Clinical study of postoperative sensitivity for a new self-adhesive resin cement

**Language:** English

**Authors:**
Dr. Constanze Olms, Dr. Arne Boeckler, Prof. Dr. Jürgen-Manfred Setz,
Department of Prosthodontics,
Dr. Christine Lautenschläger,
Institute of Medicinal Epidemiology, Martin-Luther-University Halle-Wittenberg

**Date/Event/Venue:**
July 2-5, 2008
86th General Session & Exhibition of the IADR
Toronto

**Introduction**
Self-adhesive resin cements have gained popularity over the past few years because of their improved physical properties as compared to conventional cements. New luting agents have simplified clinical handling, a wider range of applications and reduced pulp injury. Postoperative hypersensitivity and pulp injury was a problem in the past [2]. The literature shows data for postoperative hypersensibilities between 0% - 19% [3-5]. With regard to conventional adhesive luting agents a new self-adhesive resin cement provides simplified clinical procedure. Under the condition of relative dryness no additional dentin bonding is necessary. The dentin-restoration-bonding is realised by means of a phosphoric acid containing monomer. So, the tested cement is applied directly to the dentin. In-vitro tests proofed the quality of the cementation to dental alloys, zirconium oxide and glass ceramics as well as fibre enforced endodontical posts.[1].

**Objectives**
The aim of this clinical study was to evaluate a new self-adhesive resin cement for possible postoperative sensitivity. Additionally changes in cement colour, quality of the marginal seal, as well as the occurrence of de-cementations were registered.

**Material and Methods**
Nineteen patients received 60 full-coverage restorations on 43 vital and 17 successfully endodontically treated abutment teeth in the time period between May 2006 to December 2007. The crowns were cemented with a new self-adhesive resin cement (Multilink® Sprint, Ivoclar Vivadent, Schaan Liechtenstein) according to the manufacturers' instructions (Fig. 2-11). Documentation began with the cementation of the crowns. The teeth were inspected immediately after cementation, after 2 weeks (baseline), 6 months and 18 months. Tooth vitality was examined with an -50° C ice spray (roeko Endo-Frost, Fa. Coltène Whaledent, Langenau Germany) before and after cementation, after 2 weeks, 6 months and 18 months. The prevalence of follow-up postoperative sensitivities compared to sensitivity after cementation was analyzed (Tab. 1). The statistically significance was proofed by means of Chi2 tests.

![Fig. 1](image-url)
Results

After cementation postoperative hypersensitivity was diagnosed in 7% of the abutment teeth (Fig. 1, Tab. 1). At baseline (after 2 weeks) the rate was reduced to 4.7%. Postoperative hypersensitivity was not reported after 6 months (Tab. 2). One patient with two adjacent crowns showed hypersensitivity after 18 months. This was attributed to the fact that the gingiva had retracted and a hypersensitive dentin area had been uncovered. In one case endodontic treatment was carried out for one abutment tooth after 12 months. Cement colour and marginal seal did not change. De-cementation did not occur during the period of observation.
### Tab. 1

<table>
<thead>
<tr>
<th>postoperative hypersensitivity after cementation</th>
<th>normal</th>
<th>hypersensitive</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>number</td>
<td>38</td>
<td>1</td>
<td>39</td>
</tr>
<tr>
<td>% totality</td>
<td>88.4%</td>
<td>2.3%</td>
<td>90.7%</td>
</tr>
<tr>
<td>hypersensitive number</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>% totality</td>
<td>7.0%</td>
<td>2.3%</td>
<td>9.3%</td>
</tr>
<tr>
<td>total</td>
<td>41</td>
<td>2</td>
<td>43</td>
</tr>
<tr>
<td>% totality</td>
<td>95.3%</td>
<td>4.7%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

### Tab. 2

<table>
<thead>
<tr>
<th>postoperative hypersensitivity after 6 month</th>
<th>normal</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>number</td>
<td>37</td>
<td>37</td>
</tr>
<tr>
<td>% totality</td>
<td>90.2%</td>
<td>90.2%</td>
</tr>
<tr>
<td>hypersensitive number</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>% totality</td>
<td>9.8%</td>
<td>9.8%</td>
</tr>
<tr>
<td>total</td>
<td>41</td>
<td>41</td>
</tr>
<tr>
<td>% totality</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

### Conclusions

Compared to existing literature for dental cements the new self-adhesive cement showed a small rate of postoperative hypersensitivities [2-5]. The overall clinical experience proofed the cement to be an encouraging alternative to conventional cements with regard to physically data, postoperative sensitivity and ease of application. Additional prospective trials remain necessary to verify the clinical long-term performance of the tested product.

### Literature


*This Poster was submitted by Dr. med. dent. Constanze Olms.*

**Correspondence address:**

Dr. med. dent. Constanze Olms  
Martin-Luther-University Halle-Wittenberg  
Department of Prosthodontics  
Große Steinstraße 19  
06108 Halle  
Germany
Clinical study of postoperative sensitivity for a new self-adhesive resin cement

Introduction

Self-adhesive resin cements have gained popularity over the past few years because of their improved physical properties as compared to conventional cements. These cements have simplified clinical handling, a wider range of applications, and reduced para-fitting. Postoperative hypersensitivity and pain/injury are a problem in the post-op. The aim of the present study was to assess the postoperative sensitivity of a new self-adhesive resin cement in a clinical setting, followed by statistical analysis. The null hypothesis was that this self-adhesive resin cement is highly efficacious in eliminating postoperative pain and hypersensitivity.

Objectives

The aim of the clinical study was to evaluate a new self-adhesive resin cement for post-operative sensitivity. Additionally, changes in marginal adaptation and the incidence of postoperative complications were registered.

Material and methods

Between May 2015 and December 2017, 240 primary maxillary teeth received full crowns on 45 teeth and 17 technically and functionally treated teeth. The crowns were cemented with a new self-adhesive resin cement (RelyX Unicem, 3M ESPE). According to the manufacturer's instructions (Fig. 2A), the cementation began with surface conditioning. The technique was injected immediately after cementation, after 2 weeks (baseline), 6 months and 18 months. Sensitivity was measured with a high-resolution infrared probe (Dentsply, Trubyte 3000, Intraoral System, Germany) before and after cementation after 2 weeks, 6 months and 18 months. The percentage of follow-up post-operative sensitivity compared to sensitivity after cementation was measured (Fig. 3). The statistical significance was analyzed by means of Chi² test.

Results

The post-operative hypersensitivity was diagnosed in 7% of the 45 control teeth (Fig. 2B). In baseline (after 2 weeks) the rate was reduced to 4.7%. Postoperative hypersensitivity was not reported after 6 months (Fig. 2C). One patient had two adjacent crowns showed hypersensitivity after 18 months. This was attributed to a technical issue and the hypersensitivity was successfully managed. In one case of accidental cementation was carried out for the crown with the marginal and did not change any of the 60 crowns and decementation did not occur.

Conclusion

Compared to existing techniques for dental cements the new self-adhesive cement showed a small rate of postoperative hypersensitivity (2-3%). The overall clinical experience proved the cement to be an encouraging alternative to conventional cements with regard to physical data, postoperative sensitivity and ease of application. Additional prospective clinical studies are necessary to verify the clinical long-term performance of this cement product.