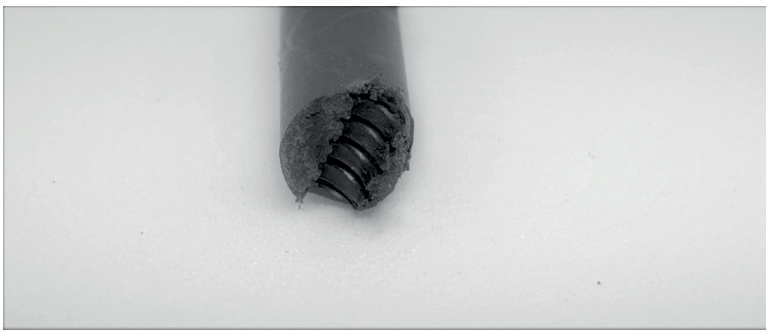
IMPeek

PEEK into the future.

Comminuted mid-diaphyseal femoral fracture in 10 YO MN Pitbull X using NEW 7mm IMPeek rod and plate repair.

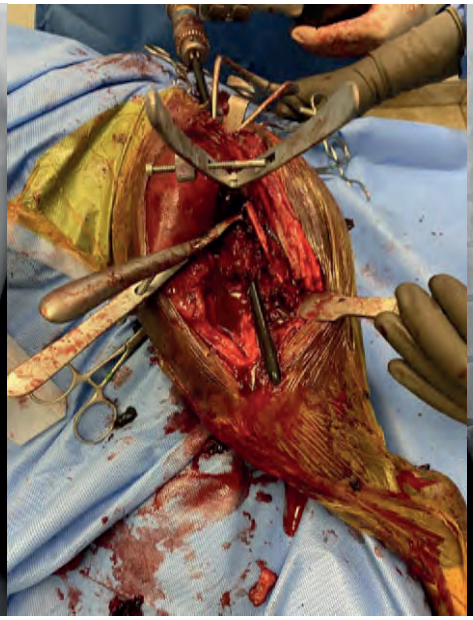
A 10 YO MN Pitbull X was admitted to the emergency department after jumping from the flat bed of a truck at high speed and becoming acutely lame. The dog was diagnosed with a closed, comminuted, mid diaphyseal fracture of the left femur. The fracture was reduced utilizing open reduction and internal fixation; first by proximal normograde insertion of a trial 1/4" Steinmann pin with sequential enlargement of the femoral canal using a 5/16" pin. This then allowed insertion of the NEW 7 mm IMPeek™ rod across the fracture into the distal metaphysis and reestablished the bone length whilst filling ***70% of the canal width***.

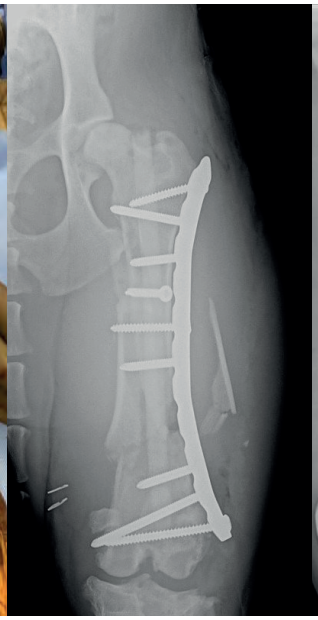
The new 7 and 8 mm IMPeek™ rods are designed to accommodate a regular Jacobs chuck attachment, facilitating easy insertion.

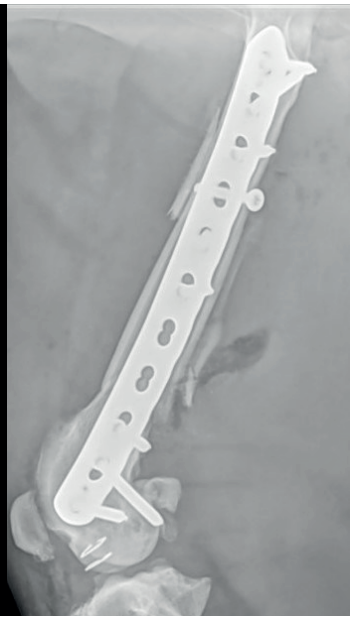


A laterally applied locking plate was then affixed in bridging fashion. At least two screws per segment happened to engage the IMPeek™ rod, thereby creating an ***interlocking plate/rod construct***. The site was closed routinely. The patient was discharged, toe touching on the limb within 24 hours. 2 weeks post op, the patient is reportedly weight bearing consistently on the limb and is clinically improving.

**** 7 and 8 mm reamers are recommended and available to purchase from Fourlimb Pty Ltd.***







Why use IMPeek in this case over a steel rod?

This case perfectly highlights some of the benefits of IMPeek over traditional steel rods.

- The blunt tip design allows for distraction of the fracture.
- The largest possible rod diameter can be inserted, which helps to reduce plate strain and the risk of implant failure. This is particularly important if you think you will have undersized implants or a non-compliant patient/owner.
- The large rod is not an impediment for bicortical screw purchase. If you drill through the rod (intentionally or not) you can get your screw purchase in 2 cortices as well as through the rod, creating an interlocking rod/plate construct! If you miss the rod by chance, you are still likely to get bicortical purchase.
- The IMPeek rod is flexible meaning over-reduction is less of an issue in long bones. Also, with an modulus of elasticity similar to cortical bone, there may be some biomechanical advantages in cases where elastic plate osteosynthesis is being utilized.
- Cost effective. Inexpensive rod, with no special equipment or aiming devices needed.
- The rod is cuttable, drillable and autoclavable.
- If cortical screws are being used exclusively, then if they engage the rod proximal and distal to the fracture they can form an interlocking rod construct, with the additional strength of a plate.
- The radiopacity of the rod allows for viewing of the fracture and plate without impedance of additional metal artifact, making minimally invasive techniques and fracture post op monitoring easier.

FAQ

Q: What is PEEK?
A: PEEK is an acronym for poly-ether-ether-ketone. This is a biocompatible, inert thermoplastic used in millions of implantable medical devices every year in humans and animals. PEEK is commonly used in everything from spinal fusion cages to bone anchors. PEEK is autoclavable and exceptionally well tolerated in the body - just like stainless steel or titanium implants.

Q: How strong is IMPeek compared to stainless steel?
A: IMPeek is carbon fibre reinforced, which means that it is very resilient. It can't compare to steel for sheer strength, but it has a modulus of elasticity and stiffness comparable to healthy cortical bone. This is a good thing, as it mimics the biomechanical properties of bone more closely than metals. Bone healing is a delicate balance between just enough stiffness and too much flexibility. IMPeek helps to bridge that gap. IMPeek rods and bone plates combined are actually stronger and stiffer than traditional metallic plate-rod constructs (Beierer et al. Vet Surg, 2014 Nov;43(8):1032-8. doi: 10.1111/j.1532-950X.2014.12254.x)

Q: How do you use IMPeek rods?
A: IMPeek rods are best used intramedullary to aid traditional bone plates in plate-rod constructs of long bones, as they are strongest in this location, but they can be used in other modes. The main benefit of IMPeek rods is that they are cuttable, drillable and can have screws cut their own thread into them to create an interlocking construct. Your imagination is the limit.

Q: How do you sterilize IMPeek rods?
A: Autoclave. This is the most simple, easy and effective. The rods are capable of withstanding temperatures in excess of 170C, so the standard autoclave temperature of 132C will not affect the rod's integrity.

Q: Why use IMPeek rods instead of regular stainless steel?
A: Stainless steel is cheaper and effective, but it also has its limitations. Metal rods and pins interfere with bone plate screws, which means you would potentially have to compromise screw angle, screw or pin size, choose between mono or bicortical bone purchase or leave the hole empty. With IMPeek rods you never have to compromise - just drill and screw, all the way through!

Q: What happens when you drill through the IMPeek rod?
A: When you drill through the rod you will feel resistance similar to drilling through very dense cortical bone. This will generate moderate amounts of heat, so ALWAYS lavage copiously when drilling.

Q: What about the IMPeek debris?
A: Studies on wear debris in dogs and cats is lacking, however total joint replacements in people are often lined with PEEK, and these have looked at the effect of wear debris on local tissue. Negative local effect on healing and cytotoxicity were not identified (Stratton-Powell et al, Clin Orthop Relat Res. 2016 Nov;474(11):2394-2404. doi: 10.1007/s11999-016-4976-z.). When compared to UHMWPE, PEEK debris is considered to exceptionally well tolerated within the body.

Q: Can you see IMPeek rods on radiographs?
A: Absolutely! We had IMPeek designed with minimally invasive osteosynthesis in mind. You can differentiate the density of the bone, metal and IMPeek easily on radiographic images. Furthermore, because the IMPeek rod is mostly carbon fibre and PEEK, there is minimal to no imaging artifact on CT and MRI.

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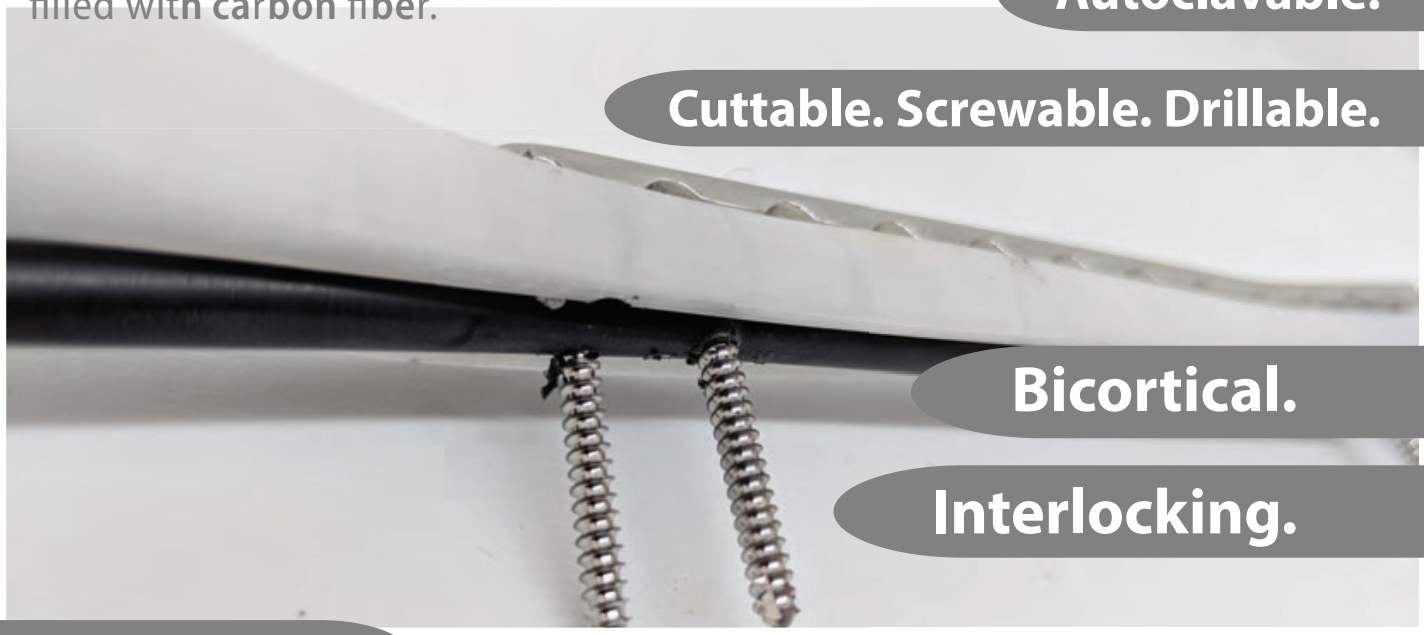
IMPeek rods offer surgeons **unique, flexible and dynamic solutions** to complex fractures. With IMPeek rods, medullary canals can be **filled up to 70%** allowing plate-rod constructs up to **4x stronger than traditional plate-rod*.**

PEEK (polyetheretherketone) is a bioinert polymer with similar properties to healthy bone when filled with carbon fiber.

Autoclavable.

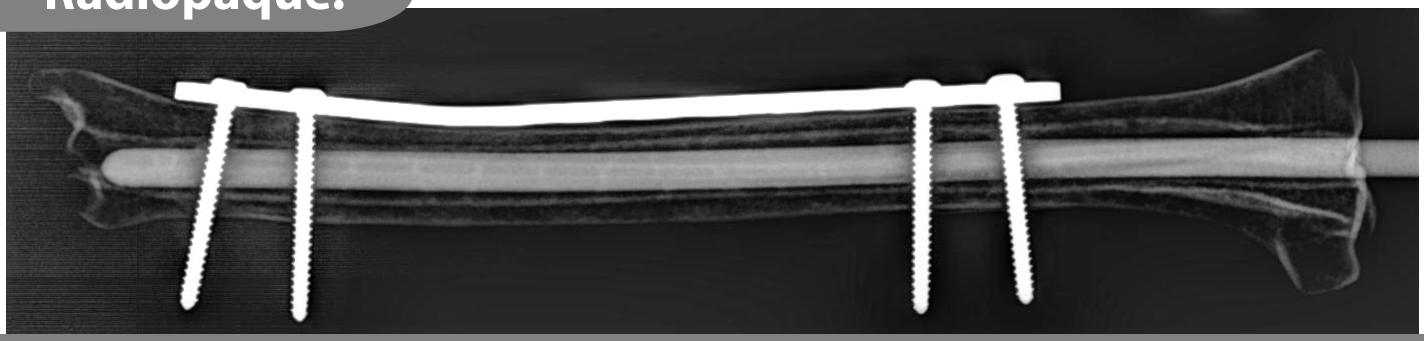
Cuttable. Screwable. Drillable.



Bicortical.

Interlocking.

Radiopaque.



IMPeek Rods Available WORLD WIDE!

*Visit **IMPeek.com** for purchase & shipping details*

3-8 mm IMPeek rod diameters available

No special equipment required **

Made in the USA

*Beierer et al (Vet Surgery, 2014)

**For 3-6 mm diameters.