SAREMCO
DENTAL

els extra low shrinkage®
Clinical case study by Christoph Pröbstl

The heyday of the health insurance type of amalgam filling treatment is now certainly past; nowadays patients mainly prefer aesthetic and mercury-free restorations. However, amalgam is a reliable and durable filling material provided the correct processing technique is used. For this reason amalgam fillings are found again and again that have reached a virtually "biblical" age as in the following case:

A patient, born in 1965, presented in the practice with slight sensitivity when biting in the region of teeth 14 and 15.

On initial observation the very old fillings were very noticeable, though examination did not indicate any sign of a filling defect or secondary caries. The patient reacted positively to the sensitivity test on teeth 14 and 15, but more intensively with tooth 14.

On closer examination mesial and distal fracture lines were detected with tooth 14 and, based on the discoloration, it was assumed that they had already existed a long time. Individual enamel sections of the mesial wall could be slightly moved with forced probing in the mesial region of tooth 14. This was due to the mercuroscopic expansion of the amalgam fillings, which were now at least 35 years old. Owing to the long period in situ of the filling the expansion pressure of the filling caused a fracture of the mesial wall and the masticatory pressure led to loosening of the enamel sections from the bond of the enamel wall.

In contrast, tooth 15 appeared to be completely intact and had been treated with an MOD filling, though this filling originated from the same time.

After explaining the cause of the problems and treatment options to the patient, the patient decided for filling treatment using composite. One decision criterion for the patient was the cost aspect, as indirect porcelain or gold restorations incur a considerably higher price. Last but not least, the fact that the HEMA and TEGDMA free composite material els extra low shrinkage® is used in our practice was an important argument for the patient to get a composite restoration.

As tooth 14 required a new restoration, the patient also wanted a new, aesthetic filling on tooth 15 at the same time.

After minimally invasive removal of the existing fillings of both teeth and excavation of slight secondary caries in the distal region of tooth 15, the enamel margins were smoothed and clearly defined, proximal shoulders prepared. The shade was also selected at this time. The interfering influences of the amalgam on the shade were eliminated and the shade of the dentine was clearly recognisable. In this case we decided for shade A3.

A rubber dam was placed as filling treatment using composite, if possible, always requires complete isolation. Sectional matrices were placed mesially and distally on tooth 15.

Wooden wedges and separating rings were placed to secure the sectional matrices in position and separate the teeth to achieve a good proximal contact point.

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After checking the correct fit of the sectional matrices, etching was completed as the first working stage using cmf etching gel from Saremco. As total etching was used cmf etching gel was particularly suitable in this case due to its increased pH value. This protected the dentine and enamel. As a result possible problems of postoperative sensitivity were reduced. After rinsing off the etching gel, care was taken to ensure that the cavity was kept slightly moist to prevent collapse of the dentine collagen fibres.

In this condition the cmf primer from Saremco was first massaged into the cavity for 20 seconds and the excess absorbed and removed using a new brush. The big advantage of this approach is that a uniformly thin film of the primer remains on the dentine. This not only avoids the formation of pools but also possible excessive drying of the cavity when air-drying.

cmf primer was subsequently polymerised for 20 seconds and cmf bonder was then applied. The same procedure was used at this stage as with application of the cmf primer. This meant wetting all cavity sections (particularly the margins of the cavity), followed by removal of the excess using a new brush (to achieve a uniform bonder film) and then polymerisation for 20 seconds.

As the cavity was now correctly prepared the mesial and distal sections of the cavity walls could be filled using the new, consistency-optimised els. It was an advantage when filling the sections that the consistency-optimised els does not flow very quickly initially and has a better dimensional stability. Consequently it was easier to build up both proximal walls in one working stage. Care was taken to place the mesial and distal marginal ridge at the same height as the adjacent teeth.

After light curing and reconstruction of the outer tooth contour, the separating rings were removed to facilitate access to the cavity. This made it easier to sculpt the occlusal surface.

At the first stage the central cusp slopes were contoured and cured from the palatal and buccal towards the central fissure. Composite was then applied in the mesial and distal section of the cavity and carefully sculpted to reconstruct the surface of the premolar as anatomically correctly as possible. Saremco brown stain was placed in the central fissure for special effect.

The same procedure was used with tooth 15. After completing the filling of both teeth, they only had to be finished.

Rough excess was removed using finishing diamonds, Soflex discs and special tungsten carbide finishers from Komet (Brasseler). The fillings were polished using rubber polishers, also from Komet, and polished to a high-lustre using occlubrushes from Kerr Hawe.

It was only possible and practical to build up the fillings using only one shade (A3) in this case, as the patient’s teeth had a certain opacity in the enamel.

No enamel layer was required during build-up using a transparent shade such as incisal amber.

In this way an inconspicuous and therefore aesthetic filling was produced, which was to the satisfaction of both the patient and dentist.

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Photographic series of the clinical case study using els extra low shrinkage®

Initial situation
35-year-old insufficient amalgam restorations teeth 14, 15

Preparation
Excavation and finishing preparation margins, rubber dam

Etching using cmf etch
Prepared cavity with sectional matrices and separating rings, total etching

Build-up using els extra low shrinkage®
Reconstruction in several layers (els consistency-optimised) shade A3

Finished build-up

Finished build-up before finishing. Fissures with SAREMCO paintart brown

Final result

Anatomically correctly contoured filling after finishing and polishing

Clinical case including photographs by Christoph Pröbstl, Wurmlingen bei Tuttlingen (D), March 2014

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