

Contact dermatitis from benzoyl peroxide in dental prostheses

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Case Reports

Case no. 1 was a 29-year-old non-atopic woman, with anomaly of enamel and suprarenal hyperandrogenism treated by oral dexamethasone (5 mg day^{-1}) for 10 years. She had had an acrylic dental prosthesis for 14 years. The patient presented with a 4-year history of erythema and oedema of the palate which occurred when she used her prosthesis.

Case no. 2 was a 43-year-old atopic woman who had had an acrylic dental prosthesis for 17 months. She presented with a 12-month history of gingival pain, erythema, and ulceration of the gum.

Patch test results in each case are shown in Table 1.

These patients had not used top-

icals containing benzoyl peroxide. In each case, material safety data sheets of the prostheses indicated the presence of benzoyl peroxide. Subsequently, an acetal resin (Acetal Dental®) (IF Dental, Piegut-Pluviers, France), without benzoyl peroxide, was used for the prostheses of these two patients, and their symptoms disappeared.

Comment

Benzoyl peroxide is an initiator of polymerization used in the synthesis of methyl methacrylate dental materials (1, 2). Benzoyl peroxide can be detected in methyl methacrylate dental material by solid phase extraction and HPLC analysis and is converted to benzoic acid in the presence of serum (2). It was not possible to test for benzoic acid in our patients. Contact dermatitis from benzoyl peroxide in dental prostheses has been described previously. Of 66 patients patch tested with a dental screening series, one was positive to benzoyl peroxide in the series of Vilaplana (3). In the study of Dutrée-Meulenberg (4), 22 patients (19 female and 3 male) with burning mouth syndrome were patch tested with a standard series and a dental screening series; 20 of these patients wore a complete or partial dental prosthesis; 3 pa-

tients were positive to benzoyl peroxide. In a multicentre study reported by Gebhardt & Geier (5), positive patch tests to benzoyl peroxide were found in 5.1% of 721 patients tested with a dental screening series. Acetal Dental® resin is an acetal resin, a polyoxymethylene thermoplastic polymer obtained by ionically initiated polymerization of formaldehyde (6).

Some allergens of the standard series and of the dental screening series were similar, including colophonium, cobalt chloride and nickel sulfate. In Case no. 1, nickel sulfate in the dental screening series was positive, whereas nickel sulfate in the standard series was negative; such anomalies have already been observed (7) when patch tests are not on the same side of the back.

These 2 cases suggest benzoyl peroxide as the cause of the prosthetic intolerance in these 2 patients. The use of acetal resin was the solution for the problem. Benzoyl peroxide should be added to the dental screening series of Chemotechnique Diagnostics®.

References

1. Anonymous. Peroxyde de dibenzoyl. Fiche toxicologique no. 33. INRS 1988: 1–4.
2. Shintani H, Tsuchiya T, Hata Y, Nakamura A. Solid phase extraction and HPLC analysis of toxic components eluted from methyl methacrylate dental materials. *J Anal Toxicol* 1993; 17: 73–78.
3. Vilaplana J, Romaguera C, Cornella F. Contact dermatitis and adverse oral mucous membrane reactions related to the use of dental prostheses. *Contact Dermatitis* 1994; 30: 80–84.
4. Dutrée-Meulenberg R O G M, Kozel M M A, Van Joost T. Burning mouth syndrome: a possible etiologic role for local contact hypersensitivity. *J Am Acad Dermatol* 1992; 26: 935–940.
5. Gebhardt M, Geier J. Evaluation of patch test results with denture material series. *Contact Dermatitis* 1996; 34: 191–195.
6. Derrien G, Jardel V. Evaluation des propriétés physiques de deux résines acétaliées. Application en prothèse amovible partielle. *Les Cahiers Prothèse* 1996; 95: 19–25.

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Table 1. Patch test results in Case nos. 1 and 2

	D2	D3
Case no. 1		
European standard series (Trolab®)		
cobalt chloride (1% petrolatum)	++	++
colophonium (20% pet.)	++	++
Dental screening series		
nickel sulfate (5% pet.)	++	++
(Chemotechnique Diagnostics®)		
cobalt chloride (1% pet.)	++	++
colophonium (20% pet.)	++	++
Additional series		
benzoyl peroxide (1% pet.)	–	++
Case no. 2		
European standard series (Trolab®)		
	–	–
Dental screening series		
	–	–
(Chemotechnique Diagnostics®)		
Additional series		
benzoyl peroxide (1% pet.)	–	+

lem raised by the simultaneous reproducibility of positive allergic patch test reactions in man. *J Am Acad Dermatol* 1989; 21: 850–854.

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