**Bisphosphonates: A threat or an option?**

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Most dentists will be familiar with bisphosphonates mainly as a cause of osteonecrosis of the jaw (ONJ). ONJ is a complication of systemic treatment. In contrast, locally applied bisphosphonates have been proven efficacious for improving the fixation of dental implants. Theoretical reasoning, experimental data, and small clinical trials suggest that local application of bisphosphonates is safe and effective in periodontology and implant surgery.

Bisphosphonates have positive effects on many conditions in bone and few and rare side-effects. Their application to bone, numerous studies have shown—especially in cancellous bone—bisphosphonates reduce the resorptive response to the trauma without impairing the bone formation response, therefore having a net anabolic effect. This explains why both local and systemic bisphosphonates have been shown to improve the early fixation of knee and hip replacements in randomised blinded clinical trials.1

Moreover, if an implant site in humans were infected, only the bone about one millimetre away from the implant surface would contain bisphosphonate and could be removed if necessary.

In a randomised blinded controlled trial of dental implants coated with a protein layer loaded with bisphosphonates, improved fixation was demonstrated.2 The resonance frequency was 5-25 Hz units higher for the coated implants compared with the controls (p = 0.001; Cohen’s d = 1.3). Radiographs showed less marginal resorption both at two months (p = 0.012) and at six months (p = 0.001). The patients were followed for five years without complications.

To conclude, systemic anti-resorptives may impair protection against osteomyelitis, thereby increasing the risk of ONJ in patients with other risk factors. Local bisphosphonates seem not to confer this risk, and improve implant fixation by their net anabolic effect.

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