

Clinical Guideline on Pediatric Restorative Dentistry

Originating Committee

Clinical Affairs Committee – Restorative Dentistry Subcommittee

Review Council

Council on Clinical Affairs

Adopted

1991

Revised

1998, 2001

Purpose

The objectives of restorative treatment are to prevent or limit the damage from dental caries, protect and preserve the remaining tooth structure, re-establish adequate function, restore esthetics (where applicable), and provide ease in maintaining good oral hygiene. Pulp vitality should be maintained whenever possible.

Background

Restorative treatment shall be based upon the results of an appropriate clinical examination and ideally be part of a comprehensive treatment plan. The treatment plan shall take into consideration:

1. the developmental status of the dentition;
2. a caries-risk assessment based upon the caries history of the patient;
3. the patient's oral hygiene;
4. anticipated parental compliance and likelihood of timely recall;
5. the patient's ability to cooperate for treatment.

The restorative treatment plan must be prepared in conjunction with an individually tailored preventive program.

Restoration of primary teeth differs significantly from restoration of permanent teeth, due in part to the differences in tooth morphology. The mesiodistal diameter of the crown of a primary molar is greater than the cervico-occlusal dimension; the buccal and lingual surfaces converge toward the occlusal; the enamel cap is thinner and is more consistent (about 1 mm throughout); and the cervical enamel rods slope occlusally, end abruptly at the cervix instead of being oriented gingivally, and gradually becoming thinner as in permanent teeth. The pulp chambers of primary teeth are proportionately larger and are closer to the surface. Contact areas of primary teeth are broad and flattened rather than being a small distinct circular contact point as in permanent teeth. Shorter clinical crown heights of primary teeth also affect the ability of these teeth to adequately support and retain intracoronal restorations.

Young permanent teeth also exhibit characteristics which need to be considered in restorative procedures, such as large pulp chambers and contact areas that are proximal to primary teeth.

The restoration of teeth should include the removal of caries or improperly developed tooth structure to establish appropriate outline, resistance, retention, and convenience form compatible with the restorative material to be utilized. Dentin conditioning and bonding should be performed appropriately for the restorative technique. Rubber-dam isolation should be utilized when possible during the preparation and placement of restorative materials.

Recommendations

Pit and fissure sealants^{1,2}

Sealants can play a significant role in the prevention and control of caries in pits and fissures of primary and permanent teeth. To help protect caries-susceptible tooth surfaces, sealants should be placed as soon as possible after the tooth erupts and proper isolation to prevent moisture contamination can be achieved.

Indications: Sealants are indicated for noncarious primary molars, permanent molars, premolars, and anterior teeth with deep pits and/or fissures.

Preventive resin restoration^{3,4}

Preventive resin restorations may require minimal tooth preparation of deep pits and fissures. The prepared area is restored with composite resin prior to the application of the sealant material.

Indications: Deep pits and fissures with incipient caries and/or developmental defects in primary and permanent teeth are indications for preventive resins.

Composite resin and glass ionomer restorations⁵⁻¹¹

Composite and glass ionomer restorations for primary and permanent teeth involve the preparation of the tooth by removal of carious tooth structure. These restorations do not require extensive removal of noncarious tooth structure to establish appropriate retention form and are more esthetic for anterior and posterior tooth restoration.

Indications: Composite resin or glass ionomer is indicated for the restoration of primary and permanent teeth with caries or developmental or acquired defects.

Alternative restorative treatment^{12,13}

Alternative restorative treatment (ART) is a technique used to restore defective or carious teeth with minimal cavity preparation utilizing slow speed and/or hand instrumentation, followed by placement of a fluoride-releasing material such as glass ionomer. The procedure usually is done without local anesthesia.

Indications: ART may be indicated to restore and prevent dental caries in young patients, uncooperative patients, patients with special needs, and in situations where traditional cavity preparation and placement of traditional dental restorations is not feasible.

Amalgam restorations¹⁴⁻¹⁸

Amalgam restorations consist of an alloy of metals condensed into a cavity preparation to restore the tooth to appropriate form and function.

Indications: Amalgam is indicated for the restoration of carious lesions and/or developmental defects in primary and permanent teeth.

Stainless steel crown restoration¹⁹⁻²²

Stainless steel crowns are prefabricated crown forms that are adapted to individual teeth and cemented with a biocompatible luting agent.

Indications: Stainless steel crown restorations may be indicated for the restoration of primary and permanent teeth with caries, cervical decalcification, and/or developmental defects, such as hypoplasia and hypocalcification, when failure of other available restorative materials is likely (eg, interproximal caries extending beyond line angles or patients with bruxism), following pulpotomy or pulpectomy, for restoring a primary tooth that is to be used as an abutment for a space maintainer, or for the intermediate restoration of fractured teeth.

Labial resin or porcelain veneer restoration²³

A resin or porcelain veneer restoration is a thin layer of restorative material bonded over the facial or buccal surface of a tooth. Veneer restorations are considered conservative in that minimal, if any, tooth preparation is required. Porcelain veneers usually are placed on permanent teeth.

Indications: Veneers may be indicated for the restoration of anterior teeth with fractures, developmental defects, intrinsic discoloration, and/or other esthetic conditions.

Full-cast or porcelain-fused-to-metal crown preparation²⁴⁻²⁷

A cast or porcelain-fused-to-metal crown is a fixed restoration that employs metal formed to a desired anatomic shape or a metal substructure onto which a ceramic porcelain veneer is fused. The crown is cemented with a biocompatible luting cement.

Indications: Full-cast metal crowns or porcelain-fused-to-metal crown restorations may be utilized for teeth having developmental defects, extensive carious or traumatic loss

of structure, endodontic treatment as an abutment for fixed prostheses, or for restoration of single tooth implants.

Fixed prosthetic restorations for missing teeth²⁸⁻³⁰

A fixed prosthetic restoration replaces 1 or more missing teeth in the primary, transitional, or permanent dentition. This restoration attaches to natural teeth, tooth roots, or implants and is not removable by the patient.

Indications: Fixed prosthetic restorations to replace 1 or more missing teeth may be indicated for establishing esthetics, to maintain arch space or integrity in the developing dentition, to prevent or correct harmful habits and/or speech abnormalities, or to improve function.

Removable prosthetic appliances³¹⁻³³

A removable prosthetic appliance is indicated for the replacement of 1 or more teeth in the dental arch to restore masticatory efficiency, prevent or correct harmful habits or speech abnormalities, maintain arch space in the developing dentition, or obturate congenital or acquired defects of the orofacial structures.

Indications: Removable prosthetic appliances may be indicated in the primary, mixed, or permanent dentition when teeth are missing. Removable prosthetic appliances may be utilized to maintain space, obturate congenital or acquired defects, establish esthetics or occlusal function, or facilitate speech development or feeding in infants.

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