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

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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.

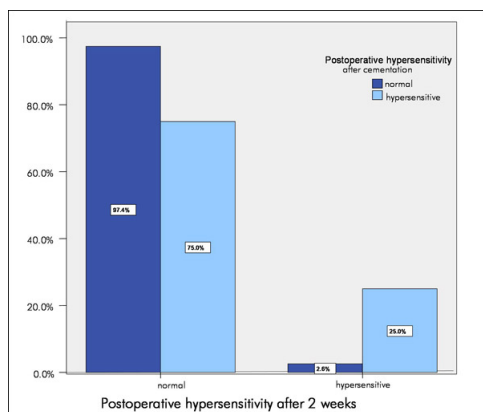


Fig. 1



Fig. 2

Fig. 3



Fig. 4

Fig. 5



Fig. 6

Fig. 7



Fig. 8

Fig. 9



Fig. 10

Fig. 11

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.

		postoperative hypersensitivity after 2 weeks			
		normal	hypersensitive	total	
postoperative hypersensitivity after cementation	normal	number	38	1	39
		%	88.4%	2.3%	90.7%
		totality			
hypersensitive	hypersensitive	number	3	1	4
		%	7.0%	2.3%	9.3%
		totality			
total		number	41	2	43
		%	95.3%	4.7%	100.0%
		totality			

Tab. 1

		postoperative hypersensitivity after 6 month			
		normal	hypersensitive	total	
postoperative hypersensitivity after cementation	normal	number	37		37
		%	90.2%		90.2%
		totality			
hypersensitive	hypersensitive	number	4		4
		%	9.8%		9.8%
		totality			
total		number	41		41
		%	100.0%		100.0%
		totality			

Tab. 2

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

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

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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 brands 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 hypersensitivities 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 proved 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 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

Between May 2006 and December 2007 nineteen patients received 60 full crowns on 43 vital and 17 successfully endodontically treated teeth. The crowns were cemented with a new self-adhesive resin cement (Multilink® Sprint, Ivoclar Vivadent, Schaan Liechtenstein) according to the manufacturer's instructions (Fig. 2-12). Documentation began with cementation. The teeth were inspected immediately after cementation, after 2 weeks (baseline), 6 months and 18 months. Tooth sensibility was examined with -50° C ice spray (roeko Endo-Frost, Fa. Coltene 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 analysed (Tab. 2). The statistical significance was proved by means of Chi² tests.

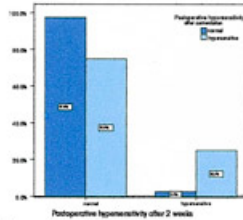


Fig. 1



Fig. 2-11

Results

After cementation postoperative hypersensitivity was diagnosed in 7% of the 43 vital abutment teeth (43 = 100%, Fig.1,Tab.2). 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 in any of the 60 crowns and de-cementation did not occur.

pre 0.05

postoperative hypersensitivity	normal	hypersensitive	postoperative hypersensitivity after 2 weeks		p-value
			n	%	
pre 0.05	43	43	41	95.3%	0.05
			2	4.7%	

Tab. 2

postoperative hypersensitivity	normal	hypersensitive	postoperative hypersensitivity after 6 months		p-value
			n	%	
pre 0.05	43	43	43	100%	0.05
			0	0%	

Tab. 3

Conclusion

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 proved the cement to be an encouraging alternative to conventional cements with regard to physical data, postoperative sensitivity and ease of application. Additional prospective trials remain necessary to verify the clinical long-term performance of the tested product.

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