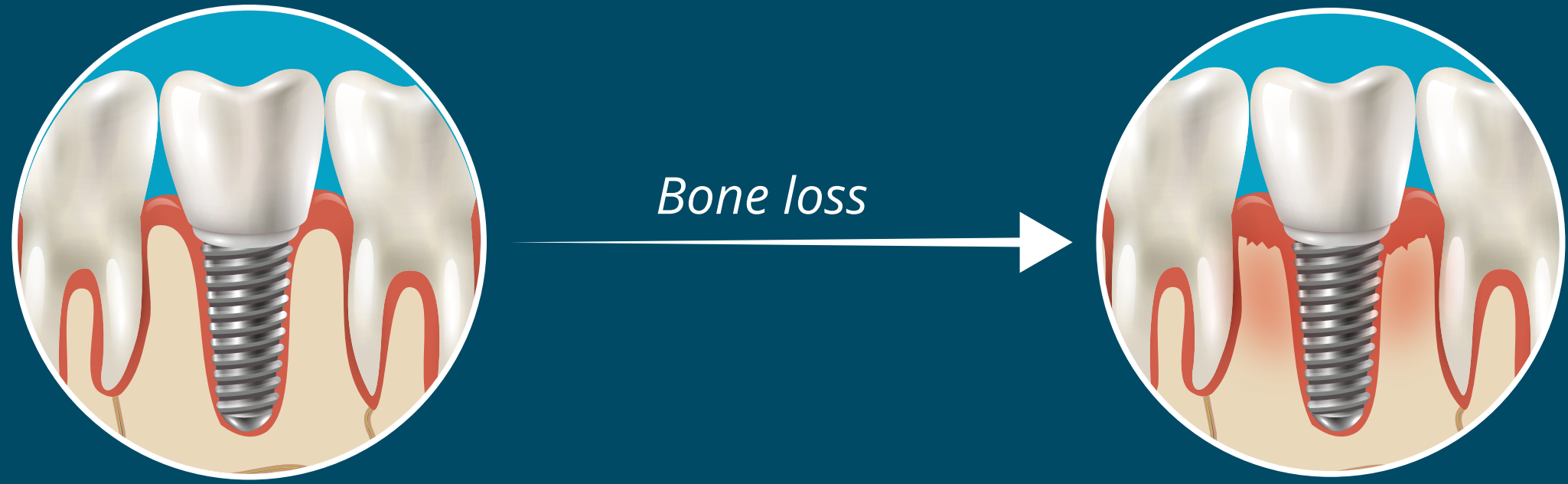
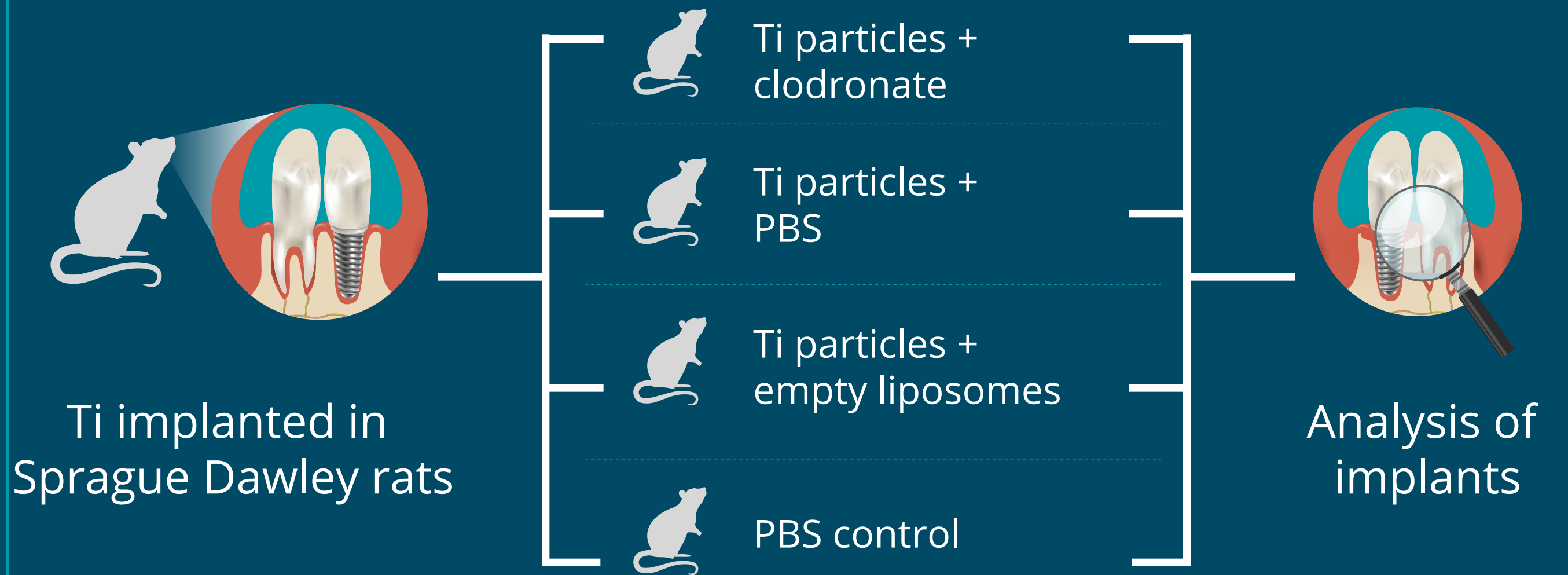


Do Titanium Particles Cause Bone Loss Around Dental Implants?

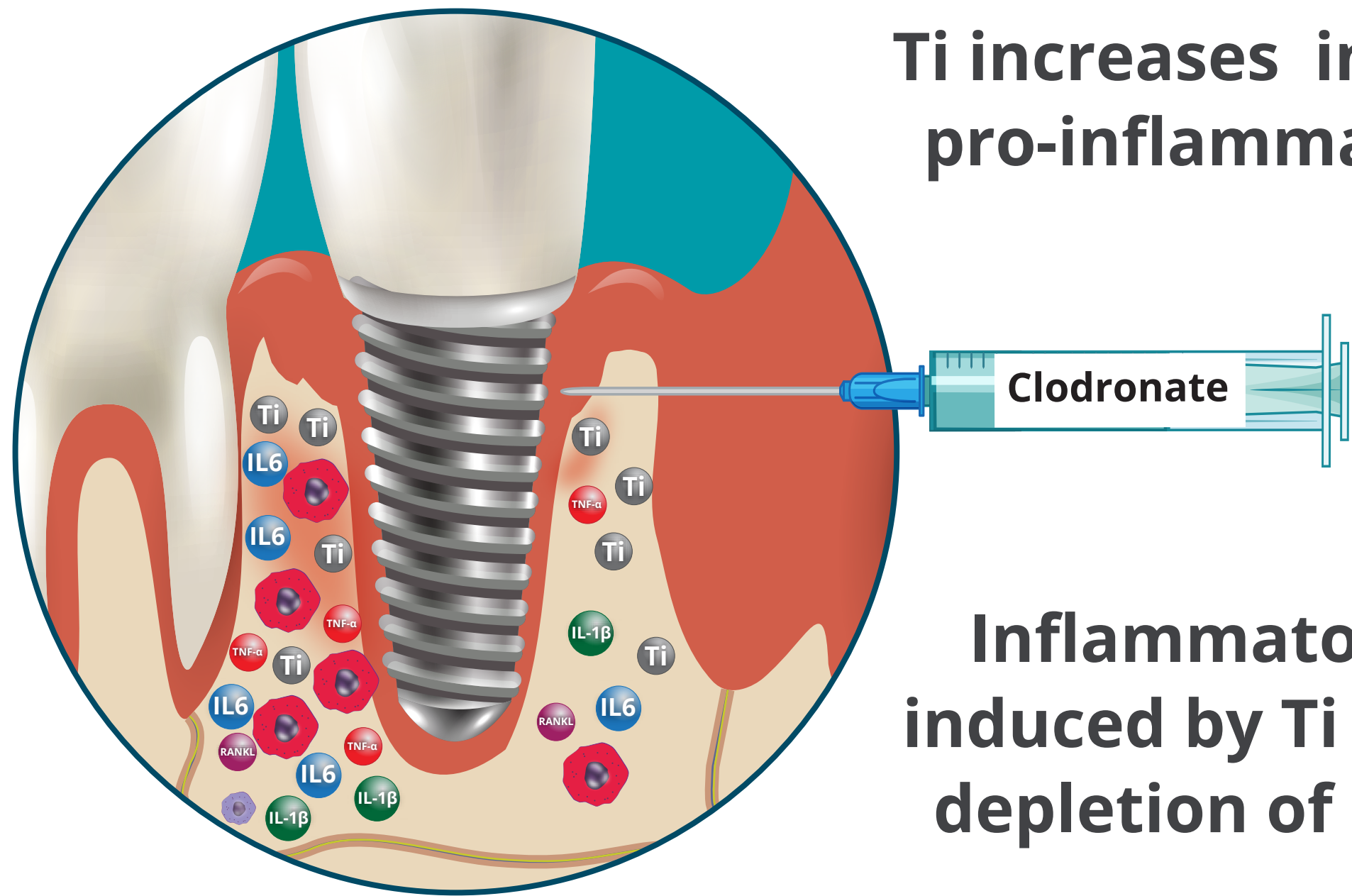
Bone loss around dental implants leads to implant failure



Is bone loss triggered by leakage of titanium (Ti) particles from the implant, and if so, what is the mechanism?



Ti increases inflammatory M1 macrophages, pro-inflammatory cytokines, and bone loss

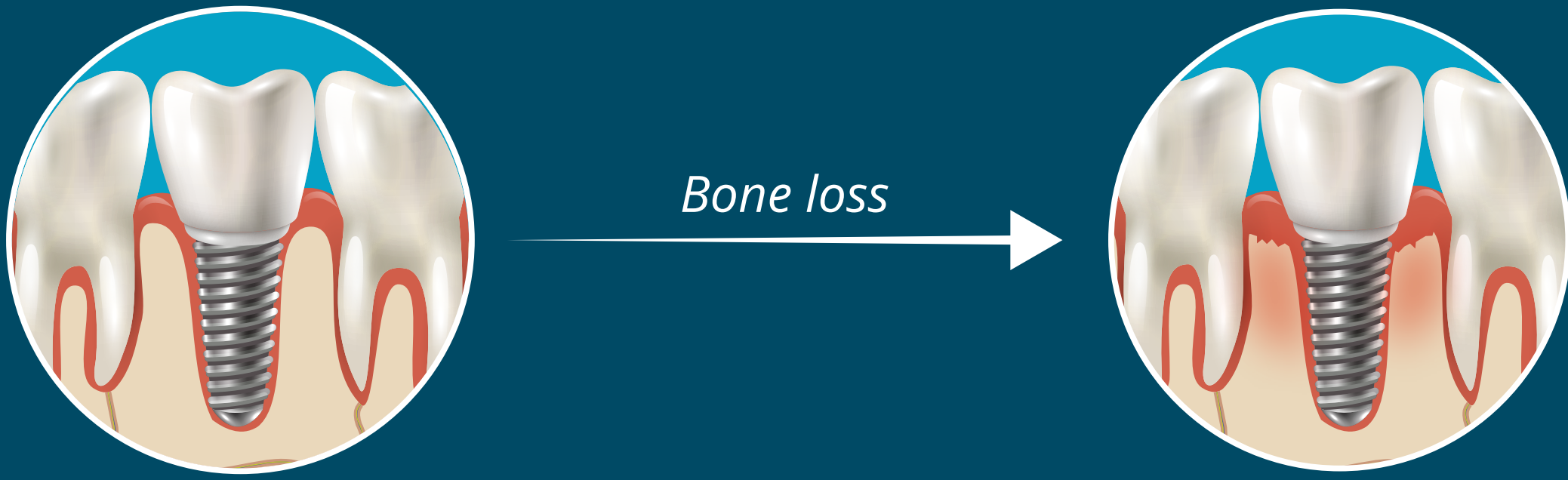


Inflammatory cytokines and bone loss induced by Ti particles were reduced upon depletion of macrophages by clodronate

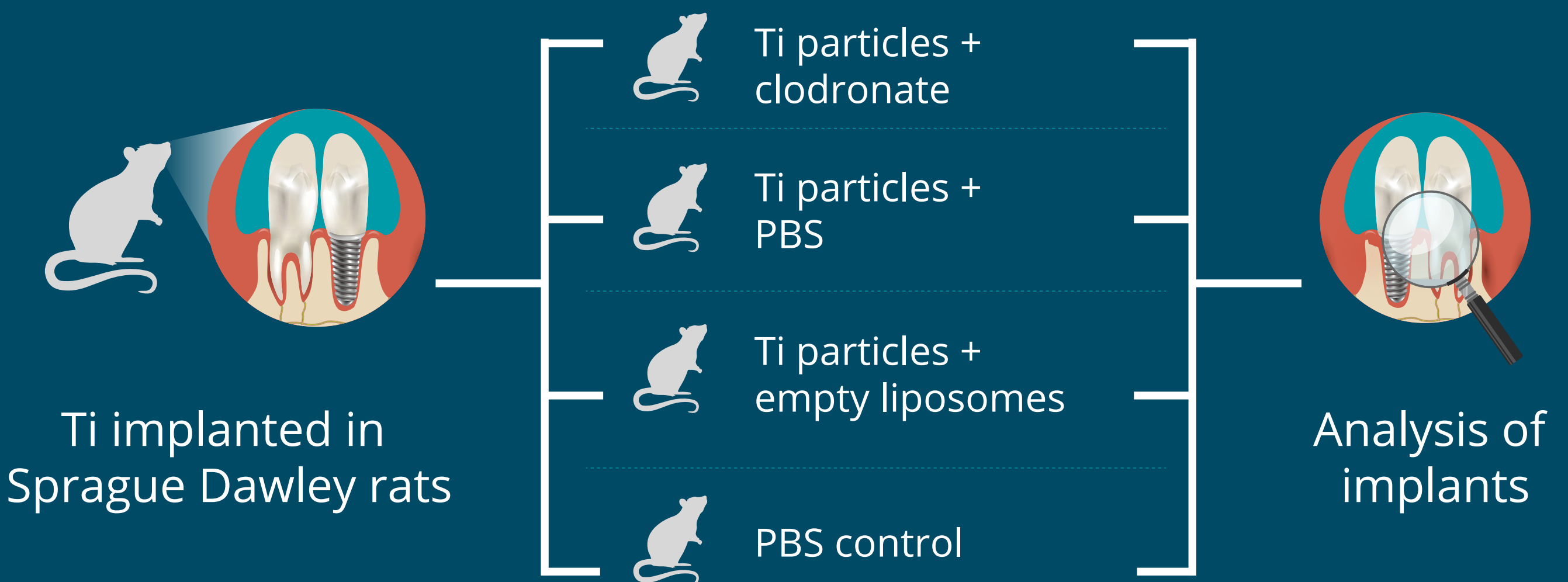
Titanium particles from dental implants activate macrophages that cause inflammatory reactions resulting in bone loss and implant failure

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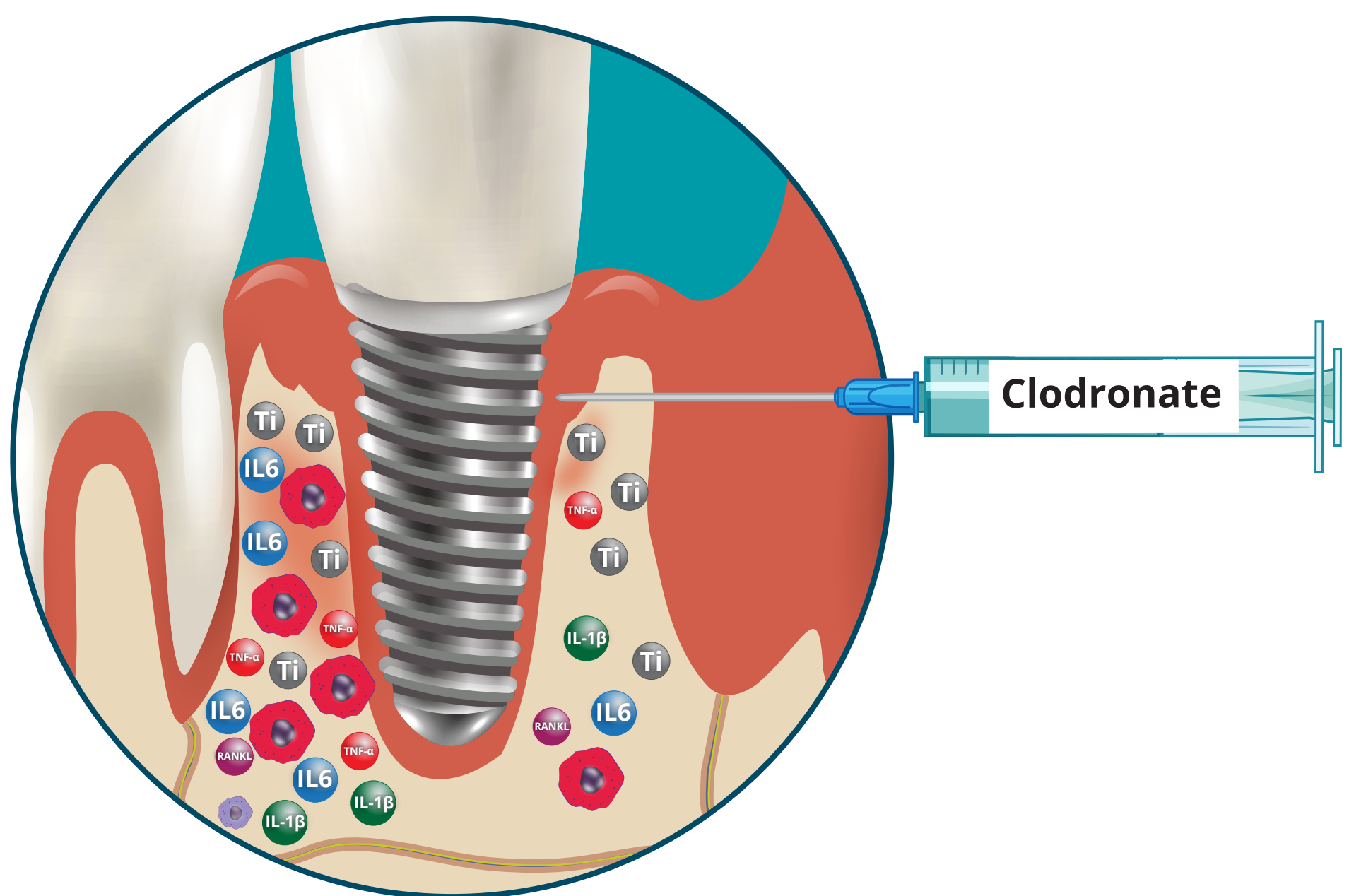
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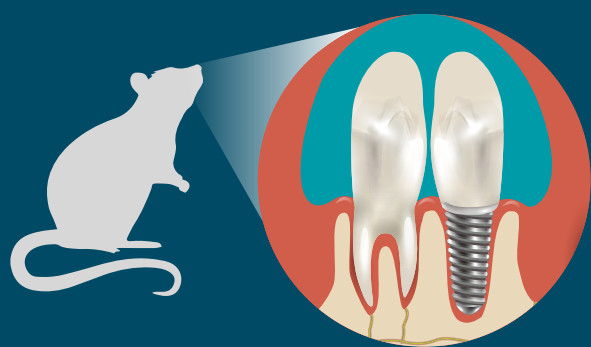
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Do Titanium Particles Cause Bone Loss Around Dental Implants?



Bone loss around dental implants leads to implant failure

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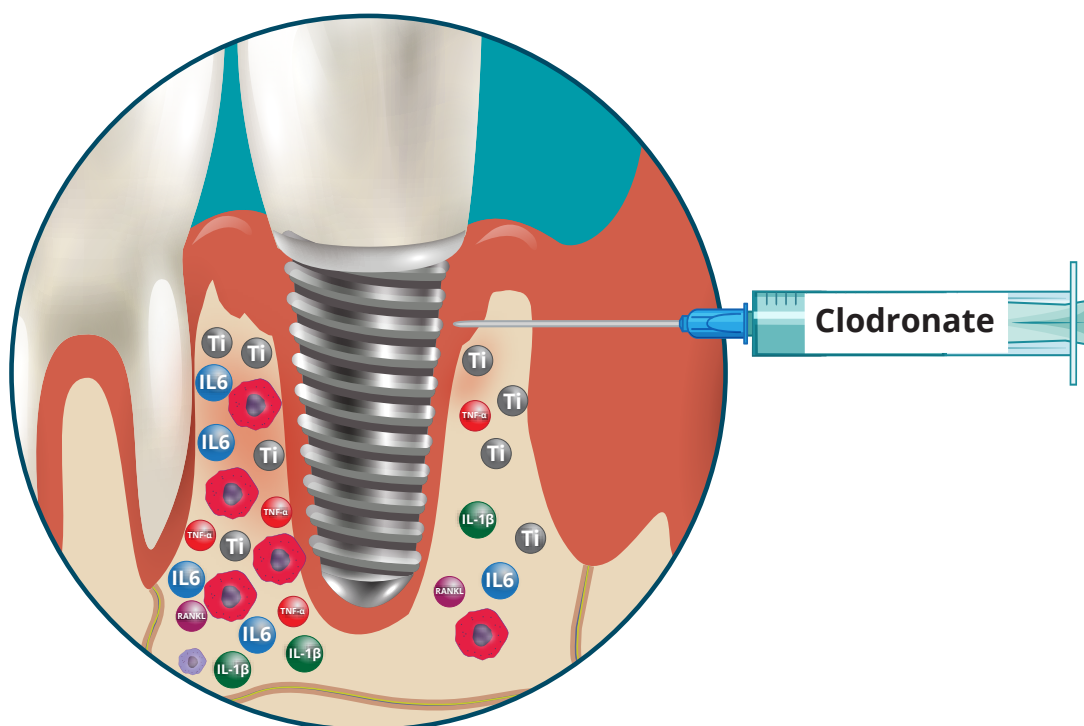
Ti implanted in Sprague Dawley rats

- Ti particles + clodronate
- Ti particles + PBS
- Ti particles + empty liposomes
- PBS control



Analysis of implants

Ti increases number of inflammatory macrophages



Clodronate reduces production of inflammatory cytokines in bone caused by Ti

Titanium particles from dental implants activate macrophages that cause inflammatory reactions resulting in bone loss and implant failure