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Should the Implant Fit the Patient or Should the Patient Fit the Implant?

Dennis Flanagan, DDS

Dental implants have increased the quality of life for many people who would have otherwise been relegated to a life of difficult mastication and poor nutrition. Many patients present for treatment with atrophic partial or completely edentulous conditions that preclude the placement of standard-sized implants. These sites typically require osseous augmentation to accommodate standard-sized implants. Edentulous sites can be deficient vertically, horizontally, in length, in width, or all of these.

Many patients with deficient edentulous sites may not be able to accept osseous augmentation procedures because of a psychological or physiological disability or economics. Additionally, sites that are extra-cortically grafted may undergo partial or complete resorption. Spilt-ridge expansions may not have the same resorption pattern as extra-cortical grafts but there is an associated surgical risk for cortex fracture and a compromised outcome. Atrophic edentulous sites may be able to accommodate implants that are narrower, shorter, or wider than standard-sized implants without development. Nonstandard implants may be appropriate for selected atrophic sites.

There are, however, considerations. For example, a narrow implant delivers a much greater occlusal force to supporting bone per square millimeter than a standard-diameter implant. Thus, narrow-diameter, mini implants may be used in multiples or in increased length to dissipate the occlusally generated forces. Splinted multiple implants increase the surface area that interfaces with the bone to lessen the per square millimeters of force borne by the bone. Additionally, narrow atrophic bone may meld

dense cortical bone that can provide a stable base for mini implants. More than one implant system may be needed to accommodate the vast array of presenting anatomic implant sites. No one proprietary implant system provides all the shapes and widths and lengths that can fit every anatomy. Using only one system may limit the list of treatment possibilities for any particular patient.

Atrophic bone can leave a maxillary sinus or a mandibular canal that impinges on an implant site. Thus, a few implant systems may need to be included in the implant surgeon's armamentarium to enable appropriate treatment.

Esthetic concerns are important factors when choosing an implant system. Nonstandard implants may not allow an esthetic prosthesis, so esthetic concerns should be addressed early. Narrow-diameter implants usually would be restored with undersized coronas that the patient may not accept. Prosthetic outcomes should be adequately described to preclude unrealistic expectations.

Thus, knowledge and familiarity of several different implant systems may be important so the treatment is most appropriate for that particular patient based on presenting anatomy, physiologic tolerance, esthetic expectations, and economic factors.

Implants should be placed into sites with adequate bone volume for that particular sized implant. Implants that are nonstandard in size may be used in various edentulous situations when standard-sized implants are too wide or too long for appropriate placement. Maintaining an inventory of nonstandard implant systems may be important for rendering the most efficacious care.

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