BRIDGING THE GAP IN SPINAL TREATMENT OPTIONS.

From the Leaders of PEEK

PEEK-OPTIMA® Spinal Rod Components
Providing semi-rigid fixation to bridge the gap between rigid and dynamic spinal constructs.
A Whole New Treatment Option with One Simple Change.

PEEK-OPTIMA Spinal Rod Components offer a whole new treatment option without the need to learn new techniques or instrumentation. The flexibility of a semi-rigid posterior fixation system can be achieved just by switching from metal to PEEK-OPTIMA Spinal Rods. These strong but flexible rods facilitate easier construct assembly, as they can be more quickly manipulated into pedicle screw heads, saving valuable time in the OR.

“I have a lot of patients who need one level fixation and I’ve always been frightened to use too rigid a system and to destroy the adjacent levels in the future. To find a device to try to protect the adjacent level is, for me, very important….I think PEEK Rods can be the alternative and maybe can replace, time after time, the rigid posterior fixation.”

Dr T. Desjardins, Neurosurgeon
Polyclinique Saint Jean, Cagnes-Sur-Mer, France
Dr. Dajardins is a PEEK-OPTIMA Spinal Rods user since June 2011

Invibio - The Worldwide Leader in Implantable PEEK Biomaterials.

Invibio is a proven medical device partner and leading provider of biomaterial solutions. Our revolutionary polymers, unsurpassed manufacturing support, and deep device knowledge have enabled device companies around the world to bring innovations to market for 15 years.

To ensure your device is made with Invibio Spinal Device Technology, look for our logo on the label.
It’s Time for an Alternative Treatment.

Spinal rods composed of metal have been used successfully for many years. However, they are not without their challenges – from rod breakage and screw loosening to accelerated degeneration at adjacent spinal segments. The high stiffness inherent with all-metal constructs are believed to contribute to these clinical challenges and negatively impact patient outcomes.\(^1,2\) In response, surgeons have indicated that a range of rod stiffness would benefit patients.\(^2\)

PEEK-OPTIMA\textsuperscript{®} Spinal Rods from Invibio are increasingly being used as an alternative to metal rods to address these challenges. These semi-rigid constructs bridge the gap between very stiff metal rod and screw constructs and dynamic stabilization constructs.

For more than a decade, PEEK-OPTIMA Polymers from Invibio have been utilized in spinal fusion surgeries, predominantly in the form of load-bearing cages. Today, PEEK is the most popular biomaterial for interbody fusion devices\(^3\) for several reasons:

- Mechanical strength
- Modulus similar to cortical bone
- Imaging compatibility
- Biocompatibility
- Fatigue resistance

PEEK-OPTIMA\textsuperscript{®} Spinal Rod Components

\textbf{Strong and flexible.}

Now, spinal rod components made from PEEK-OPTIMA Polymers are being used to achieve semi-rigid fixation with posterior pedicle screw systems. The strength and flexibility these rods provide improve load sharing and allow more physiologic loading at adjacent levels. This may decelerate degeneration and reduce stress at the bone/screw interface, which may prevent screw pull-out, especially in patients with questionable bone quality.\(^2,6\)

\begin{figure}
\centering
\includegraphics[width=\textwidth]{posterior_spine_construct_stiffness}
\caption{Posterior Spine Construct Stiffness}
\end{figure}

PEEK-OPTIMA Rods have 1/5 the bending stiffness of equivalent diameter titanium rods.
Improved load sharing encourages fusion.

Metal posterior rods are stiff compared to bone and often far more rigid than needed for spinal fusions for instability indications. In comparison to titanium, PEEK-OPTIMA Spinal Rods provide significantly more anterior loading in biomechanical tests. This may allow a greater share of the force to be applied to the anterior graft, providing additional stimulus for bone to form and fusion to occur. Case studies are beginning to report short term clinical results indicating that PEEK-OPTIMA Spinal Rods:

- Perform as well as Ti rods for achieving fusion
- May reduce the incidence of post-operative screw loosening
- May maintain perceived reduction in pain longer than Ti rods

FEA using validated L1-S1 model with 400N follower load, single level pedicle screw construct with IBF cage at L4-L5.

*Biomechanical testing is not indicative of clinical performance.
Preserve the Integrity of the Spinal Segment.

Adjacent segment degeneration.

PEEK-OPTIMA Spinal Rod Components offer strength and flexibility that significantly reduce the range of motion\(^2,^{10}\) to stabilize the treated segment\(^11\) while allowing for enough freedom to maintain physiological movement on adjacent upper and lower segments.\(^{10}\) As a result, clinical results increasingly suggest that PEEK-OPTIMA Spinal Rod Components preserve or slow down the degeneration of adjacent discs.\(^{12}\)

Bone-to-screw interface.

PEEK-OPTIMA Spinal Rod Components have been demonstrated to reduce screw toggling and maintain better screw purchase in biomechanical tests,\(^4\) which can benefit patients with questionable bone quality. This leads to reduced stress at the bone-to-screw interface which may prevent screw pull-out and device failure.\(^*,^{4,13}\)

Available only from Invibio. Learn more about PEEK-OPTIMA Spinal Rod Components at Invibio.com.

*Biomechanical testing is not indicative of clinical performance.
REFERENCES


