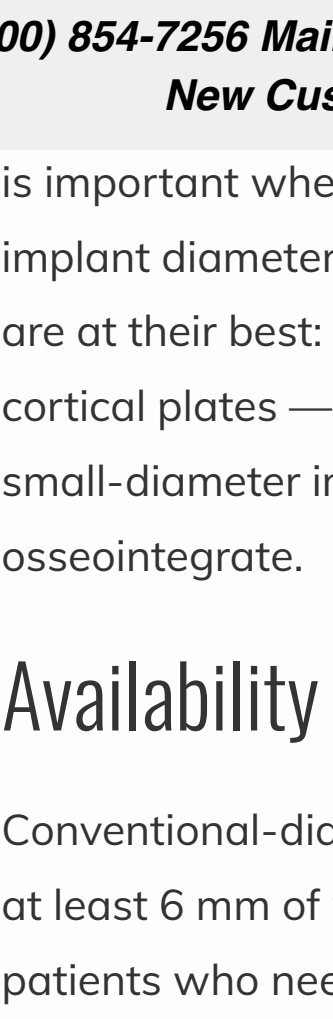


# Small Diameter Implants: Choosing the Appropriate Implant Diameter


[Inclusive Magazine: Volume 4, Issue 1](#)

with Parresh B. Patel, DDS

## Bicortical Stabilization

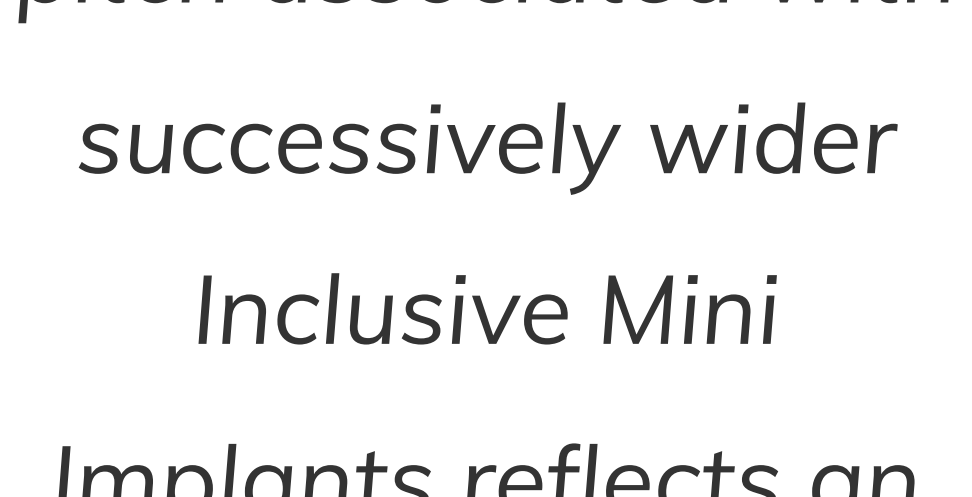
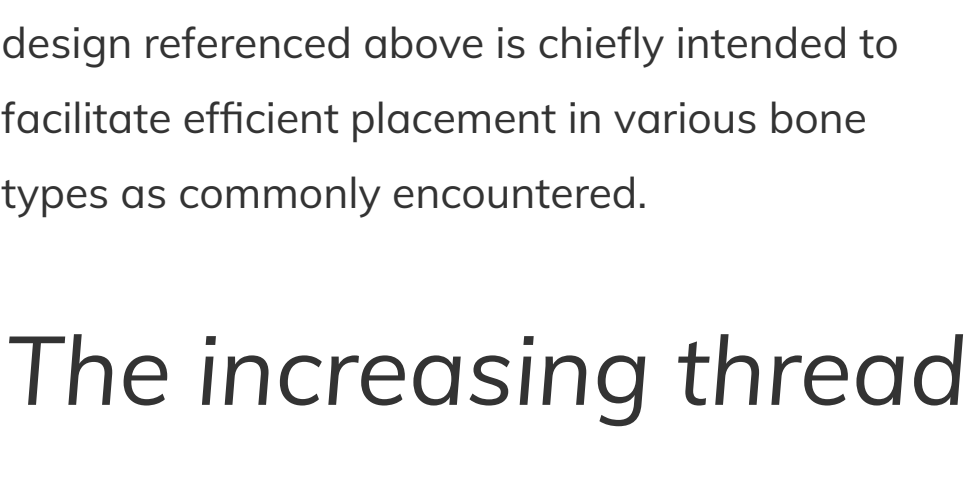
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is important when choosing the appropriate implant diameter. That is where mini implants are at their best: placed in thin bone with strong cortical plates — the ideal environment for a small-diameter implant to engage and osseointegrate.

## Availability of Bone

Conventional-diameter implants typically require at least 6 mm of width labio-lingually. But most patients who need denture stabilization lack sufficient bone width for these larger root-form fixtures, necessitating either a ridge augmentation procedure or the placement of small-diameter implants. Mini implants can often be placed in as little as 3 mm of bone, gaining stability by engaging both labial and lingual cortical plates. Similarly, a mini implant of just 10 mm in length can be sufficient to achieve bicortical stabilization along the inferior-superior axis in a resorbed mandible.

## Bicortical Stabilization of Inclusive® Mini Implants in the Labio-Lingual Dimension

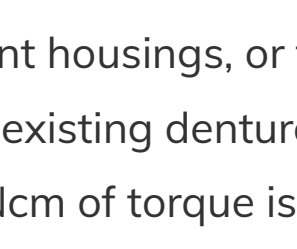
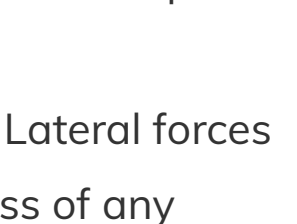
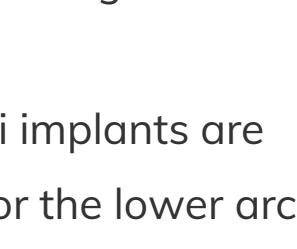


## Quality of Bone

Generally accepted placement protocols suggest that the widest possible diameter of implant be used based on the available bone. However, the thread design of various implant sizes may also be taken into account in relation to the quality of bone. A thinner ridge often indicates a higher percentage of cortical bone and associated bone density. A thicker ridge often indicates a higher percentage of cancellous interior bone. The increasing thread pitch associated with successively wider [Inclusive® Mini Implants](#) reflects an anticipation of the bone density to be encountered with various ridge sizes.

Naturally, it is incumbent upon the clinician to treatment plan for the ideal implant size on a case-by-case basis, based on a complete diagnostic evaluation. The variation in thread design referenced above is chiefly intended to facilitate efficient placement in various bone types as commonly encountered.

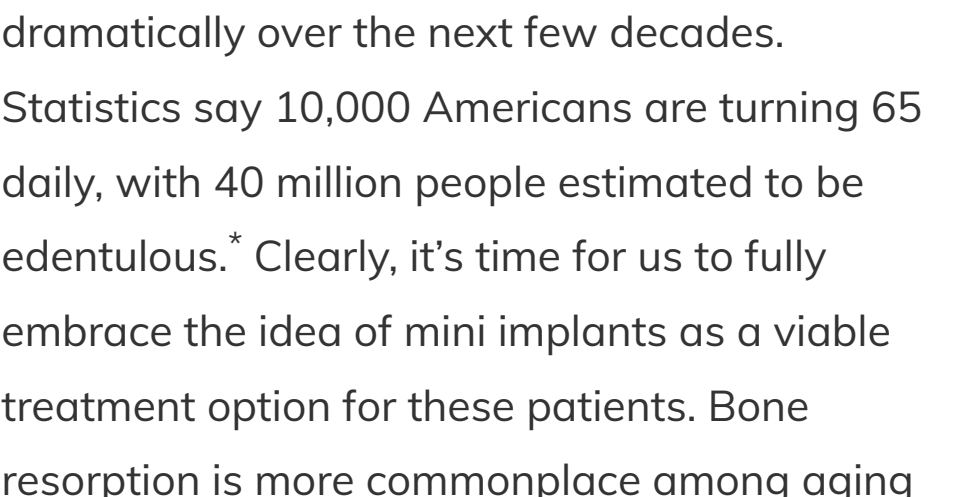
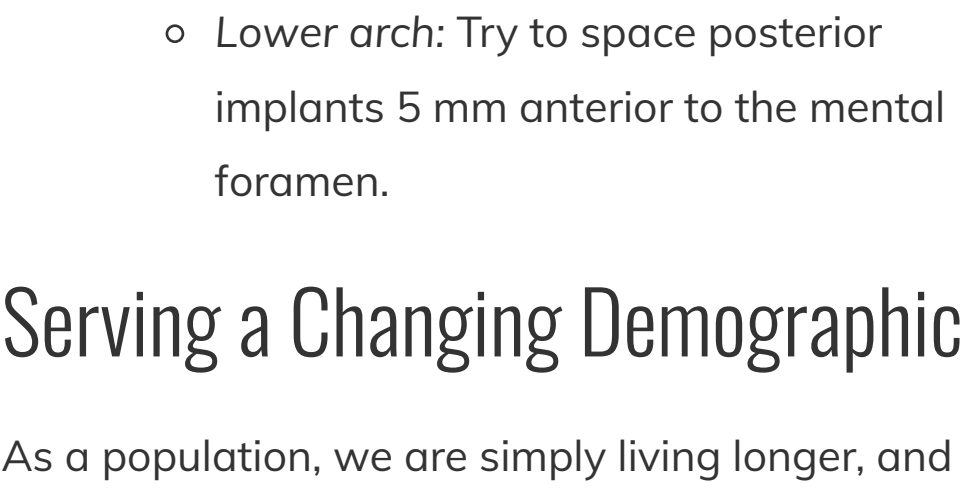
*The increasing thread pitch associated with successively wider Inclusive Mini Implants reflects an anticipation of the bone density to be encountered with various ridge sizes.*

BONE TYPE	DESCRIPTION	INCLUSIVE MINI IMPLANT	THREAD PITCH
D1	Thin/Dense	Ø 2.2 mm	
D2	Thin/Trabeculated	Ø 2.5 mm	
D3	Average/Spongy	Ø 3.0 mm	

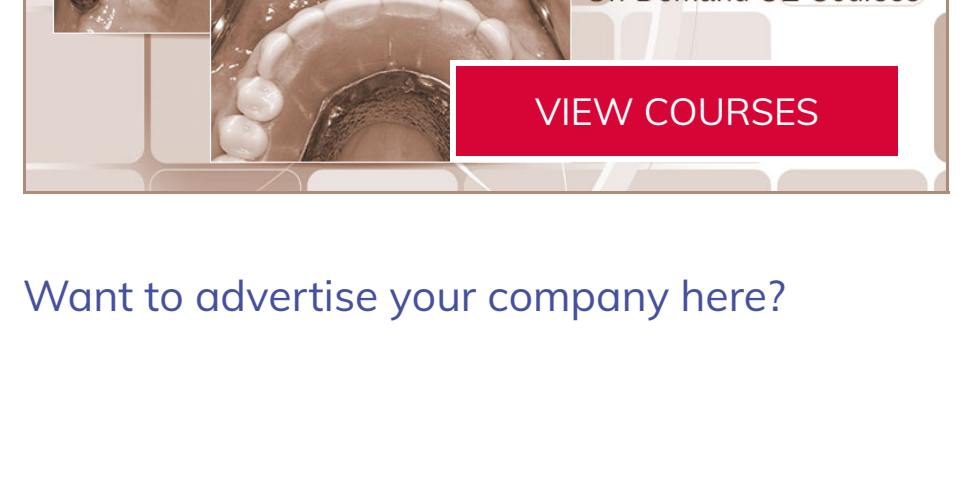
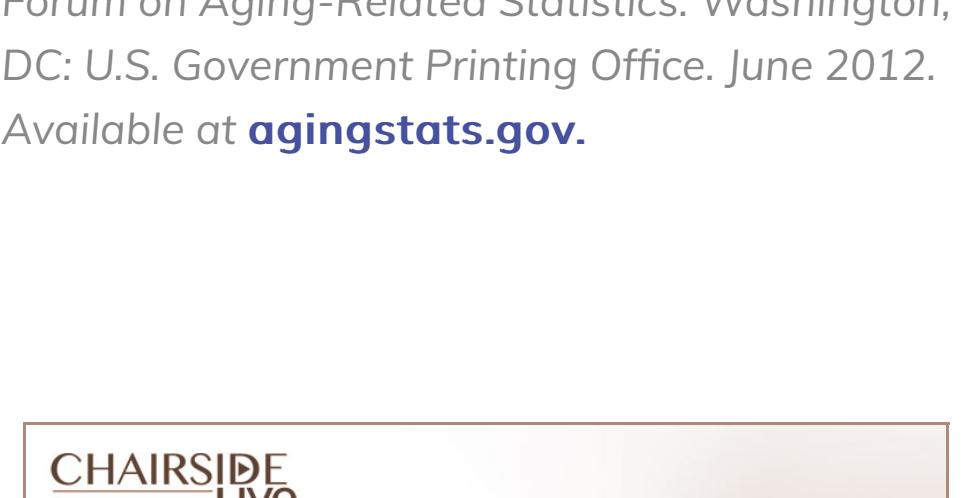
Note: The 3.0 Inclusive Mini Implant is used to compress, condense and engage Type D2 bone.

Because it is a self-tapping screw, removing the entire volume of bone, as in the case of a traditional implant with a non-cutting apex, is not necessary.

## Ø 2.2 mm Inclusive Mini Implant for Types D1 and D2 Bone, Respectively



## Ø 2.5 mm Inclusive Mini Implant for Highly Resorbed Premaxilla Bone




## Other Factors for Consideration

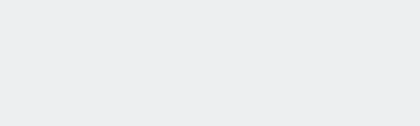
- **Number of implants** – As important as the diameter, the standard number of mini implants is typically four in the lower arch and six in the upper arch. If possible, placing five in the lower and seven in the upper and engaging additional alveolar bone will lend greater stability.
- **Immediate loading** – If 35 Ncm of torque can be achieved, it is generally safe to load the mini implants with a new denture featuring O-ring attachment housings, or to pick up the housings in an existing denture chairside. If achieving 35 Ncm of torque is not possible, consider a soft relined of the denture and allow for a prescribed period of osseointegration.
- **Parafunctional habits** – Lateral forces can compromise the success of any implant, so if the patient is a bruxer or grinder, consider placing the largest diameter implant possible.
- **Occlusion** – Whether mini implants are being placed in the upper or the lower arch, if the opposing arch is natural dentition and 35 Ncm of torque cannot be achieved for all implants, consider soft lining the denture for six weeks.
- **A-P spread** – The wider the anterior-posterior (A-P) spread, the more stable the oral environment.
  - Upper arch: Maximize the A-P spread by placing the most distal implants as far back as possible without impinging on the sinus cavities
  - Lower arch: Try to space posterior implants 5 mm anterior to the mental foramen.

## Serving a Changing Demographic

As a population, we are simply living longer, and the number of older people will increase dramatically over the next few decades. Statistics say 10,000 Americans are turning 65 daily, with 40 million people estimated to be edentulous.\* Clearly, it's time for us to fully embrace the idea of mini implants as a viable treatment option for these patients. Bone resorption is more commonplace among aging patients, and small-diameter implant placement protocols represent a minimally invasive, more affordable alternative to conventional-diameter implant placement.

*\*SOURCE: Federal Interagency Forum on Aging-Related Statistics. Older Americans 2012: Key Indicators of Well-Being. Federal Interagency Forum on Aging-Related Statistics. Washington, DC: U.S. Government Printing Office. June 2012. Available at [agingstats.gov](#).*





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