

6. Pitak-Arnnop P, Schouman T, Bertrand JC, Hervé C. Comment éviter la non-conformité de la recherche biomédicale? Recommandations aux chirurgiens. *J Chir (Paris)* 2008;145:534-541.
7. Grunkemeier GL, Wu Y, Furnary AP. What is the value of a P-value? *Ann Thorac Surg* 2009;87:1337-1343.
8. Akobeng AK. Confidence intervals and P-values in clinical decision making. *Acta Paediatr* 2008;97:1004-1007.
9. Young J. Understanding statistical analysis in the surgical literature: Some key concepts. *ANZ J Surg* 2009;79:398-403.
10. Cleophas TJ. Clinical trials: Renewed attention to the interpretation of the P values—Review. *Am J Ther* 2004;11:317-322.
11. Biau DJ, Jolles BM, Porcher R. P value and the theory of hypothesis testing: An explanation for new researchers. *Clin Orthop Relat Res* 2010;468:885-892.
12. Koretz RL. Is statistical significance always significant? *Nutr Clin Pract* 2005;20:303-307.

### Author's response

I totally agree with comments by Pitak-Arnnop et al which emphasizes the importance of clinical relevance (though not statistically significant) and 95% CI confidence interval in today's publication process - this change of mindset had evolved over many years of education on research & biostatistics. I must clarify that the present article is highlighting the well-known bias of significant P-value publication and hopefully to educate the researchers on this aspect - look at the clinical relevance rather than statistical significance. Yes, today, researchers like Pitak-Arnnop et al understood this concept of this poor decision using the P-value and I thank him for adding the important information for the follow-up of this present article (which is constraint by length).

Chan YH  
Singapore

## Microleakage of Flowable Composite Restorations

I read with great interest the article entitled "Effects of different light curing units/modes on the microleakage of flowable composite resins" by A. Ruya Yazici et al which has been published in your esteemed journal (*Eur J Dent* 2008;2:240-246). I want to share few of my thoughts regarding this study. It was a good study comparing different curing units/modes and flowable composite

resins, but the authors can further redefine the study by incorporating few parameters. First, the teeth with class V cavities which were restored with flowable composite resin could have been subjected to occlusal loading prior to microleakage testing. Studies have proven that, the teeth (especially posteriors) are subjected to heavy occlusal stresses at the cervical area during the normal function and parafunction. These stresses tend to flex the teeth. As the teeth flexes, tensile and shear stresses are generated at the cervical region.<sup>1</sup> These stresses may cause debonding of composite resin from the cavity margins and thereby increases the potential for microleakage. Second, dye leakage studies can be conducted under vacuum pressure, since the validity of dye leakage studies has been questioned because of the possible effect of entrapped air on the ingress of the dye solution.<sup>2</sup> Studies have reported that vacuum pressure decreases the volume of entrapped air and allows complete dye penetration.<sup>3</sup> Hence, authors can perform further similar studies using the above mentioned parameters for the better appreciation of the results.

Vasudev Ballal  
India

### REFERENCES

1. Rees JS. The effect of variation in the occlusal loading on the development of abfraction lesions: A finite element study. *J Oral Rehab* 2002;29:188-193.
2. Spradling PM, Senia S. The relative sealing ability of paste type filling materials. *J Endod* 1982;8:543-549.
3. Oliver CM, Abbott PV. Entrapped air and its effect on dye penetration of voids. *Endod Dent Traumatol* 1991;7:135-138.

### Author's response

The aim of this study was to evaluate the effects of different light curing units/modes on the microleakage of flowable composite resins. If the specimens were subjected to load cycling, they might similarly resistant to load cycling as the other parameters were constant. On the other hand the load cycling parameter could be a scope of another study. There are also contradictory findings related with load cycling. Yap reported that mechanical load cycling had no appreciable effects on microleakage at the enamel-cement interface but caused an increase in microleakage at the dentine-cement interface.<sup>1</sup> In another study, it

was found that mechanical loading had no influence on leakage patterns either cervically or occlusally.<sup>2</sup>

The use of a vacuum has been suggested as a means to eliminate the air within the dentinal structure, in other words entrapped air is removed by vacuuming. When we evaluate the literature, dye leakage studies under vacuum pressure are generally performed in endodontic studies. However there are also controversial results about the effects of vacuum pressure. Pathomvanich and Edmunds<sup>3</sup> assessed the extent of apical dye leakage in relation to root fillings under conditions of passive dye penetration, centrifugation, a vacuum technique and an increased air pressure technique. They found no significant differences between the four microleakage techniques. Another study was conducted to verify whether different conditions of contact with a dye solution would result in different levels of the impregnation by the marker agent in human radicular dentin were evaluated. The teeth were immersed in methylene blue dye under six different conditions: passive immersion; pre-agitation for 10 min using an endodontic ultrasound; pre-agitation for 10 min using a cleaning ultrasound; 25 mmHg vacuum for 10 min followed by passive immersion; 30 mmHg and 650 mmHg vacuum for 24 h. They also found no significant difference among the different methods for dye impregnation.<sup>4</sup> These results are in accordance with those of other authors who did not observe significant differences in the results obtained with a vacuum, specimen pressurization or passive immersion.<sup>5,6</sup> That's why we did not evaluate microleakage pattern under vacuum pressure.

A. Ruya Yazici  
Ankara, Turkey

## REFERENCES

1. Yap AU. Effects of storage, thermal and load cycling on a new reinforced glass-ionomer cement. *J Oral Rehabil* 1998;25:40-44.
2. Yap A, Stokes AN, Pearson GJ. An in vitro microleakage study of a new multi-purpose dental adhesive system. *Oral Rehabil* 1996;23:302-308.
3. Pathomvanich S, Edmunds DH. The sealing ability of Thermanafil obturators assessed by four different microleakage techniques. *Int Endod J* 1996;29:327-334.
4. Ferreira R, Bombana AC, Sayeg IJ. In vitro analysis of the penetration of methylene blue dye in human radicular dentin using different methods of impregnation. *Aust Endod J* 2008;34:110-114.
5. Dickson SS, Peters DD. Leakage evaluation with and without vacuum of two gutta-percha fill techniques. *J Endod* 1993;19:398-403.
6. Masters J, Higa R, Torabinejad M. Effects of vacuuming on dye penetration patterns in root canals and glass tubes. *J Endod* 1995;21:332-334.