

Two-step tooth implantation and built-up bone can be longer lasting: study

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Periodontists routinely grow bone in the mouth to guarantee a stable environment for teeth and tooth implants. But whether it's better to build up bone before placing the implant, or to simply place the implant and allow bone to grow around it, has been a subject of considerable medical debate.

Now Prof. Zvi Artzi of Tel Aviv University's Maurice and Gabriela Goldschleger School of Dentistry at the Sackler Faculty of Medicine has completed a study that concludes the two-step method is the more effective alternative — building [bone](#) first, then implanting and allowing further bone growth. Currently, many dental professionals prefer a one-step process to save their patients from an additional surgical procedure.

Published in the *Journal of Clinical Periodontology*, Prof. Artzi's study shows that a one-step implant will show more wear and tear over time than one implanted through the more cautious two-step procedure. While both are clinically effective methods, he concludes, implant placement procedures done with the one-step method show greater bone resorption around the implant neck — a process by which the bone is broken down. Bonding of the bone around the implant was also shown to be inferior.

Testing proven procedures

The successful placement of a tooth implant is based on the

biocompatibility of titanium, the main component of most dental and orthopedic implants. Both animal and human tissues readily accept the implant and grow around it. But in many cases, the amount of bone is also crucial to the success of the implant. Building bone to stabilize a titanium fixture is a long-standing procedure in dentistry.

Periodontists typically choose either the one-step or two-step procedure based on their preference alone. So Prof. Artzi and his fellow researchers set out to determine which procedure was scientifically superior in the long-term, well past the time when periodontists would typically monitor a patient's progress. In their study, they compared both methods of implantation in lab animals, and followed the progress of the implants over a course of two years.

The one-step procedure is based on the idea that a bone graft will simply attract the surrounding tissue to build up bone around the titanium implant — a process called conduction. The benefit of this procedure is that patients are only subjected to one surgery. But the study shows a difference in long-term efficacy, Prof. Artzi says. Ultimately, the bone recedes less in the more cautious two-step [procedure](#). The quality of the resulting bone itself is similar.

A judgement call

Though the study proves that the two-step method is more advantageous in most cases, each case is different, says Prof. Artzi. For example, dental professionals also take into account the already existing bone — which determines how stable a future [implant](#) will be — before deciding which route to take with each individual patient. Clinically, both methods remain sound, and periodontists should still rely on their own judgement as to what is best for the patient.

Provided by Tel Aviv University

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