

Policy on Interim Therapeutic Restorations (ITR)

Review Council

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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 and adopted in 2001. This document is a revision of the previous version, revised in 2013. This updated policy is based upon electronic database and hand searches of medical and dental literature using 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. 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.⁴⁻⁶ In many countries, practitioners provide treatment in non-traditional 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 carious lesions in young patients, uncooperative patients, or patients with special health care needs or when traditional cavity preparation and/or placement of traditional

dental restorations are not feasible and need to be postponed.^{7,8} Additionally, ITR may be used for step-wise excavation in children with multiple open carious 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.^{9,10} 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.¹¹⁻¹³ However, this level may return to pretreatment counts over a period of six months after ITR placement if no other treatment is provided.¹²

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.¹⁴ ITR has the greatest success when applied to single surface or small two surface restorations.^{15,16} Inadequate cavity preparation with subsequent lack of retention and insufficient bulk can lead to failure.^{16,17} 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.¹⁸⁻²⁰

Policy statement

The AAPD recognizes ITR as a beneficial provisional technique in contemporary pediatric restorative dentistry. ITR may be used to restore and prevent the progression of dental caries in young patients, uncooperative patients, patients with special health care needs, and situations in which traditional cavity preparation and/or placement of traditional dental restorations are not feasible. ITR may be used for caries control in children with multiple carious lesions prior to definitive restoration of the teeth.

ABBREVIATIONS

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

References

1. American Academy of Pediatric Dentistry. Pediatric restorative dentistry. *Pediatr Dent* 2017;39(6):312-24.
2. Nowak AJ, Casamassimo PS. The dental home. *J Am Dent Assoc* 2002;133(1):93-8.
3. American Academy of Pediatric Dentistry. Policy on the dental home. *Pediatr Dent* 2017;39(6):29-30.
4. 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: "https://www.researchgate.net/profile/Yupin_Songpaisan/publication/228553340_Manual_for_the_Atraumatic_Restaurative_Treatment_approach_to_control_dental_caries/links/02e7e51f0ef4f102d1000000.pdf". Accessed November 6, 2016. (Archived by WebCite® at: "<http://www.webcitation.org/6owJnTvED>")
5. World Health Organization. Atraumatic Restorative Treatment. Available at: "http://new.paho.org/hq/index.php?option=com_content&view=article&id=7411&Itemid=39633&lang=en". Accessed November 6, 2016. (Archived by WebCite® at: "<http://www.webcitation.org/6owJ9ZsBN>")
6. Frencken JE. The ART approach using glass-ionomers in relation to global oral health care. *Dent Mater* 2010;26(1):1-6.
7. Deery C. Atraumatic restorative techniques could reduce discomfort in children receiving dental treatment. *Evid Based Dent* 2005;6:9.
8. Gryst ME, Mount GJ. The use of glass ionomer in special needs patients. *Aust Dent J* 1999;44(4):268-74.
9. 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.
10. 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.
11. 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.
12. 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.
13. Wambier DS, dosSantos 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.
14. 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):216-221.
15. 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.
16. 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.
17. 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.
18. 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.
19. Scherer W, Lippman N, Kaim J, LoPresti J. Antimicrobial properties of VLC liners. *J Esthet Dent* 1990;2(2):31-2.
20. Tyas MJ. Cariostatic effect of glass ionomer cements: A five-year clinical study. *Aust Dent J* 1991;36(3):236-9.