

Policy on Interim Therapeutic Restorations (ITR)

Latest Revision

2022

Purpose

The American Academy of Pediatric Dentistry (AAPD) recognizes that unique clinical circumstances can result in challenges in restorative care for infants, children, adolescents, and persons with special health care needs. When circumstances do not permit traditional cavity preparation and/or placement of traditional dental restorations or when caries control is necessary prior to placement of definitive restorations, interim therapeutic restorations (ITR)¹ may be beneficial and are best utilized as part of comprehensive care in the dental home^{2,3}. This policy will differentiate ITR from atraumatic/alternative restorative techniques (ART)⁴ and describe the circumstances for its use.

Methods

This policy was developed by the Council on Clinical Affairs, adopted in 2001⁵, and revised in 2017⁶. This update is based upon electronic database and hand searches of medical and dental literature using PubMed®/MEDLINE and the terms: dental caries, cavity, primary teeth, deciduous teeth, atraumatic restorative treatment, interim therapeutic restoration, AND glass ionomer; fields: all; limits: within the last 10 years, humans, English, birth through age 18. Two hundred ninety-one articles met these criteria. Articles were screened by viewing titles and abstracts. Articles were chosen for review from these searches and from the references within selected articles. Additionally, websites for the AAPD and the American Dental Association were reviewed. Expert and/or consensus opinion by experienced researchers and clinicians was also considered.

Background

ART has been endorsed by the World Health Organization as a means of restoring and preventing caries in populations with little access to traditional dental care.^{4,7,8} In many countries, practitioners provide treatment in nontraditional settings that restrict restorative care to placement of provisional restorations. Because circumstances do not allow for follow-up care, ART mistakenly has been interpreted as a definitive restoration. ITR utilizes similar techniques but has different therapeutic goals. Interim therapeutic restoration more accurately describes the procedure used in contemporary dental practice in the United States.

ITR may be used to restore, arrest, or prevent the progression of caries lesions in young patients, uncooperative patients, or patients with special health care needs or when

How to Cite: American Academy of Pediatric Dentistry. Policy on interim therapeutic restorations (ITR). The Reference Manual of Pediatric Dentistry. Chicago, Ill.: American Academy of Pediatric Dentistry; 2023:106-7.

traditional cavity preparation and/or placement of traditional dental restorations are not feasible and need to be postponed.⁹⁻¹¹ Additionally, ITR may serve useful for stepwise excavation in children with multiple open caries lesions prior to definitive restoration of the teeth, in erupting molars when isolation conditions are not optimal for a definitive restoration, or for caries control in patients with active lesions prior to treatment performed under general anesthesia.¹²⁻¹⁴ ITR may be beneficial for patients who require additional acclimatization or increased cooperation to complete definitive restorative treatment.¹⁵ The use of ITR has been shown to reduce the levels of cariogenic oral bacteria (e.g., Mutans streptococci, lactobacilli) in the oral cavity immediately following its placement.¹⁶⁻¹⁸ However, this level may return to pretreatment counts over a period of six months after ITR placement if no other treatment is provided.¹⁷ ITR also may help reduce the risk of decay in teeth adjacent to the interim restoration.¹⁹ This technique serves as a viable tool when circumstances (e.g., coronavirus disease 2019 [COVID-19] pandemic) call for minimizing the generation of aerosols during restorative care.^{20,21}

The ITR procedure involves removal of caries using hand or rotary instruments with caution not to expose the pulp. Leakage of the restoration can be minimized with maximum caries removal from the periphery of the lesion. Following preparation, the tooth is restored with an adhesive restorative material such as glass ionomer or resin-modified glass ionomer cement.²² ITR has the greatest success when applied to single surface or small two surface restorations.^{14,23,24} Inadequate cavity preparation with subsequent lack of retention and insufficient bulk can lead to failure.^{24,25} Follow-up care with topical fluorides and oral hygiene instruction may improve the treatment outcome in high caries-risk dental populations, especially when glass ionomers (which have fluoride releasing and recharging properties) are used.²⁶⁻²⁸

Policy statement

The AAPD recognizes ITR as a beneficial provisional technique in contemporary pediatric restorative dentistry. The AAPD supports the use of ITR to restore and prevent the

ABBREVIATIONS

AAPD: American Academy of Pediatric Dentistry. **ART:** Atraumatic/alternative restorative techniques. **ITR:** Interim therapeutic restorations.

progression of dental caries in young patients, uncooperative patients, patients with special health care needs, and situations in which traditional cavity preparation or placement of traditional dental restorations is not feasible. Furthermore, ITR may be used for caries control in children with multiple caries lesions prior to definitive restoration of the teeth.

References

- American Academy of Pediatric Dentistry. Pediatric restorative dentistry. The Reference Manual of Pediatric Dentistry. Chicago, Ill.: American Academy of Pediatric Dentistry; 2022:401-14.
- Nowak AJ, Casamassimo PS. The dental home. J Am Dent Assoc 2002;133(1):93-8.
- American Academy of Pediatric Dentistry. Policy on the dental home. The Reference Manual of Pediatric Dentistry. Chicago, Ill.: American Academy of Pediatric Dentistry; 2022:21-2.
- Frencken J, Pilot T, van Amerongen E, Phantumvanit P, Songpaisan Y. Manual for the Atraumatic Restorative Treatment Approach to Control Dental Caries. WHO Collaboration. Centre for Oral Health Services Research. Groningen, The Netherlands; 1997. Available at: "http://vida.gt/clinica/doctores/wp-content/uploads/sites/2/2014/07/ART_Manual_English.pdf". Accessed January 18, 2022.
- American Academy of Pediatric Dentistry. Policy on alternative restorative treatment. Pediatr Dent 2001;23(suppl):13.
- American Academy of Pediatric Dentistry. Policy on interim therapeutic restorations (ITR). Pediatr Dent 2017; 39(6):57-8.
- World Health Organization. WHO Expert Consultation on Public Health Intervention against Early Childhood Caries: Report of a Meeting, Bangkok, Thailand, 26-28 January 2016. Geneva: World Health Organization; 2017. (WHO/NMH/PND/17.1). Licence: CC BY-NC-SA 3.0 IGO. Available at: "<https://www.who.int/publications/i/item/who-expert-consultation-on-public-health-intervention-against-early-childhood-caries>". Accessed August 1, 2022.
- Frencken JE. The ART approach using glass-ionomers in relation to global oral health care. Dent Mater 2010;26(1):1-6.
- Deery C. Atraumatic restorative techniques could reduce discomfort in children receiving dental treatment. Evid Based Dent 2005;6:9.
- Gryst ME, Mount GJ. The use of glass ionomer in special needs patients. Aust Dent J 1999;44(4):268-74.
- Canares G, Hsu KL, Dhar V, Katechia, B. Evidence-based care pathways for management of early childhood caries. Gen Dent 2018;66(6):24-8.
- Vij R, Coll JA, Shelton P, Farooq NS. Caries control and other variables associated with success of primary molar vital pulp therapy. Pediatr Dent 2004;26(3):214-20.
- Antonson SA, Antonson DE, Brener S, et al. Twenty-four month clinical evaluation of fissure sealants on partially erupted permanent first molars: Glass ionomer versus resin-based sealant. J Am Dent Assoc 2012;143(2):115-22.
- de Amorim RG, Frencken JE, Raggio DP, Chen X, Hu X, Leal SC. Survival percentages of atraumatic restorative treatment (ART) restorations and sealants in posterior teeth: An updated systematic review and meta-analysis. Clin Oral Investig 2018;22(8):2703-25.
- Lim SN, Kiang L, Manohara R, et al. Interim therapeutic restoration approach versus treatment under general anaesthesia approach. Int J Paediatr Dent 2017;27(6):551-7.
- Bönecker M, Toi C, Cleaton-Jones P. Mutans streptococci and lactobacilli in carious dentine before and after Atraumatic Restorative Treatment. J Dent 2003;31(6):423-8.
- Roshan NM, Shigli AL, Deshpande SD. Microbiological evaluation of salivary *Streptococcus mutans* from children of age 5-7 years, pre- and post-atraumatic restorative treatment. Contemp Clin Dent 2010;1(2):94-7.
- Wambier DS, dos Santos FA, Guedes-Pinto AC, Jaeger RG, Simionato MRL. Ultrastructural and microbiological analysis of the dentin layers affected by caries lesions in primary molars treated by minimal intervention. Pediatr Dent 2007;29(3):228-34.
- Ruff RR, Niederman R. Comparative effectiveness of school-based caries prevention: A prospective cohort study. BMC Oral Health 2018;18(1):53-9.
- Al-Halabi M, Salami A, Alnuaimi E, Kowash M, Hussein I. Assessment of paediatric dental guidelines and caries management alternatives in the post COVID-19 period. A critical review and clinical recommendations. Eur Arch Paediatr Dent 2020;21(5):543-56.
- Yang F, Yu L, Qin D, Hua F, Song G. Online consultation and emergency management in paediatric dentistry during the COVID-19 epidemic in Wuhan: A retrospective study. Int J Paediatr Dent 2021;31(1):5-11.
- Yip HK, Smales RJ, Ngo HC, Tay FR, Chu F. Selection of restorative materials for the atraumatic restorative treatment (ART) approach: A review. Spec Care Dent 2001;21(6):216-21.
- Mandari GJ, Frencken JE, van't Hof MA. Six-year success rates of occlusal amalgam and glass-ionomer restorations placed using three minimal intervention approaches. Caries Res 2003;37(4):246-53.
- da Franca C, Colares V, Van Amerongen E. Two-year evaluation of the atraumatic restorative treatment approach in primary molars class I and II restorations. Int J Paediatr Dent 2011;21(4):249-53.
- van Gemert-Schriks MCM, van Amerongen WE, ten Cate JM, Aartman IHA. Three-year survival of single- and two-surface ART restorations in a high-caries child population. Clin Oral Investig 2007;11(4):337-43.
- Tam LE, Chan GP, Yim D. In vitro caries inhibition effects by conventional and resin-modified glass-ionomer restorations. Oper Dent 1997;22(1):4-14.
- Scherer W, Lippman N, Kaim J, LoPresti J. Antimicrobial properties of VLC liners. J Esthet Dent 1990;2(2):31-2.
- Tyas MJ. Cariostatic effect of glass ionomer cements: A five-year clinical study. Aust Dent J 1991;36(3):236-9.