

Commentary: Thyroid function and root resorption

By Brian Povolny, DDS, MSD, PhD

This paper contains interesting material relevant to any practicing orthodontist concerned about root resorption. It examines the effect of a common hormone, l-thyroxine, on force-induced root resorption. The important conclusion is that, following the application of orthodontic force, significantly less root surface resorptive lesions were found in animals where l-thyroxine was administered than in controls.

The paper does raise some questions which may limit interpretation of its results. The authors state that l-thyroxine leads to a more efficient force-induced remodeling process. Since the true pathophysiology of orthodontic root resorption is a matter of controversy, it may be more accurate to say that l-thyroxine somehow reinforces the protection of the cementum and dentin to force-induced osteoclastic resorption. Certainly, the remarkable thing about cementum and dentin is that they are normally highly defended against force-induced osteoclastic resorption while adjacent bone tissues are subject to extensive and predictable resorption in the presence of orthodontic force. In fact, the authors observed that teeth did not move faster in the l-thyroxine group, so postulating increased remodeling efficiency seems

unjustified. It is enough to note that administering l-thyroxine had the effect of reducing surface resorption.

Other results reported by the authors suggest that further work along these lines may be enlightening. For instance, why would an appliance alone decrease alkaline phosphatase activity? And, since giving doses of exogenous thyroxine did not increase circulating thyroxine levels, why were any effects found at all?

The central importance of root resorption as a side effect of orthodontics, and its medico-legal ramifications, make the results of this paper relevant to the orthodontic community, since they suggest that it is possible to reduce root resorption with the use of a common hormone. Of course, much more work needs to be done before we will be able to use l-thyroxine or other hormones in our patients to lessen root resorption. Nevertheless, the more we understand about root resorption the better equipped we will be to avoid it in our practices.

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