A Predictable Procedure for Managing the Resorbed Posterior Maxilla with Short, Sintered Porous-Surfaced Dental Implants

Sintered porous-surfaced implants achieve integration by bone ingrowth into the porous outer surface zone.

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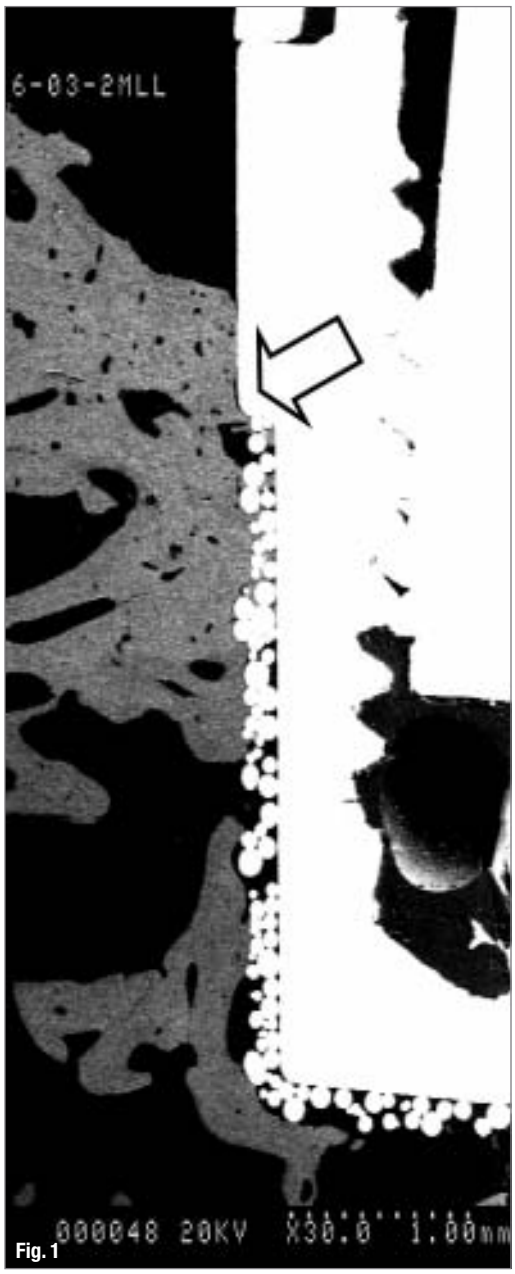

Fig. 1

Fig. 1_Backscatter scanning electron microscopic image of the proximal surface of a sintered porous-surfaced implant that had been in function in a dog mandible for 14 months. The crestal bone stabilized slightly coronal to the machined collar-to-sintered surface junction (arrow).

_Recent advances in technique have led to the simplification of the restoration of the resorbed posterior maxilla with dental implant-supported prostheses. While direct open window sinus elevations to access the sinus cavity continue to be used[1] (particularly when multiple implant sites in a single sextant require sinus augmentation), many patients with minimal subantral bone height can be more easily and less expensively managed with the indirect sinus elevation approach. As originally described by Summers[2] and confirmed by others[3-5], an indirect, minimally invasive, low-risk sinus elevation procedure can be performed using hand-held, end-cutting osteotomes and a surgical mallet to elevate the sinus floor in an area localized to the apex of the implant osteotomy. The height of subantral bone existing at the intended implant site is first determined using a panoramic, tomographic, or, ideally, a computed tomography radiographic image. Knowing this height and assuming that the bone is primarily types III or IV[6], a series of osteotome tips of gradually increasing diameter driven by tapping with a surgical mallet is used to develop the osteotomy to a depth short by ~1 mm of the sinus floor. If the bone quality is denser (eg, type II)[6], a pilot bur may be needed to create the initial site depth (again staying ~1 mm short of the sinus floor) thereby avoiding excessive force with the osteotomes that could produce vertigo as an untoward effect.[7] The bone through which the osteotome advances becomes compacted and acts as a "ceiling" for the osteotomy socket. This autogenous plug of bone will remain attached to the Schneiderian membrane of the sinus cavity and act as a buffer to protect this membrane from damage when the sinus floor is ultimately breached. Nevertheless, Summers[2] has advocated that an exogenous particulate graft material be added to augment this autogenous plug before proceeding to advance the largest diameter osteotome tip through the remaining ~1 mm of subantral bone,