Letters to the editor*

Allergic reactions to acrylics


Allergic reactions to acrylic materials are certainly real, as we witness in our laboratory (Great Lakes Orthodontics); technicians frequently break out upon exposure to methylmethacrylate monomer. Although significantly less frequent for cured polymers, these reactions can be serious and require careful analysis and description. The authors presented a lucid accounting of their work, which included a good variety of techniques. I believe a few technical points, unrelated to their experimental work, should be mentioned.

When discussing immune reactions, “Hamptons” are haptns (the English dental lexicon has enough peculiar words). It is also most unlikely (virtually impossible) for dental acrylic resins to contain formaldehyde; listing formaldehyde as a primary cutaneous antigen in dental acrylics is absurd, and this type of statement should not be allowed to capriciously find its way into the dental literature. Also, benzyl peroxide is not benzoyl peroxide; they are chemically distinct. Benzyl peroxide incorrectly appears on the Internet in regard to acne.

Finally, I find it disturbing to advocate overcoming allergic reactions in sensitive denture patients by intentionally exposing them to additional acrylic. Should this become standard practice? Here, light-cured methylmethacrylate is assumed to be safe—with less residual monomer than heat-cured acrylic resins to contain formaldehyde; listing formaldehyde; as we reported, although there was little residual monomer on the patient’s retainer, it was enough to cause a reaction.

Regarding formaldehyde in acrylic resins, we do agree that it is not a chemical in methylmethacrylate resins. It is, however, found in controlled experiments, leaching from the cured acrylic. The dental literature has enough reports, so we could have avoided that discussion. It is not yet clear how it happens, but the possibility of oxidation of methylmethacrylate groups into formaldehyde has been considered. Because formaldehyde has been shown to be not only allergenic, but also cytotoxic, in the concentrations leached from acrylic resins, we understand Mr Lauren’s concerns as a representative from a dental materials corporation and all that might be involved. We suggest reading the cited articles as a starting point to elucidate this important matter.

We believe Mr Lauren misunderstood the brief statement regarding the aspect of dose-dependency. It is clear in the text that each patient has a different chemical profile, as suggested by Kusy, and the allergic reaction depends on the concentration related to each person’s tolerance level. For 1 patient, a small dose can cause an allergic reaction, whereas another might have no reaction, as stated in the text, “because an allergic reaction is not dose-dependent, but related to the patient’s sensitivity.” As we reported, although there was little residual monomer on the patient’s retainer, it was enough to cause a reaction.

Even though it was not mentioned in our article, Mr Lauren stated that, in his country, light-cured resin is widely

*The viewpoints expressed are solely those of the author(s) and do not reflect those of the editor(s), publisher(s), or Association.

Author’s response

We thank Mr Lauren for his interest on our article, in which we presented a patient with an allergy to auto-polymerized acrylic resin. We especially appreciated the considerations on vocabulary, a major drawback when writ-
used and considered to be safe, but he seems to question whether, after cured, it contains less residual monomer than heat-cured materials. In regard to this, Rose et al. confirmed that heat-cured acrylic resins have, by far, better performance considering leaching of monomer and cytotoxic profile when compared with auto- and light-cured materials.

Before we finish, it is proper to mention that, in this time of evidence-based dentistry, comments should be supported by scientific findings and not mere personal opinions. Because we believe in Mr. Lauren’s good intentions, the opportunity to elucidate any points that might have been cloudy can only be well appreciated. Finally, we thank the editor for the opportunity to respond to the comments about our article published in the March 2006 issue of the AJODO.

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REFERENCES


History of orthodontics

I read with interest Norman Wahl’s recent installment on the history of orthodontics (Orthodontics in 3 millennia. Chapter 8: The cephalometer takes its place in the orthodontic armamentarium. Am J Orthod Dentofacial Orthop 2006;129:574-80). I noted, however, that Rocco J. DiPaolo was not included with those who made significant contributions to cephalometric radiography.

Approximately 40 years ago, DiPaolo introduced the quadrilateral analysis, formulated to differentiate between malocclusions of skeletal and nonskeletal origins and to identify dysplasias regarding relative size and position of the lower facial components. Essentially, it is a proportionality concept that is concerned primarily with the skeletal configuration in a dentofacial complex in both the horizontal and vertical dimensions, regardless of dentoalveolar relationships.

By detecting any skeletal excess, deficiency, or postural position in both the horizontal and vertical dimensions, this individualized assessment enables the clinician to institute the appropriate mechanics but also forewarns of any skeletal limitation that might compromise treatment.

Quadrilateral analysis became an integral part of orthodontic education in the Department of Orthodontics, College of Dental Medicine, Fairleigh Dickinson University, Rutherford, NJ. Thousands of patients were evaluated cephalometrically, and many research studies were conducted, showing this analysis to be statistically significant.

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