Aesthetic restorations in the posterior region
A case study demonstrating the adhesive cementation of ceramic onlays

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Over years, much has been said about the benefits and longevity of amalgam restorations. In contrast, direct composites have been stigmatised as inferior materials in the posterior area. With better aesthetics and adhesion to dental tissue, however, composites offer two indisputable advantages over amalgam.

The exact same thing holds true for indirect restorations. For years, it has been argued that indirect restorations made of alloys with a high gold content are the benchmark and that indirect ceramic restorations are inferior in terms of durability. Undoubtedly, this was the case with the first generation of these materials as proven by several studies; however, there have been enormous technological advances in the field of ceramic materials and adhesive cements. For example, ceramics that are more durable and have similar optical characteristics to lithium disilicate (IPS e.max System, Ivoclar Vivadent) have been developed. Resin cements have seen improvement with regard to adhesion to various dental materials, such as various glass-ceramics in combination with silane (Monobond-S, Ivoclar Vivadent) and metal and oxide ceramics in combination with a metal/zirconia primer. The self-etching Multilink N Primer A+B greatly simplifies the cementation process because it does not require the use of phosphoric acid. Simpler handling, universal application and improved resistance make it the most widely indicated cement for the posterior region as demonstrated in the case study below.

Case study
A classic restorative problem that we have to deal with almost every day is what to do after the removal of extensive and longstanding amalgam restorations. The original defect left by the retentive and aggressive preparation necessary for amalgam restorations, combined with the defective margins and caries adjacent to the restorations, means that generally only a minimal amount of useful dental tissue remains (Fig. 1).

During the removal of the amalgam, a rubber dam (Optra-Dam, Ivoclar Vivadent) should be used to allow better visibility and control, as well as to protect the patient from the amalgam powder generated during the procedure (Fig. 2). After removal of the restorations and any remaining caries, immediate dentine sealing was performed and a liquid resin was applied as a liner to fill the retentive areas left from the old restorations (Fig. 3).

This self-curing luting composite with a light-curing option is a universal cement indicated for cementing all types of indirect restorations made of metal, metal ceramic, lithium disilicate and all-ceramic (zirconia and alumina based). It offers excellent adhesion to various dental materials, such as various glass-ceramics in combination with silane (Monobond-S, Ivoclar Vivadent) and metal and oxide ceramics in combination with a metal/zirconia primer. The self-etching Multilink N Primer A+B greatly simplifies the cementation process because it does not require the use of phosphoric acid. Simpler handling, universal application and improved resistance make it the most widely indicated cement for the posterior region as demonstrated in the case study below.
amalgam preparations (Fig. 1). We subsequently took impres-
sions and the laboratory fabricated lithium disilicate ceramic onlays (IPS e.max Press, Figs. 4a–b).

In the next session, once the fit of the restorations had been
checked in the mouth, we per-
formed etching with hydrofluoric
acid for 20 seconds and silanisation
with Monobond-S for 60 seconds
(Figs. 5 & 6). It is important to
note that water is released in the chem-
ical reaction of silanisation and,
given the hydrophobic character-
istics of the luting composite, this
must be fully evaporated. The next
step was to mix Multilink N Primer
A+B and apply it to the preparations
for 15 seconds (Fig. 7).

The onlay was then held close
to the cavity and Multilink N ap-
plied directly onto the onlay. This
step is made easier by the auto-mix
syringe containing the cement,
which allows direct application to
the restoration. It is important to
remember that curing of Multilink
N cement is accelerated on con-
tact with Multilink N Primer
A+B, which was previously mixed and
placed in the cavity (Figs. 8a–c).

The cement was cured for two
seconds to assist the removal of any
excess, while pressure was main-
tained on the onlay (Fig. 9). The
semi-plastic excess cement was
easily removed with a curette an-
dacquette-type sharp instrument
(Figs. 10a–c). Once the excess had
been removed, the restoration
margins were protected against
oxygen with Liquid Strip (Ivoclar
Vivadent). Then final curing was
done (Fig. 11).

Figure 12 shows a view of
the four onlays after cementation.
The ceramic onlays after polish-
ing of the margins can be seen in
Figure 13. The ceramic restora-
tions blended seamlessly with the
natural dentition owing to the
esthetic properties of the cement.
The use of ceramic onlays in the
posterior region is the treatment
of choice in this type of treatment,
in view of the durability they of-
er and the preservation of dental
tissue made possible by adhesive
cementation with materials such
as Multilink N.