User report pertaining to experiences with the utilization of vinyl siloxane ether impression material

Kettenbach Identium® Heavy / Identium® Light

Case study

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High school:
1990 School-leaving examination (Abitur)

Alternative civilian service:
10/1990 – 01/1992 Alternative civilian service at St. Elisabeth-Krankenhaus (hospital)/Cologne-Hohenlind

University degree:
1999 University of Bonn, Dentistry (State Examination)

Medical dissertation:
09/1997 – 11/2000 University of Cologne, Department of Operative Dentistry
Dissertation supervisor: Prof. Michael A. Baumann

11/2000 Acquired the title “Dr. med. dent.”

Employment experience (as a dentist):
05/2000 – 10/2009 Research assistant at Department of Dentistry 1 - Operative Dentistry and Periodontology, Erlangen
02/2007 to present License to administer the state examination in the area of operative dentistry at the Friedrich-Alexander-Universität Erlangen
11/2009 to present Senior physician at the Department of Operative Dentistry of Philipps-Universität Marburg
8/2011 to present Managing senior physician at the Department of Operative Dentistry of Philipps-Universität Marburg
1/2014 to present Functional director of the Endodontics Section of the Department of Operative Dentistry of Philipps-Universität Marburg
01/2016 Habilitation (postdoctoral teaching qualification) for the discipline of Dental, Oral and Maxillofacial Medicine
04/2016 Granted the permission to teach (venia legendi) and appointed associate professor at the Department of Operative Dentistry of Philipps-Universität Marburg

Awards:
2008 Research award for full ceramics
09/2010 Second place, Espertise Talent Award, topic: „RelyX Unicem – a good basis for the root canal obturation of the future?“

Research visits:
09 – 12/2006 Visiting Assistant Professor, University of Toronto, Faculty of Dentistry, Discipline of Endodontics and Oral Microbiology
Research project: Retreatment efficiency of 2 new obturation systems – a micro-CT study.
Background
The dental industry offers dentists a variety of impression materials. For the preparation impressions, it is common to use silicones or polyethers. For this purpose and depending on the indication, the established techniques are putty-wash and double-mix impressions. Silicones have the advantage that the viscosity is relatively easy to adjust, allowing for good soft tissue displacement, for instance papilla and gingival margin. The detail accuracy is excellent, as are both handling and taste. On the other hand, many dentists like to use polyether materials for impressions because they also provide an excellent casting accuracy and, furthermore, thanks to their material properties such as superior flow, show their strength particularly in difficult impression situations when one is confronted with drying preparations that do not offer optimum drying parameters. Consequently, they are superior to silicones in this respect. On the downside, they have a low viscosity and thus lack the excellent flow behavior so much appreciated by users. Moreover, compared to silicones, polyethers have a flavor that takes some getting used to and that is often perceived as unpleasant. Various modifications of silicone impression compounds have led to the improvement of the hydrophilicity of this intrinsically hydrophobic material. Having said all that, most dedicated polyether users decline to use silicones while traditional silicone users, too, usually forego polyether compounds.

Identium® – the best of two worlds?
And now the Kettenbach company has created a new impression compounds material called vinyl siloxane ether®, that will be officially launched into the market as part of the Identium® impression line just in time for the IDS 2009. It is, one could say, a combination of a silicone and a polyether. However, it is not a mere mixture of the two materials, but rather an integration of the two materials, which results in the creation of a new polymer.

Identium® in clinical use
This material, whose properties have already been extensively tested by the author, had to prove its abilities in a practical application. The planned application area was a classical bridge preparation in the right upper jaw. The female patient had to have tooth no. 15 removed due to a longitudinal root fracture, which resulted in a cavity in region 15 that was still visible in the impression and in the intraoral picture of the clinical situation. The patient decided against an implant. The patient opted for an all-ceramic bridge with a zirconia frame (Wieland). Therefore, both inlays of teeth 14 and 16, adjacent to the gap, were removed and, after the removal of the underfilling and the excavation by way of the total etch technique, an adhesive buildup was made on both teeth (Syntac Classic with Grandio Flow WO and Tetric Basic white). It was followed by the chamfer preparation of both bridge abutments. A temporary bridge from Struktur Premium (Voco) was also made in a direct technique. After the retraction, cords were placed in two layers; the double-mix impression of the prepared situation was made using Identium® Heavy/Identium® Light, whereby one layer of cords was left for permanent retraction, what is still seen in the impression. The impression of the opposing jaw was made with Kettosil®. Then a bite registration was taken with Futar® D Fast. The temporary bridge was finally inserted with TempBond NE and the patient was sent to the dental technician to choose the individual color. In the subsequent session, the trial of the bridge frame and minor adjustments were made. For fit checking, the new low-viscosity Identium® light was used, which proved to work very well in this application. After the finishing the bridge in the laboratory, the trial of the completed work was made. After the correction of the proximal contacts, which were initially too tight, a new check with Identium® light was performed. After minor corrections of the static and dynamic occlusion, the bridge was sent to the laboratory for the final firing. The insertion of the bridge was carried out on the seventh day with Glasionomer cement (Ketac-Cem, 3M Espe). The patient stated that she was completely satisfied with the fit of the bridge and she had no complaints during the subsequent check-up appointment.
Case study

Fig. 1: Pre-surgery situation

Fig. 2: After removal of inlays

Fig. 3: Preparation with cords

Fig. 4: Coating with Identium® Light

Fig. 5: Coating with Identium® Light

Fig. 6: Coating with Identium® Light

Fig. 7: Coating of molars

Fig. 8: Coating of molars

Fig. 9: Positioning of the imprint

Fig. 10: Imprint after removal

Fig. 11: Imprint in detail

Fig. 12: Impression of opposing jaw with Silginat®

Fig. 13: Bite registration with Futar® D

Fig. 14: Frame on the model, buccally

Fig. 15: Frame, basally

Fig. 16: Trial of frames, buccally

Fig. 17: Finished bridge model, buccally

Fig. 18: Finished bridge model, occlusally

Fig. 19: Finished bridge model, buccally

Fig. 20: Finished bridge model, occlusally

Identium® Heavy / Identium® Light
Conclusion
The new Identium® impression material proved to be an ideal material for the double-mix impressions also in various impressions taken before. The use of Identium® Heavy introduced in the impression tray in the Automix procedure is very well possible, whereby the already known and proven mixing technique is excluded as a possible source of defects and has already proved itself. The lightblue color of the material is highly appropriate as it is not too bright and yet not too dark and thus ensures optimal readability. The viscosity of the applied Identium® Heavy was very suitable for the planned impression because it allows for a slight displacement of soft tissues. The Identium® Light is violet in color and thus ensures a sufficient color differentiation from Identium® Heavy. It proved advantageous that experimentation with colors in the red and green range was avoided as some people, including dentists and dental technicians, are affected by color deficiency. Identium® Light, as customary for Kettenbach, is offered in a doublechamber cartridge for mixing guns. It could be easy and safe to apply Identium® Light intraorally with an auto-mixing tip for coating the bridge abutments and always ensure reproducible results. The flow [of the material] onto the tooth stump is very well recognizable on the intraoral pictures. The readability is also very good and effortless. The image sharpness of smallest details was also outstanding, what was not least demonstrated by the so called soft probes for the fit checking of the bridge frame on both bridge abutments. It was possible to subtly mark slight incongruities and correct them accordingly in a selective manner.

Summary
In summary, it can be said that the new material is an impression that is very easy and safe to use and that meets the highest standards in terms of precision. The use in the framework of the double-mix impression technique allows the user to work efficiently, while the application form ensures safe handling and consistently reproducible quality. When the impression shows the desired results after the very first imprint, this is very desirable for the workflow. Thus the processing time can be reduced in turn and, ultimately, the costs can also be reduced. Moreover, a reliable first imprint also has a positive impact on patient satisfaction level – a benefit that is not to be underestimated.