

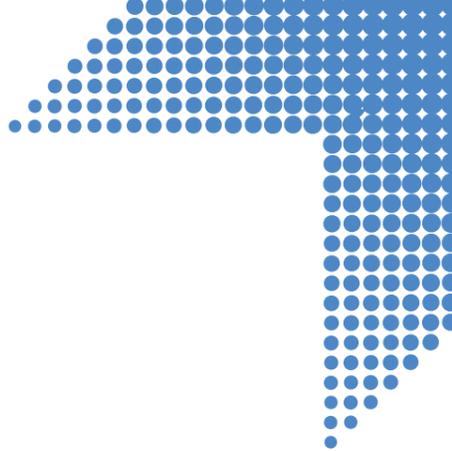


# Ecosite Elements

## Case Reports

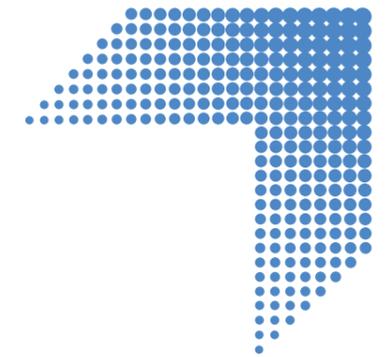
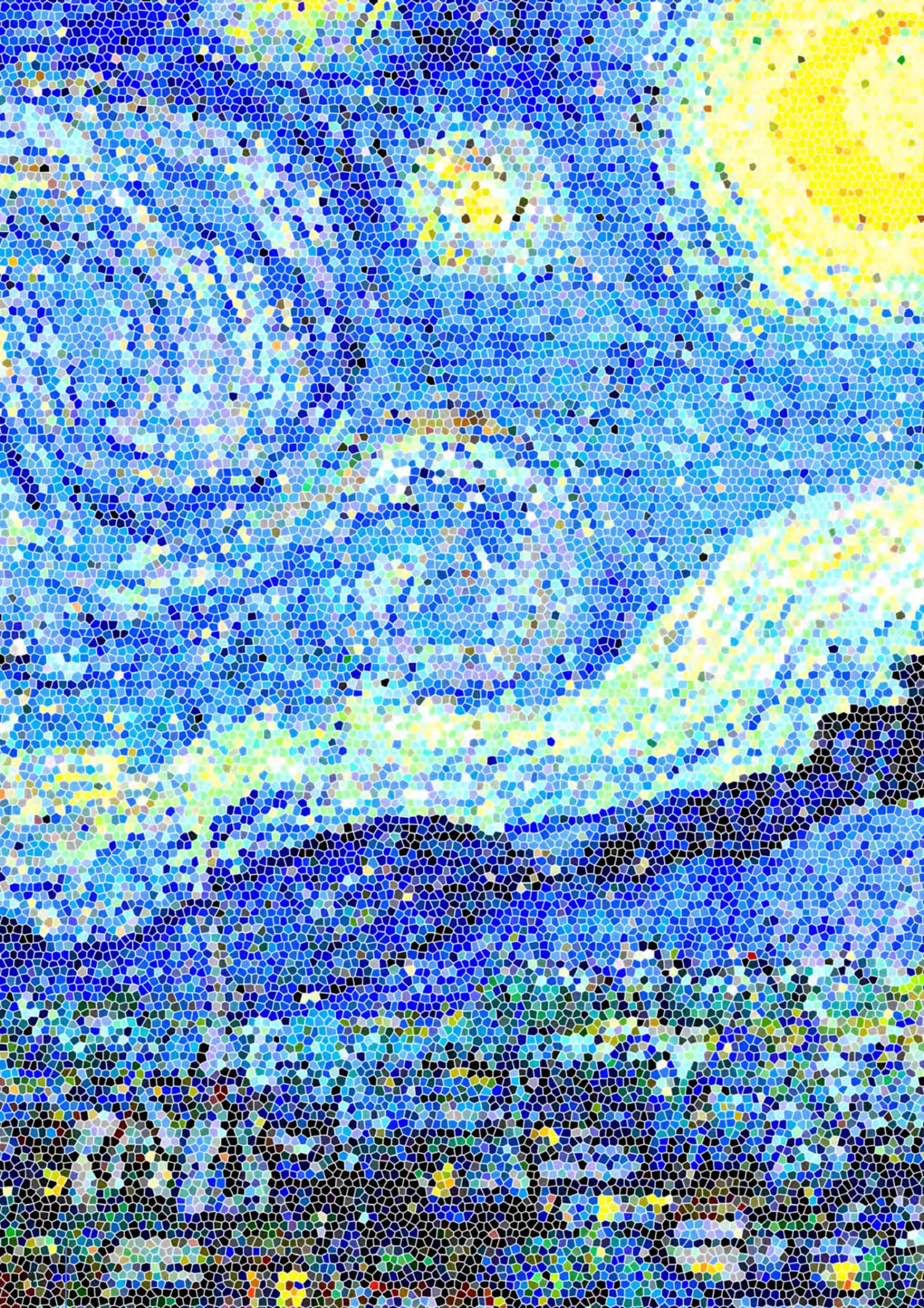
A series of case reports showing clinical solutions with Ecosite Elements.





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## The Modern Art of Composite

### Ecosite Elements in the daily practice.

From simple handling to reliable stability and esthetic requirements: The demands on a modern composite are high.

Whether anterior or posterior teeth, mono-chromatic or multi-shade technique—Ecosite Elements fulfills all the requirements of everyday practice and enables impressive realistic results. This has also been confirmed by renowned practitioners worldwide who already use Ecosite Elements in practice.

In order to give you extensive insights into our customers' experiences and some possible applications, we have collected some clinical cases for you here.

We hope you enjoy reading the Case Reports and would like to thank our authors for their excellent cooperation and implementation.

## Form follows function: Esthetic posterior composite stratification.

Dr. Shiraz Khan



Fig. 1: Initial situation, with a posterior composite with secondary caries on tooth 16

This case demonstrates the use of Ecosite Elements Composite material: namely the Pure and Highlight Set.

The patient presented with a posterior composite with secondary caries, which needed replacement (Fig. 1). The quadrant was isolated with a rubber dam to ensure adequate moisture control and good visualisation (Fig. 2). This was a minimal restoration, with all caries removed and the melo-dentinal junction (ADJ) cleared (Fig. 3). This was a perfect case for applying the Ecosite Elements Pure and Highlight Shades. Here, A2 was used in the traditional incrementally layering fashion. Each increment was placed and thoroughly adapted; using a microbrush to minimise the void formation process between subsequent layers. The final layers were then constructed using the cusp-by-cusp method to recreate the natural anatomy.

Although for anterior composites, the characterisations are routinely placed under the enamel layer increment, this case demonstrates scope to use a single shade of composite, the body. However when layering the incremental cusps, there is also often scope to include micro-voids between increments in the fissure system. Placing the



Fig. 2: Rubber dam isolation of the treatment area

fissure staining as the last increment in posterior teeth is preferable, since it will seal these voids and facilitate natural-looking esthetic posterior composite restorations.



Fig. 3: After removal of the caries tissue



Fig. 4: Final situation after polishing and control of the occlusion

The fissure system was filled with the brown tint from the highlight set, which functions not only to seal any occlusal voids between the fissure anatomy created with the cuspal stratification technique, but also to create a natural-looking restoration which can be integrated from an esthetic perspective. The final cure is undertaken through glycerine gel to remove the oxygen-inhibition layer and maximise the hardness of the restoration as soon as the treatment is finished. The final aspect involves ensuring the restoration is integrated into the patient's habitual occlusal scheme. The restoration is then tested in static contact and excursive movements. As Figure 4 shows, this restoration did not cause any hindrance in terms of static or dynamic occlusal load. Ultimately form follows function, which, in turn, aids longevity.

Based on the author's experience, this restorative material showed optimal handling characteristics. The composite not only demonstrated non-stick quality, but also optimal consistency; allowing the anatomical details to be sculpted. The Highlight set also paves the way for creative/artistic flare, if desired by the practitioner, without actually being a mandatory procedure. Ecosite Elements is a restorative material that provides the clinician with maximum flexibility in terms of application as well as a high-quality restorative material for the patient.

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## Direct build-up after dental trauma using Ecosite Elements composite material.

Max-Richard Seidemann



Fig. 1: Initial situation, with Ellis II fractures of the two central incisors



Fig. 2: Color preselection after preparing and cleaning the tooth surfaces

A 43-year old male patient spontaneously attended our practice with Ellis II fractures of the two central incisors after biting on a peach stone (Fig. 1). As the patient works as a consultant and had a job-related appointment the same day, he demanded swift and immediate esthetic rehabilitation.

Since the fragments were missing, a composite resin restoration appeared to be the first choice due to its minimally invasive nature. Considering the patient's esthetic dilemma and time pressure, it was agreed with the patient that a fast freehand direct build-up should be tried rather than an indirect technique.

Both teeth were vital and a radiographical review revealed no pathological findings. Apart from the Ellis II fracture tooth, 11 had a minor enamel fracture on the distal-vestibular edge and tooth 12 on the incisal edge. The patient wanted to leave these smaller defects untreated, since they were already in that state for several years.

The sharp edges were removed, and a buccal bevel prepared. After cleaning the tooth surfaces, a color preselection was conducted and Ecosite Elements A3 with an EM Layer was chosen (Fig. 2). The tooth surfaces were etched for 30 seconds (starting with the enamel surface only, then, after 15 seconds, also covering dentin areas with etching gel for a further 15 seconds) with phosphoric acid (DMG etching gel 37%) (Fig. 3). Subsequently, a matrix band was applied between the two central incisors before the bonding step was carried out using DMG Ecosite Bond (Fig. 4).

The first increment used was an A3 applied freehand and irregularly to achieve a natural look (Fig. 5). Next came the final EM Layer of the Ecosite Elements Layer set (Fig. 6). Each increment was light-cured for 20 seconds. A first rough contouring and finishing step with Soflex discs and a diamond bur were performed, before the separation and bonding procedure was performed on tooth 21 (Fig. 7).

As previously, tooth 21 was built up using a multilayer freehand technique (Figs. 8, 9). Subsequently the restorations were contoured, finished and finally polished with composite rubber polishers and a silicon carbide brush. Figure 10 shows the final situation.

In an everyday general practice setting in particular, the ability to provide swift, reliable and esthetically pleasing solutions for unannounced cases like this one is crucial. It became clear that its optimal consistency and non-stick nature would allow Ecosite Elements to restore and rebuild teeth swiftly and efficiently. Apart from ideal handling properties, the simple shade selection with optimal variety and great polishability were also key to an esthetically satisfying outcome.

Accordingly, the Ecosite Elements system offers a versatile and user-friendly restorative material, which allows the clinician to provide patients with a high-quality material to satisfy them and their esthetic requirements, however tight the schedule.

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Fig. 3: Total-etch technique to prepare the surfaces



Fig. 4: Tooth 11 – Application of Ecosite Bond



Fig. 5: Tooth 11 – Application of the first increment Ecosite Elements A3



Fig. 6: Tooth 11 – After the application of the enamel layer (Ecosite Elements EM)



Fig. 7: Tooth 11 – after contouring; Tooth 21 – Application of Ecosite Bond



Fig. 8: Tooth 21 – Application of the first increment Ecosite Elements A3



Fig. 9: Tooth 21 – Following the application of the enamel layer (Ecosite Elements EM)



Fig. 10: Final Situation after polishing

## Fillings made easy – esthetic solution for posterior restorations.

Basel Kharbot



Fig. 1: Initial situation

Composite restorations have proven to be the gold standard for filling therapy because of their esthetic properties and the scope of working strictly decay-oriented, thus preserving tooth structure.

A patient with multiple carious lesions was treated with the new Ecosite Elements by DMG. The present case report examines tooth 14 with distal and mesial caries.

During clinical examination, a distinct shadow was visible in the distal area (Fig. 1).

After isolation of the working area, the carious lesions were exposed, followed by removal of the carious tissue (Fig. 2).

Then, transparent matrixes were placed. This provided more visibility while remodelling the proximal walls of the tooth and promoted light curing.

Ecosite Elements (shade B1) was used in combination with the Ecosite Bond which can be applied both as a swift and reliable self-etching bonding as well as a selective- or total-etch system (Fig. 3).

While placing the filling, the outstanding non-stickiness of this composite takes effect. Due to its rather firm consistency, it also keeps the intended shape very well.

The color matching of the composite is easy, since the material integrates very well into the restored tooth (Fig. 4).

These properties do not only improve the handling and adaptability before light curing but also make polishing easier after having placed the filling (Fig. 5); an approach allowing esthetically favourable results with minimal effort (Fig. 6).

As a result, Ecosite Elements shows superior esthetic qualities while remaining a user-friendly, monochromatic approach with five colors to choose from (B1, A2-A4).

Within a vast variety of available composite products, Ecosite Elements subsequently proves its worth not only for being a universal material but also a reliable choice for high esthetic demands.

Accordingly, it can be used for a wide range of indications.

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Fig. 2: Situation after isolating the working area and removing the carious tissue



Fig. 3: Application of the Ecosite Bond

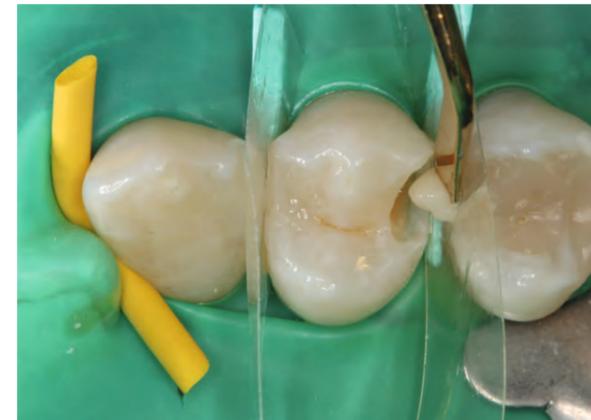


Fig. 4: Application of Ecosite Elements B1



Fig. 5: Final modulation after removing the matrix



Fig. 6: Final situation after polishing

# Small direct composite with Ecosite Elements.

Erik-Jan Muts, MSc.



Fig. 1: Initial situation, small leakage of the old composite 36 is visible. The x-ray showed secondary caries under the amalgam of tooth 36 and underneath the composite 37



Fig. 2: After isolation with rubberdam to ensure a clean and proper operative field



Fig. 3: The old amalgam and composites are removed. Secondary decay is removed with a round excavator tungsten carbide bur



Fig. 4: After selective etching of 30 seconds, the enamel shows crispy white

### Pre-operative

A 35-year-old female patient presented herself in my practice as a new patient. Teeth 37 and 36 were diagnosed with secondary caries under composite and amalgam fillings (Fig. 1). Precise removal, cleaning and replacement with a new composite was advised.

### Treatment protocol

Following local anaesthesia, the treatment site was isolated with rubberdam (Isodam Heavy, SDS) using a special marked stamp (DDC Stamp, K-Dental), a basic clamp (12A, Hygienic) and a floss ligature (PFTE Floss, Tandex). Before isolating, occlusion and articulation was checked for with an articulating paper (Arti-Fol, Bausch) (Fig. 2). Once isolated the old composite and amalgam were removed. The amalgam was removed with a special tungsten carbide bur (H32, Komet) and the composites with a small regular diamond (Fig. 3).

Final removal and excavation was done using a round excavator tungsten carbide. Enamel edges were bevelled with a special stone (Dura Greenstone, Shofu), whereupon the preparation was sandblasted with 29µm aluminumoxide (Aquacare Twin, Velopex). Next, selective enamel etch with 35% phosphoric acid was performed (UltraEtch, UltraDent) for 30 seconds (Fig. 4). After rinsing thoroughly with water, universal bonding was applied (Ecosite Bond, DMG) and rubbed for 30 seconds (Fig. 5), gently dried with air for 5 seconds and light-cured for 10 seconds using an LED polymerization device (VALO, Ultradent). The composite build-up starts with an initial dentine layer using shade A3.5 (Ecosite Elements A3.5, DMG). This layer is applied flat and equally divided, with the surface located 2.5mm below the cusps. Final adjustments of the dentine layer can be done with a brush (Mirobrush, Microbrush International). Light curing is then done



Fig. 5: Ecosite Bond is applied and rubbed for 30 seconds



Fig. 6: A small amount of dentine composite (Ecosite Elements A3.5, DMG) is applied as the first layer



Fig. 7: One by one, each cusp is sculpted with an enamel composite (Ecosite Elements EM, DMG)



Fig. 8: After modelling the dentine and enamel composite



Fig. 9: Immediately after applying the brown staining



Fig. 10: Final result after polishing and 4 weeks of function

for 20 seconds (Fig. 6). Next an enamel shade is used to reshape the anatomy shape of the tooth (Ecosite Elements EM, DMG). Each cusp is reconstructed step-by-step. (Fig. 7) Special instruments used are a very thin explorer (Fissura, LM Arte) and a brush (Round Brush #1, GC). Inclination of the cusps is monitored from the side. The layered concept with a 'dentine'-like base-layer creates a 3D-effect since the translucency of an enamel composite is higher at the fissure than at the top of a cusp (Fig. 8). And after excess removal staining is done with special stain flowable composite (Ecosite Elements Brown, DMG) (Fig. 9). Being subtle with the staining is the key, but sometimes very difficult. After staining excess composite can be removed using a tungsten carbide and a special stone (Dura Greenstone, Shofu). Final polishing is done with wheels (Diacomp Twist, EVE), rubberdam is removed and occlusion and articulation were checked. Some final

adjustments were necessary with a fine diamond. Those adjusted areas were polished again and a final polish was performed with aluminium oxide paste (Enamelize, Cosmedent) and a goat hairbrush (Goat Hair, Polirapid). Final result after 4 weeks in function (Fig. 10).

### Findings

The composite used (Ecosite Elements, DMG) is a very well sculpturable and non-sticky high-end composite. Using it in a dual-layer concept (as described in this case) a very esthetic results can be established. High gloss is easily obtained after polishing.

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# High-polished composite restoration – An easy solution for all direct restorations.

Everybody can be an expert when working with the right materials

Dr. Dario Novak



Fig. 1: Initial situation with amalgam filling



Fig. 2: Discoloration after removing the amalgam filling

Technological development across the board in dentistry has seen patients' expectations soar and likewise dentists' demands. Nowadays, materials should be affordable, user-friendly and highly esthetic. Excellence is expected from us as dentists in all our professional fields, especially one which many dentists consider routine, namely, restorative dentistry.

Today, amid soaring demands from patients; expectations from dentists are equally great. Meeting these demands successfully means using reliable and high-quality materials. Apart from the quality, what is also crucial is ensuring the materials are user-friendly, adaptable, do not stick to instruments and highly polishable.

A young patient (34) arrived at our dental office to have her tooth's old amalgam filling replaced with an esthetically more acceptable material (Fig. 1). We opted for a DMG Ecosite Elements composite available in pure colors (e.g. B1, A2, A3, A3.5, A4) and combinable with layering shades for enamel (Enamel Bleach, Enamel Light, Enamel Medium, Enamel Dark – later in text EB, EL, EM, ED). Under more demanding circumstances, highlight elements can also be used, of which we will now cite only Opaque A2 as a flowable composite. Having removed the amalgam filling and cleaned the cavity, we noticed dark dentin discolorations, constituting tertiary dentin and an amalgam tattoo and often found in teeth having an amalgam filling without any lining. The dark dentin discolorations were only removed for esthetic reasons, as they showed no signs of caries (Fig. 2). To evaluate caries, we used the Caries Indicator by Henry Schein. To be as minimally invasive as possible, the decision was made to leave the discolorations and hide them with a lining of composite Opaque A2 DMG Ecosite Elements.

After cleaning, a selective etch was performed (for 15 secs.), whereupon the Ecosite Bond was applied and light-cured for 10 seconds.

Flowable composites show great self-adapting properties in cavities as well as great fluidity. Thanks to these properties, the material has wide-ranging applications in our everyday work. After placing only 1 mm of flowable OA2 and light-curing it for 20 seconds, we can see most of the discolorations are already covered (Fig. 3).

For the dentin layer, we use A2 Ecosite Elements. It can be used as a single layer or combined with enamel colors, as was done in this case. First, the cusps were layered with A2 to achieve the basic restoration morphology, while leaving space for the enamel layer (Fig. 4). Each layer was then light-cured for 20 seconds and the composite applied to buccal cusps, taking into account that space was still needed for the enamel layer. After the dentin layer, a thin enamel layer – EL (Enamel Light) in this case – was applied to each cusp separately and light-cured (Fig. 5).

The occlusion was checked and materials prepared for final polishing (Fig. 6). Note the fine occlusal surface morphology, which can be easily reproduced using the correct materials. DMG Ecosite Elements has excelled in this field as it does not stick to the instruments and is extremely easy to shape.

To achieve better results and a shinier filling surface, specially designed instruments for high polishing should be used. EVE Twist Polisher can impart high shine to your fillings and make tooth-restoration margins undetectable.

An enlarged picture (Fig. 7) of our final restoration shows the amazingly polished surface of Ecosite Elements composite, rendering

it multifunctional and one of the most practical restoration solutions in all areas, especially direct restorations in anterior teeth (Fig. 8).

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## Conclusion

Developing new technology in resin composites should prove a simpler and more practical way to elicit highly esthetic results. Nowadays, easy dispensing and handling, great adaptability to the tooth structure and high polishing properties are the minimum requirements we expect from a composite system. Look no further than DMG with its new Ecosite Elements for exactly that.



Fig. 3: Cavity appearance after using and light-curing the flowable OA2 Ecosite Elements



Fig. 4: Cusps modelling with A2 Ecosite Elements



Fig. 5: After the dentin layer, applying a thin layer of EL (Enamel Light) Ecosite Elements



Fig. 6: Final restoration appearance prior to occlusal check and final polishing



Fig. 7: Enlarged picture of final restoration. Perfect tooth-restoration transition, highly polished surface



Fig. 8: Result one day after the treatment with perfect shade matching because of the rehydration of the tooth

## Combined treatment with resin infiltration and direct restoration on a molar with MIH: a clinical case using Icon and Ecosite Elements.

Dr. Ali Salehi



Fig. 1

Fig. 2

Fig. 3

Fig. 1: Initial situation tooth number 46 – old composite filling on the mesio-buccal cusp, also including brown and white spots (MIH syndrome), Part of the mesio-lingual cusp is also broken; Tooth 47 – an old occlusal composite filling. Fig. 2: The old fillings were removed and the cavities properly cleaned up. Fig. 3: The white areas are first sandblasted, then Icon-Etch is applied for 2 min to the same.

Initial situation with tooth number 46 presenting an old composite filling on the mesio-buccal cusp as well as brown and white spots specific to all patients with MIH syndrome. Part of the mesio-lingual cusp is also broken. Although tooth 47 has a normal aspect, it also has an old occlusal composite filling that needs replacing (Fig. 1). After rubber dam placement, the old fillings were removed and the cavities were properly cleaned up. The dehydration process following the isolation step makes the white spots even more opaque and visible on tooth 46 (Fig. 2).

Hypomineralisation spots of the tooth are really deep in MIH cases (close to the enamel-dentin junction), so the enamel covering the white areas is first sandblasted and then Icon-Etch applied for 2 min on the same spots. Combining the mechanical action of the sandblasting and the chemical erosion of the acid allows the top of the lesion to be reached faster to facilitate and streamline infiltration (Fig. 3).

A microbrush was used to rub the Icon-Etch on the white spots to optimize its erosive action. Icon-Dry was applied to simulate the pre-infiltration result and verify whether or not the lesion has been properly reached. The first test with Icon-Dry shows that the lesion has not yet been properly reached (Fig. 4).

The second test with Icon-Dry (after another sandblasting and another 2 min of Icon-Etch) shows that the white spots were nearly masked. At this point, we can consider that Icon-Infiltrant will be efficient in masking the lesion and therefore proving a properly infiltrated hypomineralised zone.

Icon-Infiltrant was applied for 3 min and then light-cured; followed by a further 1-minute application and additional light-curing (Fig. 5). The white spots have been properly masked, therefore we can consider that the molar's enamel has been reinforced in those areas thanks to the successful infiltration process (Fig. 6). Here, the visual masking of the lesion is not the main reason why infiltration treatment is useful. In actual fact, the resin infiltration shell reinforces the MIH lesions, extending the longevity of both filling and tooth. Etching with 37% orthophosphoric acid for 30 secs. on enamel and 15 secs. on dentin (Fig. 7).

Situation immediately after rinsing and drying the teeth. We can see the chalky aspect of the enamel; awaiting the adhesive procedure. A significant portion of the enamel has been treated around the cavity to ensure the margin of the composite filling will be finished in enamel for proper sealing and better longer-lasting results. The dentin was also kept slightly moist to optimize the bonding results.

Fig. 4: Icon-Dry was applied to simulate the pre-infiltration result and determine whether or not the lesion had been properly reached. Fig. 5: Icon-Infiltrant was applied for 3 min and then light-cured. Fig. 6: Result of the Icon treatment – the white spots have been masked. Fig. 7: Etching with 37% orthophosphoric acid. Fig. 8: Applying adhesive to the etched dentin and enamel. Fig. 9: Situation after building up composite on tooth 46 with Ecosite Elements Pure shade A3. Fig. 10: Situation after building up composite on tooth 47 with Ecosite Elements Pure shade A3 and polishing with a «two-step» technique using silicone rubber polishers. Fig. 11: Situation immediately after removing rubber dam. Fig. 12: Situation after one week recall, after rehydrating the teeth.



Fig. 4



Fig. 5



Fig. 6



Fig. 7



Fig. 8



Fig. 9



Fig. 10



Fig. 11



Fig. 12

Applying sufficient adhesive to the etched dentin and enamel (Fig. 8). Situation after composite building up on tooth 46 with Ecosite Elements Pure shade A3. The cavity was filled with several increments of composite and light-cured for 30 seconds on each occasion. Creating a proper anatomical morphology was the priority; a process facilitated by this composite build-up technique. Polishing was only mechanical with a «two-step» technique using silicone rubber polishers (Fig. 9). Situation after building up composite on tooth 47 with Ecosite Elements Pure shade A3. The cavity was filled with several increments of composite and light-cured for 30 seconds on each occasion. Creating a proper anatomical morphology was the priority; a process facilitated by this composite build-up technique. Polishing was only mechanical with a «two-step» technique using silicone rubber polishers (Fig. 10).

Situation immediately after removing the rubber dam. The integration of the result is not totally achieved as the teeth are still dehydrated due to the isolation. However the initial visual result already looks quite interesting (Fig. 11).

Situation after one-week recall. After rehydration, the restorations look very nice and have integrated well into the teeth (Fig. 12).

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