

## 12 Week Comparison Max Shear to Pushout IntimateBond™ versus Bare Porous PEEK and Bare PEEK

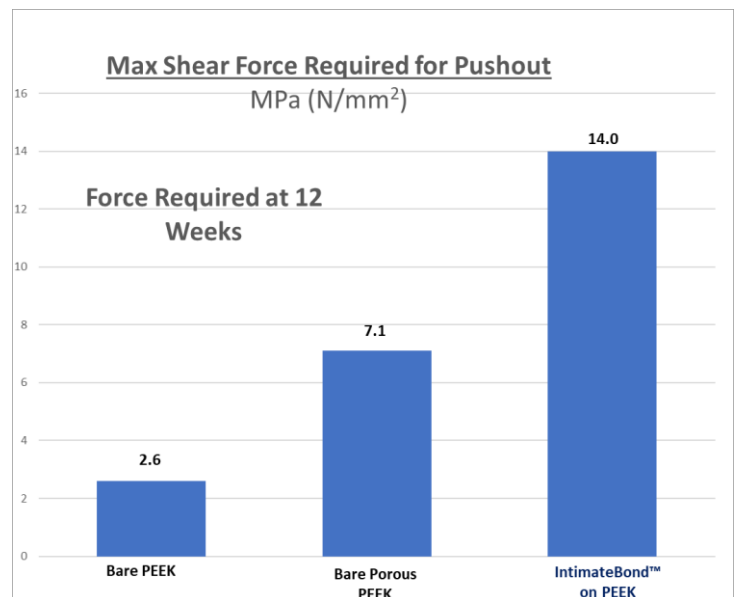
Cell attachment Fixes an implant. Ingrowth is the growth of the bone around an implant often separated from the bone by a cushion of fibroblasts. Ongrowth is the juxtaposition of bone and the implant without intervening fibroblasts. True cell attachment is where the bone cells attach (FIX) directly to the implant for maximum bone integration and minimum micromotion.

The fixation strength of cell attachment is demonstrated by the pushout force required for a solid dowel at 12 weeks<sup>1</sup>. Results were from cortical dowel implants (25 mm x 6mm) in sheep femurs. In Vivo testing in an established sheep model reveals that the IntimateBond™ Osteoblast cell attachment surface dramatically increases the shear force required to remove the implant at 12 weeks:

- Almost 2x Porous PEEK
- More than 5 times the force of bare PEEK

And further, osteoblast ingrowth into channels overwhelms the existing fibroblasts on complex surfaces and into open aperture, further enhancing implant fixation. In another published study by Walsh<sup>2</sup> (2018) “Histology showed newly formed woven bone tracked along the surface of the titanium in the apertures... without any graft.”

And separate published study data testing low-roughness and high-roughness plasma-spray coated dowels in a pelvic sheep model revealed that the pullout force for the tested plasma-spray samples may be less than half the Maximum Shear Force required in the IntimateBond study, though the studies, examiners and sponsors were not matched.<sup>3</sup>



<sup>1</sup> Walsh et. al, (2009, Unpublished) Bone ingrowth and ongrowth into Modified PEEK implants in an established sheep model.

<sup>2</sup> Walsh et. al, (2018) The in vivo response to a novel Ti coating compared with polyether ether ketone: evaluation of the periphery and inner surfaces of an implant.

<sup>3</sup> Data reported by Lincotekmedical.com. [https://www.lincotekmedical.com/wp-content/uploads/2023/05/Brochure-PEEK-COATING\\_Medical-1.pdf](https://www.lincotekmedical.com/wp-content/uploads/2023/05/Brochure-PEEK-COATING_Medical-1.pdf)