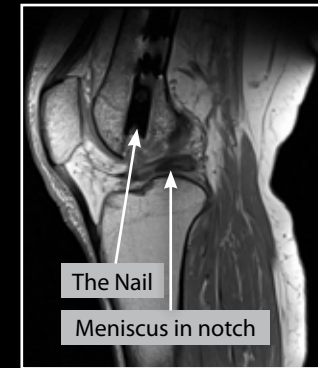




# Carbon Fiber Implants – Better Callus Faster<sup>1</sup>

CarboFix Trauma - Enhance your patient's chance of healing

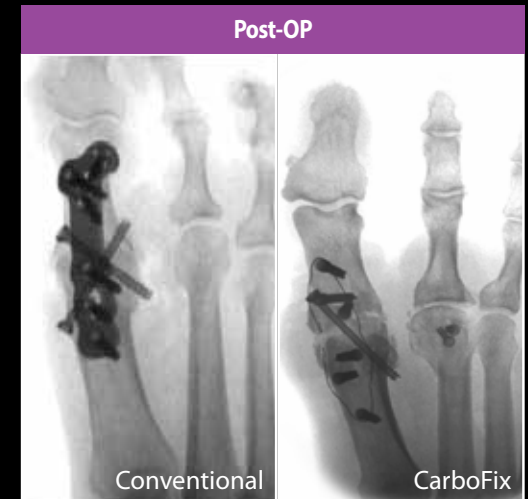
- **Modulus of Elasticity similar to cortical bone**
  - Earlier callus formation
  - Potentially decreases complications such as stress risers etc.
- **Unparalleled fatigue resistance**
  - Prolonged support for delayed union and oncology patients
- **Radiolucency**
  - Enhanced reduction and screw placement
  - Better follow-up of fracture healing process
- **Essential in oncology patients**
- **MRI/CT Artifact free**
- **No cold welding or bone ingrowth**
  - Facilitates easier hardware removal





# Carbon Fiber Implants – Clearly Better

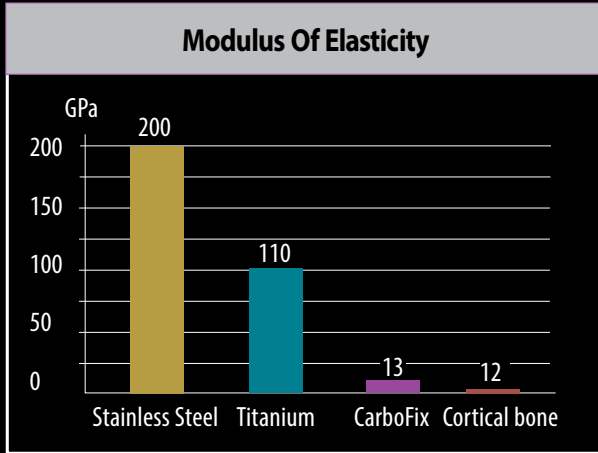
CarboFix Trauma - Enhance your patient's chance of healing



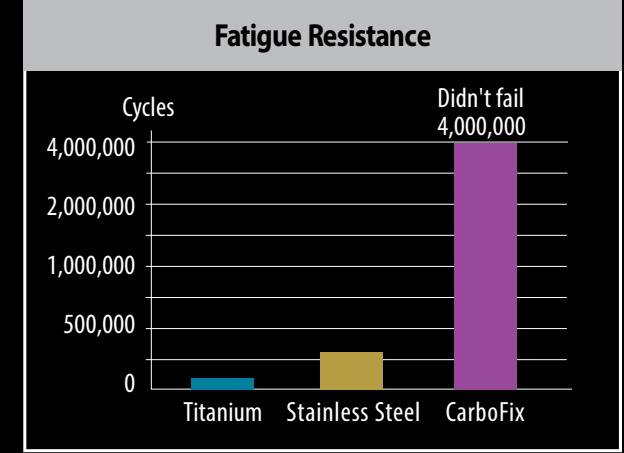
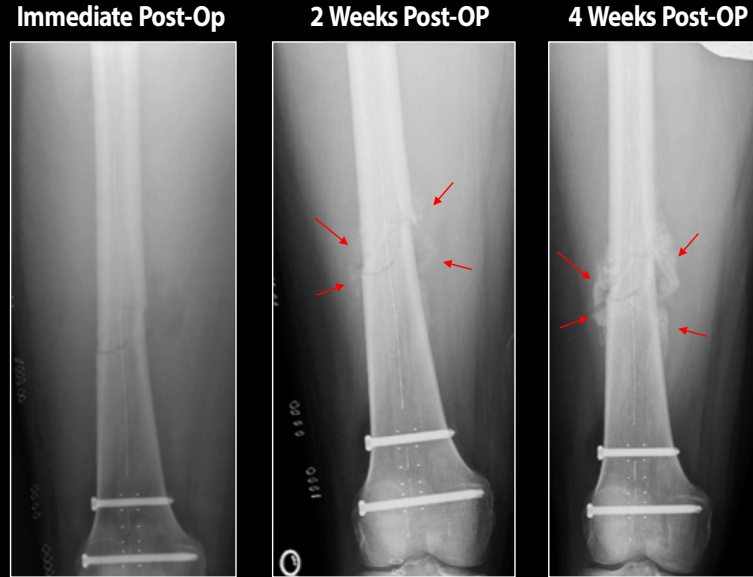


# Carbon Fiber Implants – Better Callus Faster<sup>1</sup>

CarboFix Trauma - Enhance your patient's chance of healing

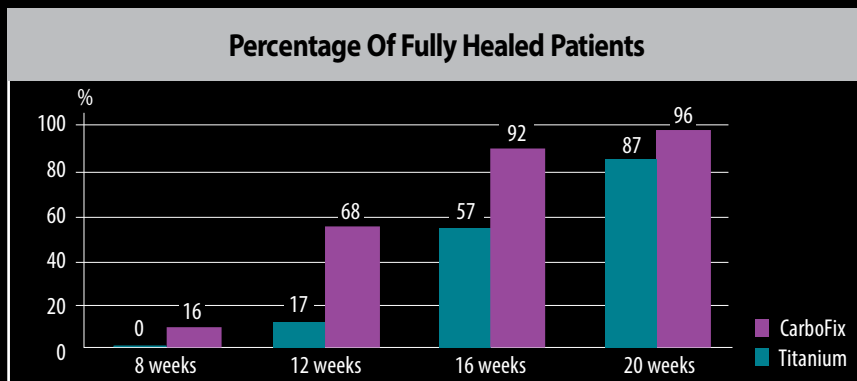


The Modulus of Elasticity of CFR-PEEK mimics Cortical Bone<sup>2</sup>



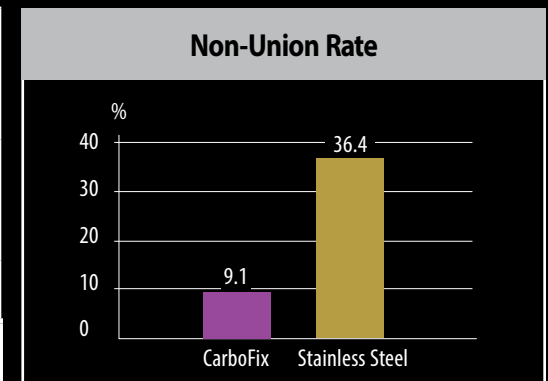
CarboFix CFR-PEEK implants have an Unparalleled Fatigue Resistance

## Tibial Carbon Fiber Vs. Titanium Nail<sup>3</sup>



## Distal Femur Carbon Fiber Vs. Stainless Steel Plate<sup>4</sup>

	CarboFix	Stainless Steel
No. of Patients	11	11
Age (Average)	71.7	57.3
Diabetic Patients %	54.5	9.1
Peripheral Vascular Disease %	18.2	0
<b>Avg. Time to Full Weight-Bearing (weeks)</b>	<b>9.8</b>	<b>11.7</b>



<sup>1</sup> Dr. B.Ziran - OTA 2017

<sup>2</sup> Alok D Sharan, Simon Y Tang, Alexander R. Basic Science of Spinal Diseases Japee bothers medical publishers.2013; 159-160

<sup>3</sup> O'Pry et. al. Carbon Fiber Reinforced PEEK versus Titanium Tibial Intramedullary Nailing: A preliminary analysis and results

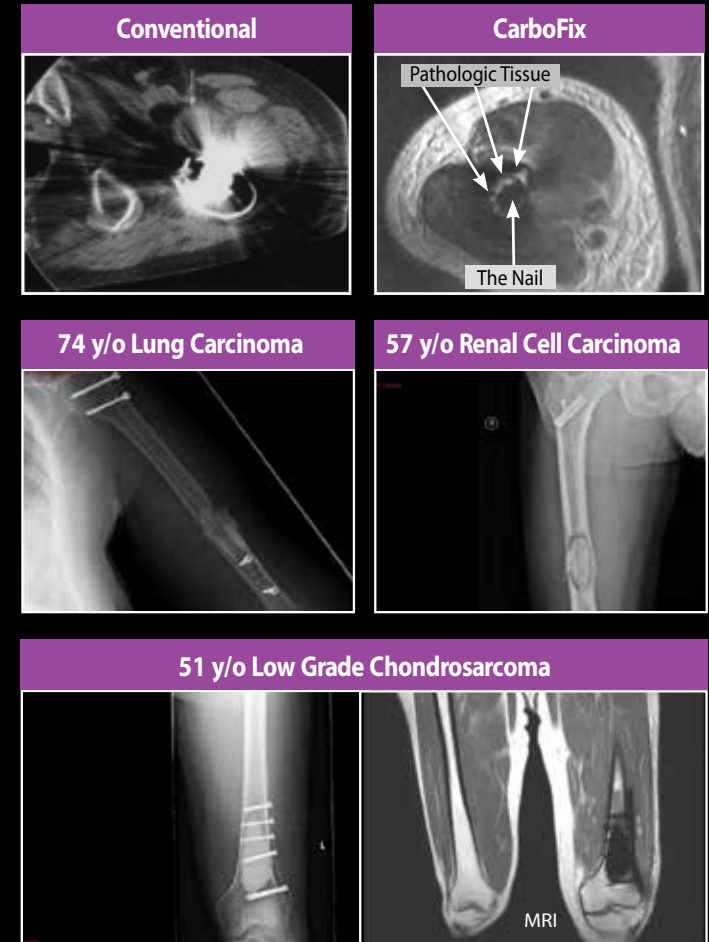
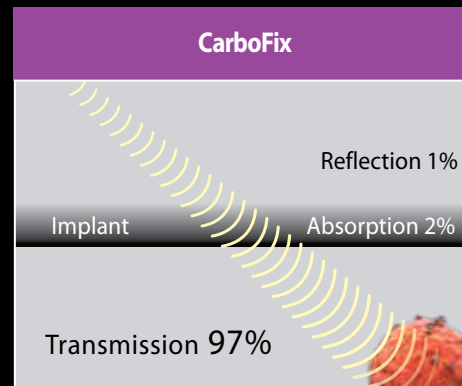
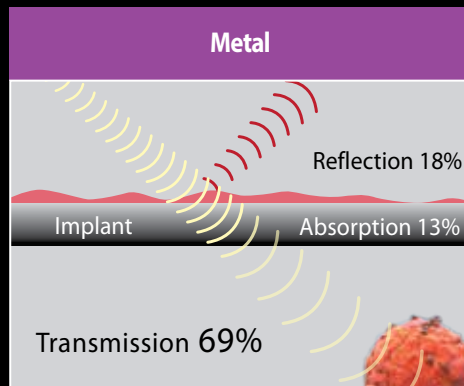
<sup>4</sup> Mitchell M et al. Early Comparative Outcomes of Carbon Fiber Reinforced Polymer Plate in the Fixation of Distal Femur Fractures. Journal of Orthopaedic Trauma Publish Ahead of Print DOI: 10.1097/BOT.0000000000001223



# CarboFix Trauma - Clearly Better

## Essential in Oncology Trauma Surgery

- **Unparalleled fatigue resistance<sup>5</sup>**
- **MRI/CT Artifact free**
  - Allows precise follow-up and early identification of local recurrence<sup>6</sup>
  - Improved radiation planning accuracy<sup>7</sup>
  - Reduced radiation planning work time<sup>8</sup>
- **Negligible effect on radiotherapy dose distribution<sup>9</sup>**



<sup>5</sup> E.L. Steinberg, et al. Carbon fiber reinforced PEEK Optima - A composite material biomechanical properties and wear/debris characteristics of CF-PEEK composites for orthopedic trauma implants. *Journal of the Mechanical Behavior of Biomedical Materials* (2012), <http://dx.doi.org/10.1016/j.jmbbm.2012.09.013>

<sup>6</sup> M.N. Zimel, et al. Carbon fiber intramedullary nails reduce artifact in postoperative advanced imaging. *Skeletal Radiol.* DOI 10.1007/s00256-015-2158-9

<sup>7</sup> Xin-Ye, et al. The prospect of carbon fiber implants in radiotherapy, *Journal of Applied Clinical Medical Physics*, Volume 13, Number 4, 2012

<sup>8</sup> J.W. Snider III, et al. Challenges Associated With Pencil Beam Scanning Proton Therapy for Spinal Tumors Following Surgical Stabilization: A Robustness Evaluation of Carbon Fiber Reinforced Polyetheretherketone (Carbon-PEEK) Versus Titanium, *International Journal of Radiation Oncology*, Volume 96, Number 2S, Supplement 2016, pp. E699–E700

<sup>9</sup> A. Nevelsky, E. Borzov, S. Daniel, R. Bar-Daroma. Perturbation effects of the carbon fiber-PEEK screws on radiotherapy dose distribution. *J Appl Clin Med Phys.* 2017 Mar;18(2):62-68



# Carbon Fiber Implants – Better Callus Faster<sup>1</sup>

## CarboFix Trauma - Portfolio & Sizes

Plates			
Implant	Number of Holes (Length, mm)	Orientation	Thickness (mm)
Distal Radius-Standard	3, 4, 7 (52, 60, 90)	Right or Left	2.4
Distal Radius-Narrow	3, 4 (52, 60)	Right or Left	2.4
Distal Radius-Triangular	3, 4 (54, 63)	Right or Left	2.4
Proximal Humerus	3, 4*, 6, 8, 12* (102, 120*, 156, 192, 262*)	Bi-Lateral	3.7
Distal Fibula	3*, 4, 5*, 6, 9, 11 (72*, 85, 96*, 114, 155, 184)	Right or Left	2.3
One Third Tubular	5, 6, 7, 9, 11 (56, 67, 78, 98, 122)	Bi-Lateral	2.3
Diaphyseal-Narrow	7, 9 (154, 190)	Bi-Lateral	4.7
Diaphyseal-Broad	9, 11, 13 (160, 185, 220)	Bi-Lateral	5.3
Diaphyseal No Holes	(160, 185, 220)	Bi-Lateral	5.3
Distal Femur	6, 8, 10, 12, 14, 16 (171, 207, 243, 279, 315, 350)	Right or Left	5.1
Medial Proximal Tibia	4, 6, 8, 10, 12 (85, 112, 139, 166, 193)	Right or Left	4.6
Lateral Proximal Tibia	4, 6, 8, 10, 12 (87, 117, 147, 177, 207)	Right or Left	5.1
MTP	Dorsiflexion: 0°, 5° (50)	Right or Left	2.0
Lapidus	Flat / 1 mm / 2 mm	Right or Left	2.0

Nails			
Implant	Length (mm)	Diameter (mm)	Prox. Diameter (mm)
Humerus	180, 200, 220, 240, 280	8.5	10.0
Proximal Humerus	150	8.0	11.0
Tibia	260, 280, 300, 320, 340, 360, 380, 400	10.0, 11.0	11.5
Femur	300, 320, 340, 360, 380, 400, 420	10.0, 11.0, 12.0	11.5, 11.5, 12.0
Ankle Arthrodesis	160, 200, 240	10.0, 12.0	12.0

Trochanteric (PF) Nail 125°* / 130°	180, 300, 320, 340, 360, 380, 400, 420, 440*, 460*	11.0, 12.0	17.0
Lag Screw Carbon Fiber or Titanium	80, 85, 90, 95, 100, 105, 110	10.4	-

\*Special Order

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# Carbon Fiber Implants – Clearly Better<sup>1</sup>

## CarboFix Trauma - Portfolio & Sizes

