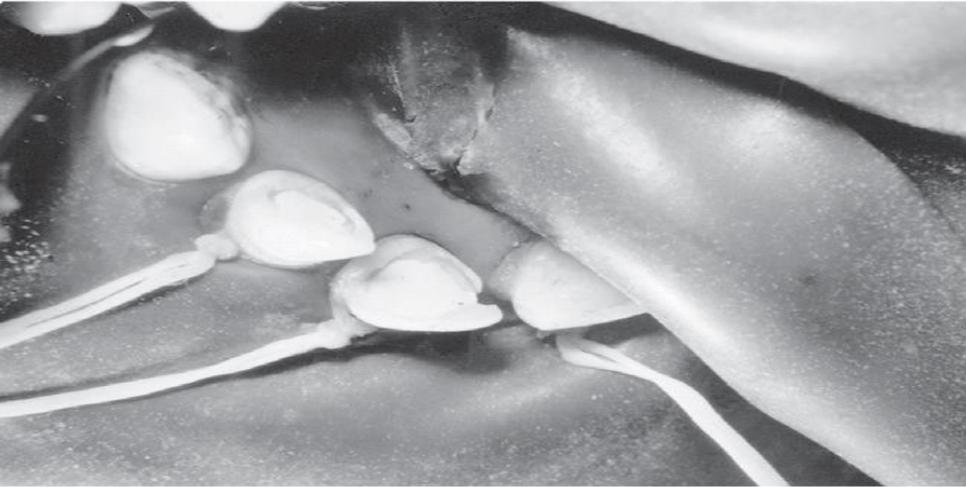
DIRECT RESIN CROWNS

the resin crown technique wherein the tooth is restored with composite resin using a **celluloid crown** form as a matrix. They point out that very **little finishing** of the restoration is required when the celluloid crown has been properly fitted.



Celluloid crown forms are also **available** for **primary posterior teeth**. These crown forms are useful matrices for some posterior bonded restorations. A good example of an indication for using such a crown form is to provide a bonded **crown buildup** to temporarily **reestablish** arch **integrity** and **occlusion** of an **ankylosed** (submerged) primary molar.







INTERIM RESTORATION FOR HYPOPLASTIC PERMANENT MOLARS

The dentist who routinely treats children occasionally faces a **difficult restorative problem** when severely **hypoplastic** first permanent molars erupt. Often the teeth are so defective that they **require restoration** at a very **early** stage of **eruption**.



Many of these teeth have been **saved** by early restoration with stainless steel crowns as an interim procedure. However, this **procedure** may require **sacrificing** sound tooth surfaces to provide adequate space for the crown. Such full-coverage restorations are sometimes difficult to fit.



The **composite** materials have proved to be a more **satisfactory interim** restoration for many of these teeth. Such a bonded composite buildup restoration allows **preservation** of all **sound** tooth structure and **depends** on the presence of some **enamel** surfaces to provide bonded **retention** for the restorative material. Any soft defective areas are excavated, but little or no additional tooth preparation is done. Usually even undermined enamel surfaces are preserved for additional retention and support of the restorative material.

In some cases **gingivoplasty** around the erupting tooth may first be necessary to allow **adequate access** to and **isolation** of the defective areas.

Some of the **newer** restorative materials on the glass ionomer- composite resin continuum may provide an even **better** interim restoration for **hypoplastic** teeth **because of** their ability to release fluoride and to bond to hypoplastic enamel.



STAINLESS STEEL CROWNS FOR POSTERIOR TEETH

Chrome steel crowns, as introduced by Humphrey in 1950, have proved to be serviceable restorations for children and adolescents and are now commonly called stainless steel crowns. There are a number of indications for the use of stainless steel crowns in pediatric dentistry, including the following:



1. Restorations for primary or young permanent teeth with extensive and/or multiple carious lesions.
 2. Restorations for hypoplastic primary or permanent teeth that cannot be adequately restored with bonded restorations.
 3. Restorations for teeth with hereditary anomalies, such as dentinogenesis imperfecta or amelogenesis imperfecta,
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4. Restorations for pulpotomized or pulpectomized primary or young permanent teeth when there is increased danger of fracture of the remaining coronal tooth structure

5. Restorations for fractured teeth

6. Restorations for primary teeth to be used as abutments for appliances

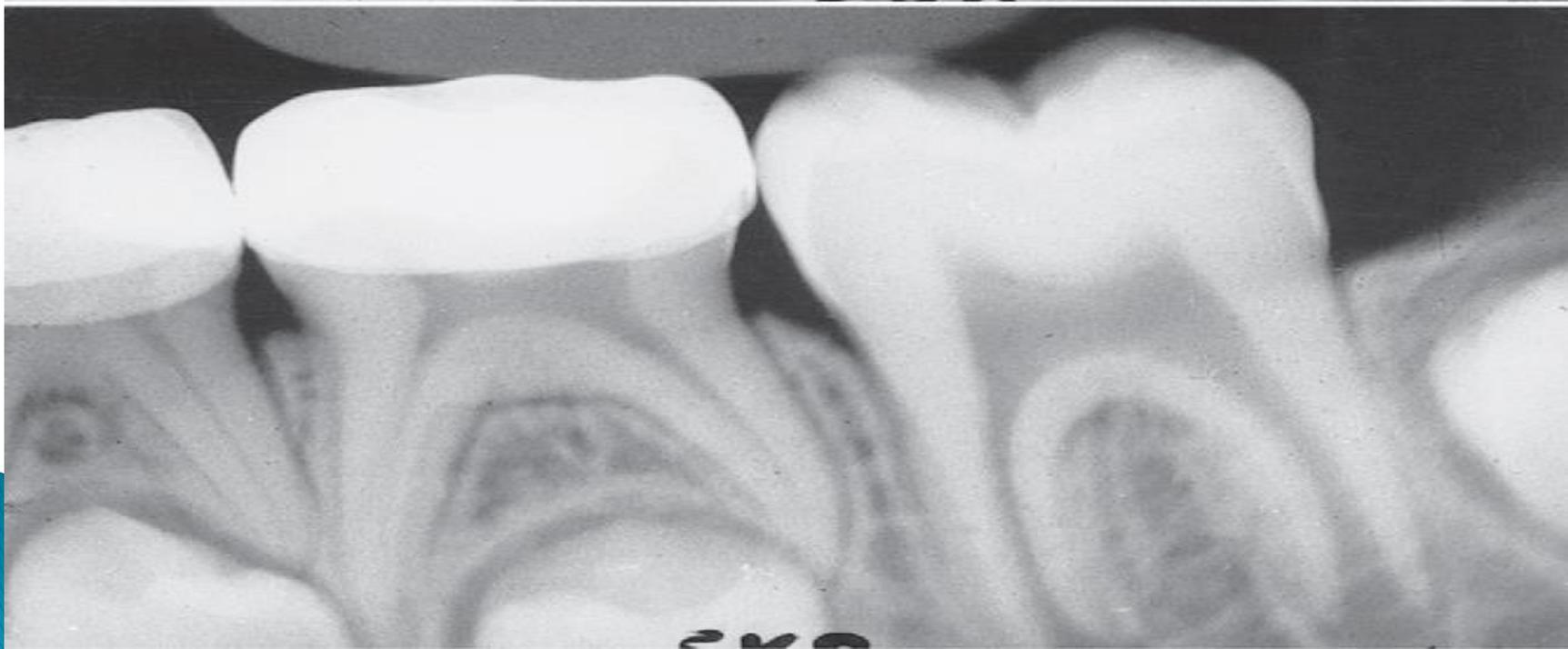
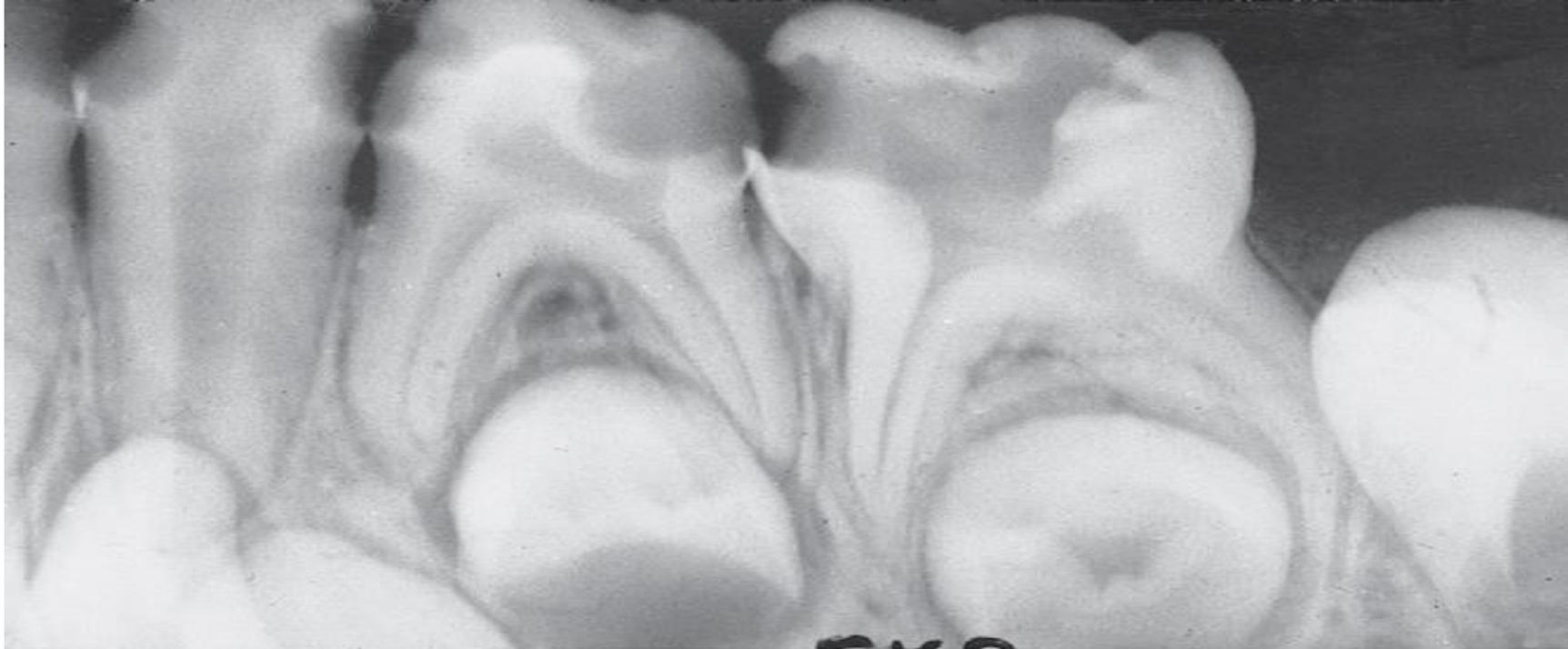
7. Attachments for habit-breaking and orthodontic appliances

The stainless steel crown (SSC) is an extremely durable restoration...Children with extensive decay, large lesions or multiple surface lesions in primary molars should be treated with stainless steel crowns.



Because of the **protection** from future **decay** provided by their feature of full coverage and their **increased durability** and **longevity**, **strong consideration** should be given to the use of SSCs in **children** who require **general anesthesia**. Finally, a strong argument for the use of the SSC restoration is its cost effectiveness based on its durability and longevity.





PREPARATION OF THE TOOTH

A local anesthetic should be administered and a rubber dam placed as for other restorative procedures. The proximal surfaces reduced. Care must be taken not to damage adjacent tooth surfaces during the proximal reductions. A **wooden wedge** may be placed tightly between the surface being reduced and the adjacent surface to provide a slight separation between the teeth for better access.



The cusps and the occlusal portion of the tooth may then be reduced. The general contour of the occlusal surface is followed, and approximately 1 mm of clearance with the opposing teeth is required.

It is usually **not necessary** to **reduce** the **buccal** or **lingual** surfaces; in fact, it is desirable to have an undercut on these surfaces to **aid** in the **retention** of the contoured crown. In some cases, however, it may be necessary to reduce the distinct **buccal bulge**, particularly on the first primary molar.

SELECTION OF CROWN SIZE

The smallest crown that completely covers the preparation should be chosen. There are **two important** principles that will help consistently to produce well-adapted stainless steel crowns. **First**, the operator must establish the correct **occlusogingival** crown **length**; and **second**, the crown **margins** should be shaped circumferentially to **follow** the natural contours of the tooth's marginal gingivae.



CONTOURING OF THE CROWN

crown-contouring pliers with a ball-and-socket design is used at the cervical third (if loosely fitting, start at the middle third) of the buccal and lingual surfaces to help adapt the margins of the crown to the cervical portion of the tooth. The handles of the pliers are tipped toward the center of the crown, so that the metal is stretched and curled inward as the crown is moved toward the pliers from the opposite side.

The crown should be replaced on the preparation after the contouring procedure to see that it snaps securely into place. The **occlusion** should be **checked** at this stage to make sure that the crown is **not opening** the bite or causing a **shifting** of the **mandible** into an undesirable relationship with the opposing teeth.



The **final** step before cementation is to produce a **beveled gingival margin** that may be **polished** and that will be well tolerated by the gingival tissue. A rubber abrasive wheel can be used to produce the smooth margin.



If the dentist encounters a **tooth** that is **too large** for the largest crown, a similar technique may be helpful. The crown may be **cut** on the buccal or lingual surface. After the crown has been adapted to the prepared tooth, an **additional piece** of stainless steel band material may be welded into place. A small amount of solder should be added to the outer surface of the margins. The crown may then be contoured in the usual manner, polished, and cemented into place.

ALTERNATIVE RESTORATIVE TREATMENT

Alternative or atraumatic restorative treatment, or ART, has become a popular descriptive term to describe a conservative method of managing both small and large carious lesions when treating the disease by more traditional restorative procedures is impossible or impractical for many reasons, including lack of access to traditional dental settings.

This method may **prevent** pain and **preserve** teeth in individuals who do not have access to regular and conventional oral health care. ART may be performed with **only hand instruments** when no other dental equipment is available, but it may be useful sometimes in the conventional dental setting as well.



ART does not require the complete excavation of dentinal caries before placement of the restorative material.

Because circumstances do not allow for follow-up care, ART **mistakenly** has been interpreted as a **definitive** restoration.





**THANK
YOU!**