

## Don't throw away your gutta percha just yet.....(3/08)

Tay FR, Pashley DH, Loushine RJ, Kuttler S, Garcia-Godoy F, King NM, Ferrari M. Susceptibility of a polycaprolactone-based root canal filling material to degradation. Evidence of biodegradation from a simulated field test. *Am J Dent* 2007;20:365–369.

The purpose of this laboratory study was to examine if Resilon, a polycaprolactone-based root canal obturation material, was susceptible to microbial biodegradation by using a simulated field test. Ten disks 7-mm in diameter and 1-mm in thickness were prepared of gutta percha (negative control), polycaprolactone (positive control), and Resilon. The disks were exposed for up to four months to an aerobic bacterial sludge collected from dental suction traps. Five disks were ultrastructurally examined using scanning electron microscopy (SEM) at two and four months. At each evaluation consistent results were noted within each group. The gutta percha samples exhibited no change in surface physical appearance (except for a loss of luster) with some surface bacteria identified at the highest SEM magnification. The polycaprolactone disks exhibited surface degradation of the polymer at two months that at four months was found to continue to extensive surface erosion with bacterial and fungal infiltration. The Resilon samples exhibited biodegradation signs at two months that consisted of pitting accompanied with bacterial infiltration. Furthermore, extensive degradation of the polymer matrix was observed in the deeper regions of the pits. At four months, Resilon was found to exhibit more extensive polymer matrix erosion and breakdown accompanied with fungal hyphae. However, the Resilon filler particles were not observed to undergo degradation. **The authors concluded that the incorporation of polycaprolactone into the Resilon polymer/filler blend did not prevent microbial biodegradation in this simulated field study. Furthermore, the authors recommended that long-term clinical trials of Resilon should not be based on radiographic analysis alone, as the fillers will not undergo biodegradation and will still appear radiopaque even after the degradation of the radiolucent polymer component.**



**DECS Comment:** The adage “Be not the first on whom the new is tried, nor the last to cast the old aside” is very much alive and well in the current dental environment. Many new products/techniques are marketed in sometimes well-meaning attempts to improve materials and techniques. The newer polycaprolactone obturation technique depends highly on adhesive bonding to the root canal dentin. Known problems with adhesive dentistry above the cemento-enamel junction also exist down in the root canal system, especially when one considers the difficulty of maintaining optimal bonding conditions in the complex anatomical apical areas. This research group has previously identified the difficult bonding problems that a clinician will encounter with root canal dentin with adhesive bonding. This latest work also provides additional information that the some of the newer obturation materials can be subject to bacterial degradation. The newer obturation techniques, while possessing some promising concepts, need to be proven with long term clinical trials that are ascertained by methods in addition to the usual radiographic techniques.

### References

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