A minimally invasive restorative approach for treatment of interproximal root caries lesions

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As the population ages, an increased prevalence of gingival recessions and root surfaces exposed to the oral environment has been reported. This in turn causes an increased risk for caries; it is estimated that the incidence of root caries in those older than 65 years of age is 23.7%. Published data support the use of glass ionomer as a restorative material that seems particularly suitable for restoring root lesions; the material has good esthetic and anticariogenic properties and has gained wide acceptance among practitioners. A minimally invasive approach for restoring interproximal root caries lesions with glass ionomer is described. (Quintessence Int 2011;42:611–614)

As adults keep their teeth longer than ever before, there is an increase of the prevalence of gingival recessions caused by normal aging as well as an increased number of root surfaces exposed to the oral environment. It has been reported that the proportion of US population aged 65 years and older is projected to increase from 12.5% in 2000 to 20.1% in 2030.1 It is estimated that the incidence of root caries in those older than 65 is 23.7%.1

Furthermore, there is evidence that older people experience caries at a rate at least as great as adolescents and may be considered even more at risk than children and young adults since root surface caries are prevalent in this age group as opposed to those 20 years old or younger.2

Root caries can occur on the buccal or palatal aspects of teeth or on the interproximal aspects. This latter subcategory is particularly challenging as conventional treatment approaches demand extensive tooth substance removal and the cavity margins are placed on dentin. Usually, the apical position of the lesion and its relationship with the soft tissue make moisture control and restoration material difficult.

A minimally invasive restorative treatment approach for interproximal root lesions using amalgam as a restorative material has been suggested.3 Published data support the use of glass ionomer as a restorative material since it seems particularly suitable for this type of restoration. It has been shown that glass ionomer has longer survival rates in low stress areas such as Class V restorations,4,5 has anticariogenic effects5–7 and esthetic advantages4 compared to amalgam, and has gained acceptance with the practitioners, having shown clinically acceptable results.1,5

Minimally invasive restorations made with glass ionomer in the permanent dentition in Class V situations showed equal or better longevity compared to amalgam for up to 6.3 years.8 It seems, however, that restoration success is related mainly to additional factors such as caries removal, moisture control, cavity conditioning, material mix, and material insertion.5

This article will describe a step-by-step approach for obtaining a predictable glass-amalgam restoration using a minimally invasive approach for the treatment of interproximal root caries lesions.

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The procedure is a modification of one previously presented by one of the authors (I.G.) for amalgam restorations using a minimally invasive restorative treatment approach. For reasons of clarity, the step-by-step procedure is illustrated on an extracted tooth with a proximal root caries lesion.

1. Prepare a slot preparation with access from the buccal or lingual surface of the tooth, depending on the proximity of the lesion to that surface, and extend the preparation through to the opposing embrasure. Make sure all caries are removed (Figs 1 to 3).

2. Cut an opening 3 mm in diameter in the matrix band (no. 1 Tofflemire, JR Rand, or Automatrix, Dentsply) at the access surface using a tungsten carbide bur (Fg 330, SS White) in a high-speed handpiece. Apply the matrix to the tooth, and make sure there is a tight fit at the cervical margin (Figs 4 and 5a).

**METHOD AND MATERIALS**

The procedure is a modification of one previously presented by one of the authors (I.G.) for amalgam restorations using a minimally invasive restorative treatment approach. For reasons of clarity, the step-by-step procedure is illustrated on an extracted tooth with a proximal root caries lesion.
3. Inject glass ionomer (Fuji IX GP, GC Europe) through the matrix orifice until surplus is evident (Fig 5b).

4. After the matrix is removed, remove excess material, finish, and check radiographic appearance (Figs 6 and 7).

**DISCUSSION**

The literature supports the use of glass ionomer as a viable material for restorations of caries lesions in low stress bearing areas in the permanent dentition. Anticariogenic effects of glass ionomers, coupled with improved physical and clinical properties of the material, suggest that clinicians treating interproximal root lesions with a minimally invasive restorative approach should consider glass ionomer as the material of choice for the restoration.6–7,10,11

Since most of the restoration is expected to be interproximal, clinicians face the challenge of evaluating the outcome immediately after treatment and during recall visits. Obviously, radiographic evaluation will be the method of choice for this type of treatment. In the past, most of the criteria for evaluation involved mainly visual and tactile parameters,12–14 but criteria for evaluating interproximal restorations radiographically have recently been developed.15

**CONCLUSION**

Epidemiologic data suggest that as the population ages, root caries will become more prevalent. Improvement in material properties and implementation of conservative approaches in practice enhance clinicians’ armamentarium for dealing with these lesions. The minimally invasive restorative approach for the treatment of interproximal root caries helps clinicians provide an inexpensive, predictable restoration that can be used even on teeth that otherwise would have a guarded prognosis.
REFERENCES