

TABLE E-1 Analysis of the Literature Comparing Outcomes Dealing with Pharmacological Treatment, Dosage, and Fixation of Implant

Study	Animal or Clinical Study	Drug, Administration, Dosage	Follow-up	Fixation implant	Bone type	Outcome*
Peter et al. ⁷ (2006)	Murine study: 25 Wistar rats	Zoledronate, local delivery, 0, 0.2, 2.1, 8.5, and 16 µg/implant	3 weeks	Titanium alloy (TA6V) cylinders (diameter 3 mm; length 5 mm), plasma coated with hydroxyapatite (thickness 20µm; crystallinity index 62%)	Osteoporotic	0.2-8.5 µg/implant showed an increased mechanical fixation of the implant.
Tanzer et al. ⁴⁰ (2005)	Canine study: 9 mongrel dogs	Zoledronic acid, local delivery, 0.05 mg	12 weeks	Porous tantalum implants (50-mm long, 5-mm diameter)	Healthy	Mean extent of bone ingrowth = 12.5% for control vs. 19.8% for the zoledronic acid-dosed dogs, with relative difference of 58%. Individual islands of new bone formation with the implant pores similar in number in both groups but 71% larger in zoledronic acid-dosed group.
Bobyn et al. ⁹ (2005)	Canine study : 7 mongrel dogs	Zoledronic acid, local delivery, single postoperative intravenous injection, 0.1 mg/kg	6 weeks	Porous tantalum implants (50-mm long, 5-mm diameter)	Healthy	Mean extent of bone ingrowth = 6.6% for control vs. 12.2% for zoledronic acid-treated implants, individual islands of new bone formation within implant pores similar in both groups but 69% larger in zoledronic acid-treated group.
Miyaji et al. ⁶ (2005)	Murine study: 18 Wistar rats	Alendronate, systemically administered, 350 µg/kg once a week	5 weeks	Self-drilling mini cortical screws	Healthy	In alendronate group, the number of cells positive for TRAP and cathepsin K was lower at the bone-screw interface, as were the number of fibroblastic cells positive for RANKL.
Skoglund et al. ⁸ (2004)	Murine study: 76 male Sprague-Dawley rats	Systemic (daily subcutaneous injections of ibandronate (3 µg) or local ibandronate (10.1 mL)	2 weeks	Stainless steel screws, threads measuring 1-7 mm in diameter and 3mm in length	Healthy	Systemic ibandronate increased the pull-out force at failure by 30%. Local treatment increased the force at failure by 15% and stiffness by 28%. Local ibandronate increased the torque moment at failure by 60%, and the maximum friction moment by 51%.

*TRAP = tartrate-resistant acid phosphatase