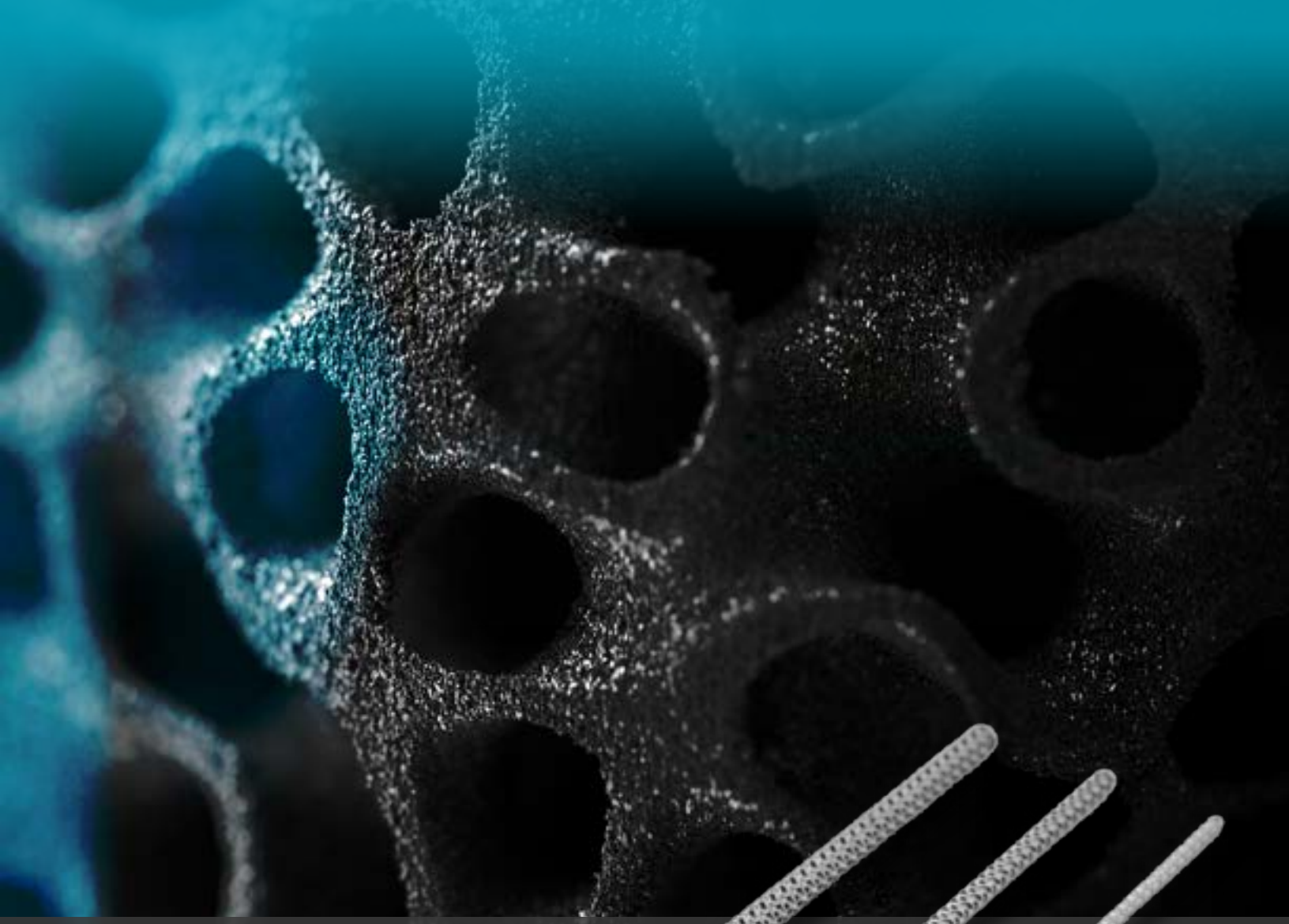


*osseo*REBAR Nail

with TIDAL Technology

Maintain alignment & fixation of bone fractures, osteotomies, arthrodesis, & bone graft

SURGICAL TECHNIQUE

LOWER EXTREMITY

restor3d

restor3d

Personalized Orthopaedics
Enabling Surgeons to Repair and
Reconstruct the Human Body

Backed by Science
Driven by Outcomes

THIS IS AN INTERACTIVE DOCUMENT

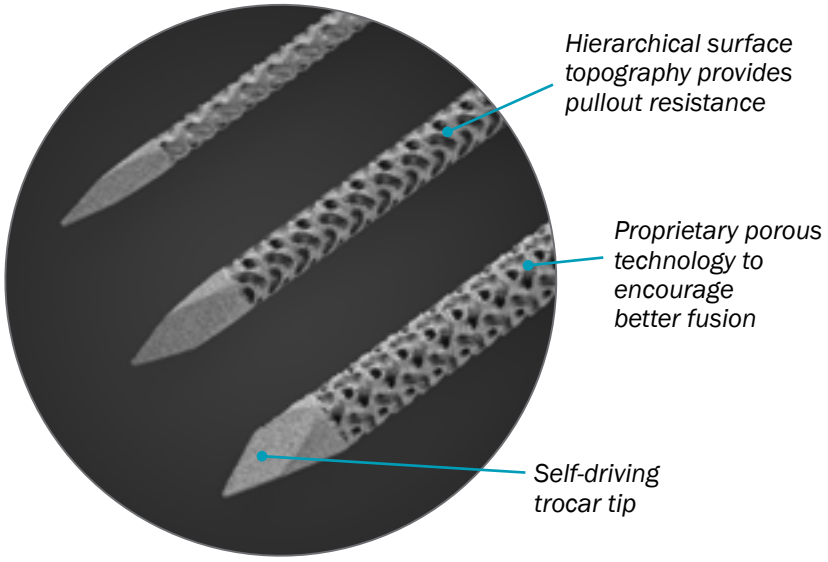
Contents

IMPORTANT NOTE: restor3d, as the manufacturer of this device, does not practice medicine and does not recommend this or any other surgical technique for use on a specific patient. The surgeon who performs any procedure is responsible for determining and utilizing the appropriate techniques for such procedure for each individual patient. restor3d is not responsible for selection of the appropriate surgical technique to be utilized for each individual patient. Always refer to the package insert, product label and/or product instructions prior to using any restor3d product.

For further product information or to arrange a product demonstration, please contact your local restor3d representative or call Customer Service toll-free in the U.S. at (984) 888-0593 or email customerservice@restor3d.com. You can also visit www.restor3d.com.

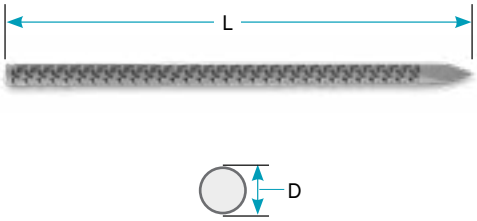
Product Overview

The restor3d *osseo*REBAR Nails with TIDAL Technology are cylindrical-shaped devices designed to help maintain alignment and fixation of fractures, osteotomies, arthrodesis, and bone graft with supplemental fixation in the foot and ankle. Manufactured using laser powder bed fusion of medical grade titanium alloy (Ti-6AL-4V) and our proprietary porous technology – TIDAL Technology, *osseo*REBAR Nails have been sterilized by gamma radiation and are provided sterile in unopened, undamaged packaging. Available in 2.0, 3.0, and 4.0 mm diameters to accommodate various indications.



Available in multiple sizes to accommodate various indications

Sizing Options



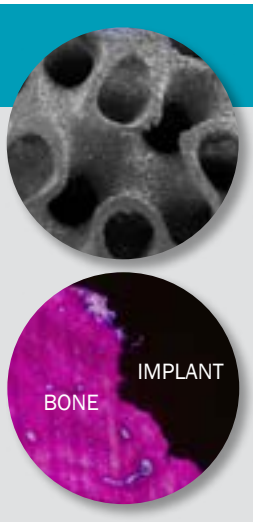
LENGTH (mm)	DIAMETER (mm)
70	2
70	3
70	4

TIDAL Technology

Backed by years of scientific research and development

restor3d's TIDAL Technology is an optimized porous architecture designed for osseointegration. Derived from sinusoidal functions, TIDAL Technology guides bone growth through the fully interconnected structure with maximized surface area.

- 100% interconnectivity and up to 80% porosity[1]
- Mesoscale pores support graft retention and bony ingrowth[2]
- Direct bony apposition to implant surface guided by surface topography and curvature demonstrated in preclinical model[2,3]



1. Kelly, et al. Acta Biomaterialia (2019) 94, 601-626.
2. Kelly, et al. Journal of the Mechanical Behavior of Biomedical Materials (2021) 116, 104380.
3. Kelly, et al. Biomaterials (2021) 279, 121206.

Indications

The restor3d *osseo*REBAR Nails are indicated for maintenance of alignment and fixation of bone fractures, osteotomies, arthrodesis, and bone graft in the presence of appropriate additional immobilization (e.g., rigid fixation implants, cast, brace).

Contraindications

The restor3d *osseo*REBAR Nails are contraindicated for use in cases of:

- Infection
- Physiologically or psychologically inadequate patients
- Inadequate skin, bone, or neurovascular status
- Irreparable tendon system
- Possibility for more conservative treatment
- Growing patients with open physes
- Patients with high levels of activity
- Malignant primary or metastatic tumors which preclude adequate bone support or screw fixations, unless additional supplemental fixation or stabilization methods are utilized
- Foreign body sensitivity

Surgical Technique

1. **Surgical Approach** – Utilize a standard surgical approach to access the affected anatomy, while protecting any nearby structures (Fig. 1).

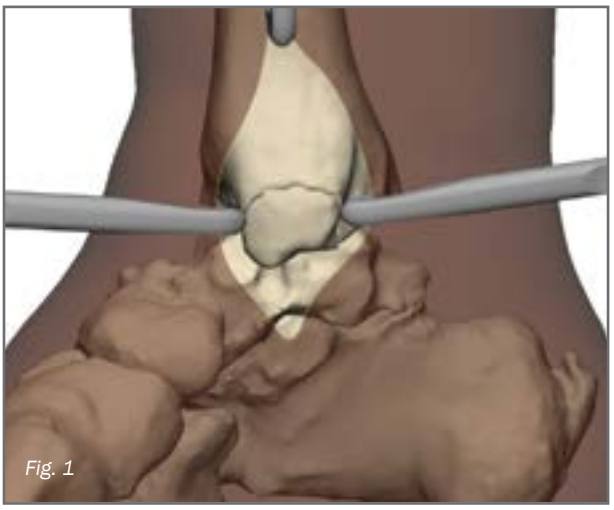


Fig. 1

2. **Reduce the Fracture or Fusion Site** – Based on fracture pattern, use closed, percutaneous, or open reduction techniques (Figs. 2 & 3). Provide provisional fixation (e.g. with supplemental Kirschner wires or clamps) as needed prior to nail placement. Confirm reduction with multiplanar fluoroscopic views. For fusions, when appropriate, address nonunion with bone grafting.

3. **Select Appropriate Nail Size** – Nails are offered in 2.0, 3.0, or 4.0 mm diameters. All sizes are 70 mm in length. Provisional templating the nail over the skin with the use of fluoroscopy (in the AP and lateral planes) can aid in estimation of implant diameter selection (Fig. 2).

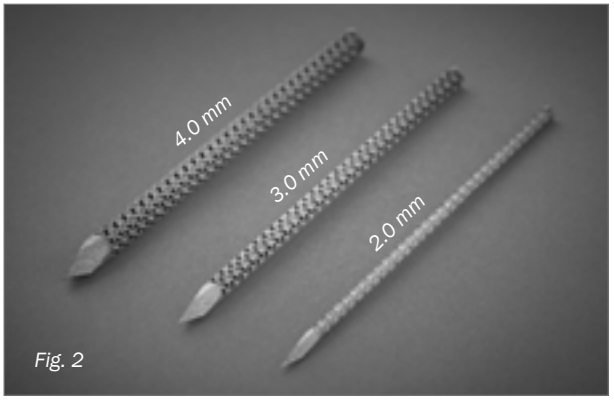


Fig. 2

4. **Place Nail in Wire Collet or Chuck** – A wire collet can be used for the 2.0 or 3.0 mm diameter nails. A keyed chuck must be used for the 4.0 mm diameter nail (Fig. 3).

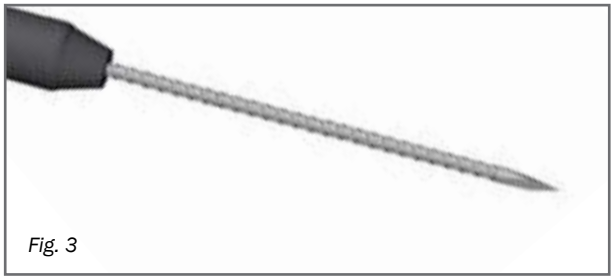


Fig. 3

5. **Drill Implant into Bone** – Cross the fracture/fusion site to an appropriate depth to achieve adequate fixation while protecting adjacent soft tissues or structures at risk (Fig. 4).

Fig. 4

6. **Verify Nail Placement** – Using fluoroscopy, verify nail placement (Fig. 5). To ensure soft tissue protection, do not pierce through far cortex.

Fig. 5

7. **Cut Nail to the Desired Length** – After cutting the nail to the desired length (Fig. 6), it may be necessary to seat the nail further into the bone using the appropriately sized bone tamp (Fig. 7).

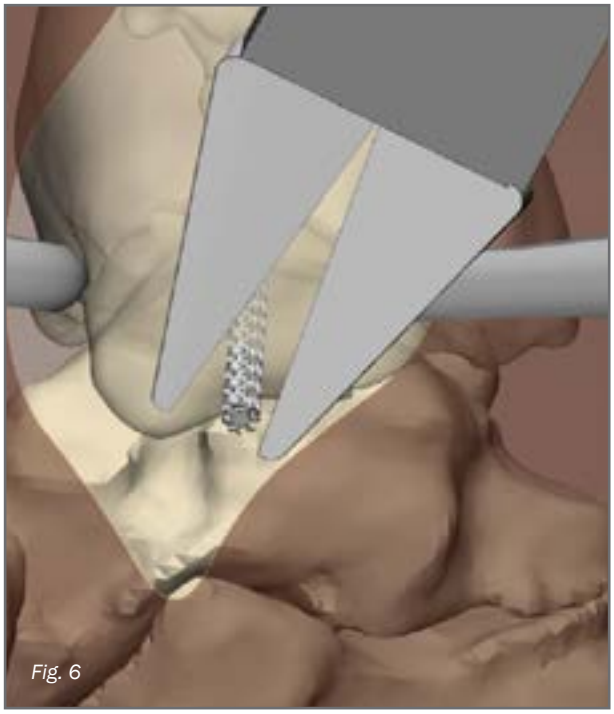


Fig. 6

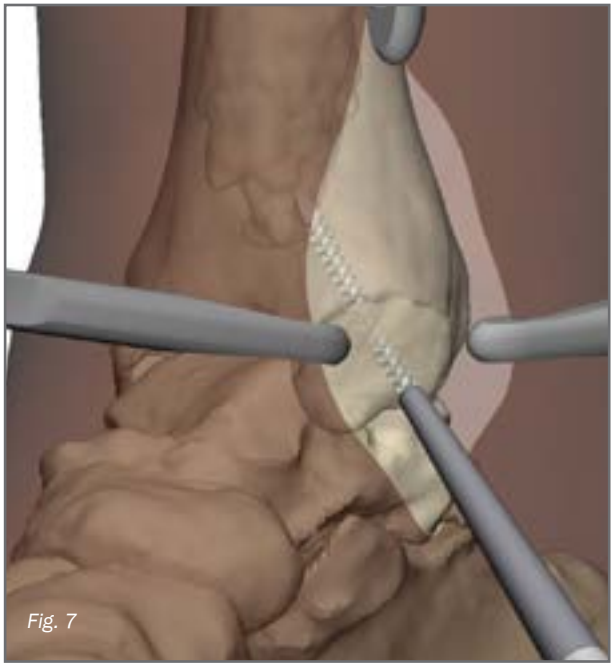


Fig. 7

8. **Place Additional Nails** – Based on fracture pattern or fusion site, use the previous steps to place additional nails, as needed, to achieve desired stabilization (Figs. 8 and 9).

Fig. 8

9. **Implant Fixation** – The nail is intended for use with supplemental fixation.
10. **Close Incision Using Standard Technique**
11. **Immobilization is based upon surgeon preference.**

Explant Information

If this implant needs to be removed, use a standard off-the-shelf trephine system with an inner diameter slightly larger than the diameter of the implant being removed.

Ordering Information – Implants

*osseo*REBAR Nails

IMPLANT	PRODUCT CODE	LENGTH	DIAMETER
	1140-0270TR	70 mm	2 mm
	1140-0370TR	70 mm	3 mm
	1140-0470TR	70 mm	4 mm

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