YOUR TRUSTED SOLUTION. BECAUSE POSTERIOR CERVICAL SHOULD BE EASIER.

Infinity™

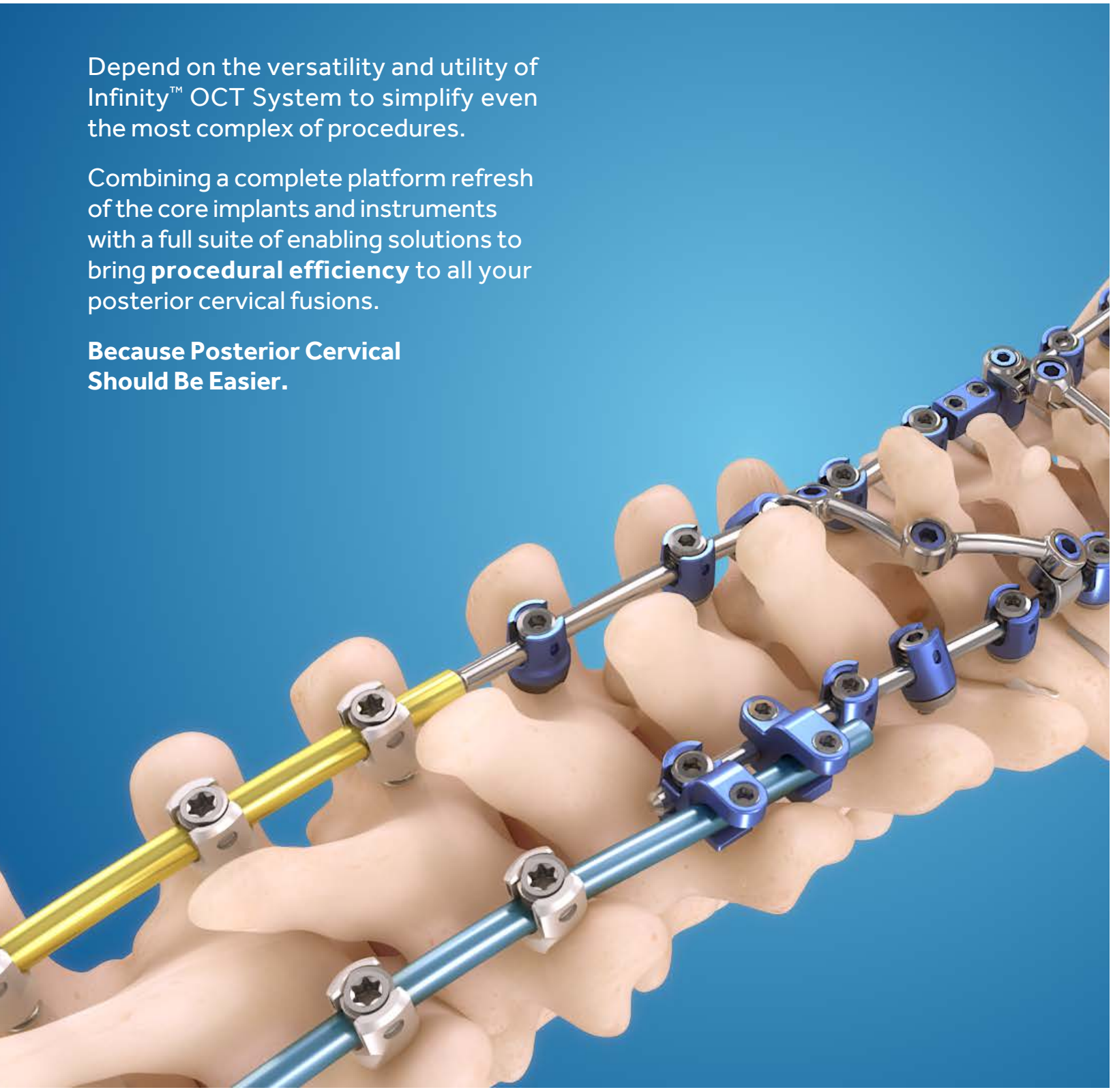
Occipitocervical-Upper Thoracic System

YOU ASKED. WE ANSWERED. EFFICIENCY PLUS REFINEMENT.

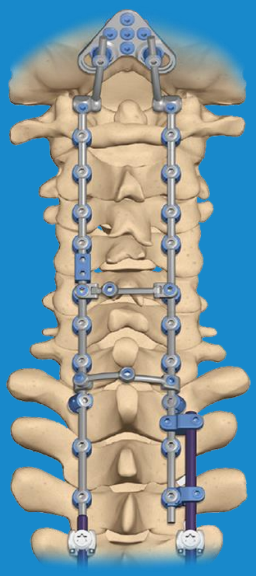
Depend on the versatility and utility of Infinity™ OCT System to simplify even the most complex of procedures.

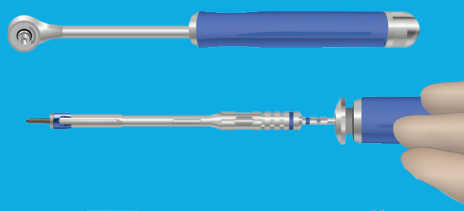
Combining a complete platform refresh of the core implants and instruments with a full suite of enabling solutions to bring **procedural efficiency** to all your posterior cervical fusions.

Because Posterior Cervical Should Be Easier.



IMPLANTS
DESIGNED FOR
EASY CONSTRUCT
CONNECTIONS.





THE RIGHT TOOLS,
FOR SMALL
SPACES

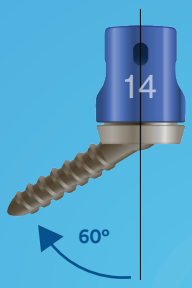
FULLY-ENABLED
PROCEDURES

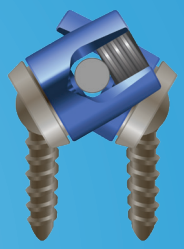
ENHANCED MULTI AXIAL SCREW AND SET SCREW— **THE FOUNDATON OF YOUR CONSTRUCT. MADE EASIER.**

Multi Axial Screw

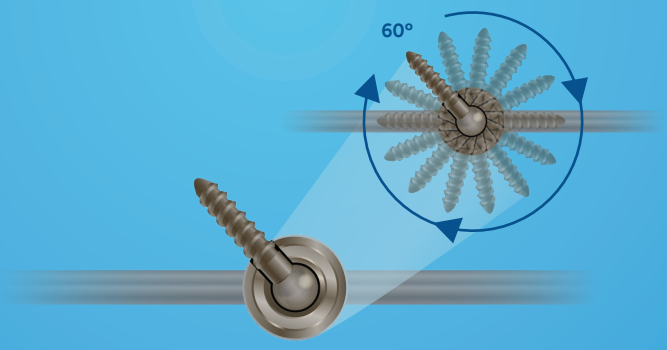
Construct Assembly made easy with **RodSync Technology:**

- Angulation where you need it... with up to 60° of angulation in **ANY** direction
- Easy Rod Capture with Friction Fit Saddles that maintain position during rod placement
- Minimized Rod Contouring



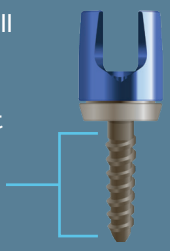


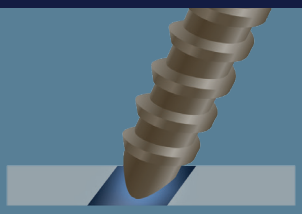
8.7mm of medial/lateral offset without the use of lateral connectors



IMPLANTS DESIGNED FOR EASY CONSTRUCT CONNECTIONS.

24% more full threads for increased engagement in bone and stronger tactile feel*

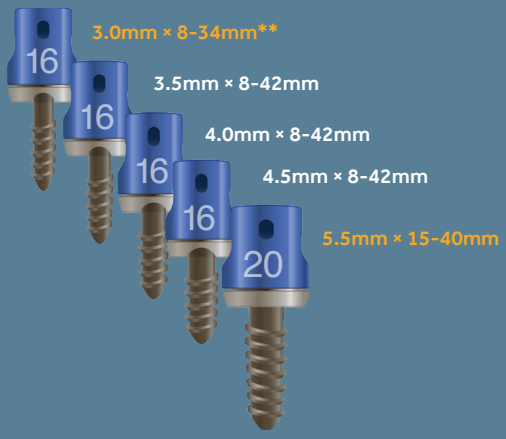




Ease of start with tapered tip that facilitates location of pilot hole and screw insertion

One screw for all rod diameters and materials for procedural and logistical efficiency

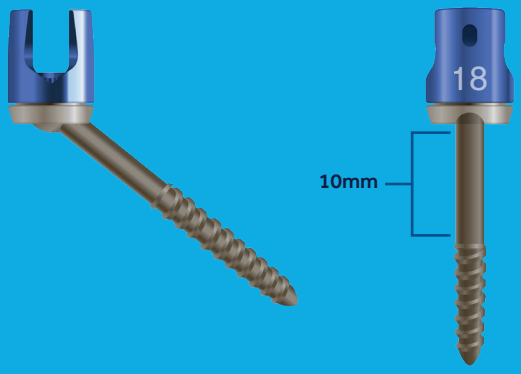
Expanded Size Ranges to now include a 3.0mm X-Small Cervical Screw** and 5.5mm Transition Screw



Partially Threaded Multi Axial Screw

Variety of diameters to accommodate unique anatomy of C1 lateral mass

Uniform 10mm of unthreaded screw shank throughout all screwlengths

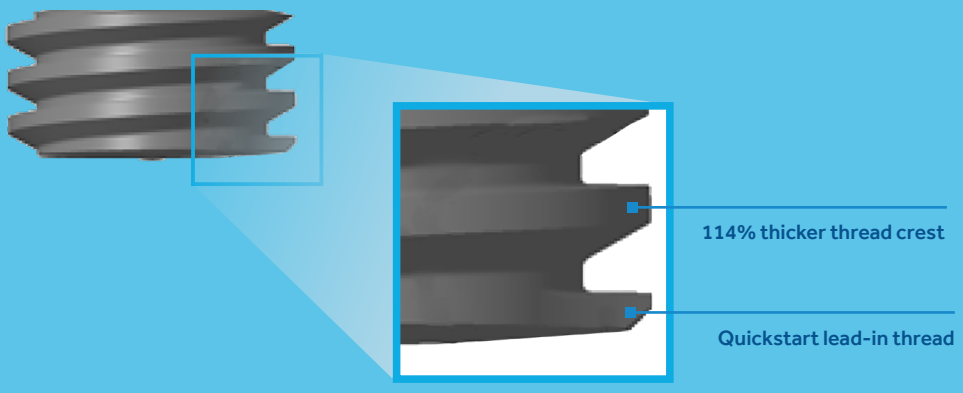


Set Screw

Designed to minimize cross threading

- Features a blunt start thread for ease of starting by reducing the chances of the set screw starting off-axis.
- 114% thicker thread makes it more difficult to cross thread*

Increased interface with screwdrivers with 20% deeper hex engagement*

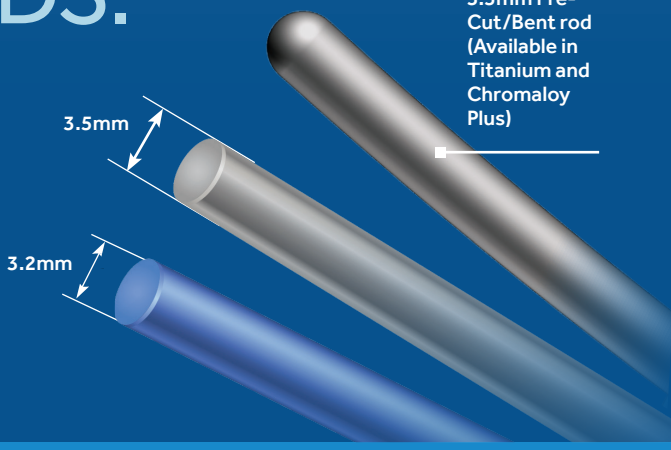


*as compared to Vertex Select™ Reconstruction System

**The 3.0mm multi axial screw (MAS) requires the use of MAS Crosslink™ at each level in which the 3.0mm screw is intended to be used

FULL SPECTRUM OF ROD DIAMETERS AND MATERIALS ACCOMODATING VARIOUS SPINAL APPLICATIONS AND CONSTRUCT DEMANDS.

Surgeon choice of rod diameter and material to best match patient pathology and construct demands, all interchangeable with the same multi axial screw for procedural and logistical efficiency.



Rod Options

Rod Family Description	3.2mm Titanium	3.5mm Titanium	3.5mm Chromaloy™ Plus	3.5mm to 4.75mm, Titanium	3.5mm to 5.5mm, Titanium	3.5mm to 6.0mm, Titanium	3.5mm to 4.75mm, Chromaloy™ Plus	3.5mm to 5.5mm, Chromaloy™ Plus	3.5mm to 6.0mm, Chromaloy™ Plus
Straight Rods	■	■	■						
Pre-Cut/ Pre-Bent Rods		■	■						
Occipital Adjustable Rods (see OC section for details)		■	■						
Occipital Pre-Curved Rods (see OC section for details)		■	■						
Cervical Thoracic Tapered Rods (see OC section for details)				■	■	■	■	■	■

MULTIPLE ROD MATERIALS TO MEET VARIOUS CONSTRUCT DEMANDS

Mechanical Comparisons of Various Rod Materials

Rod Stiffness*

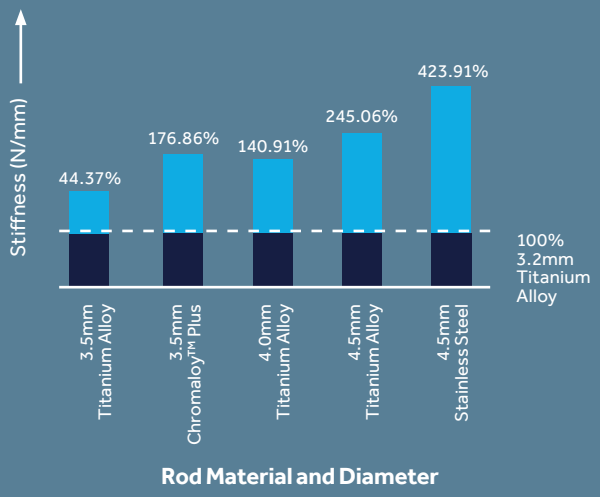
The resistance to deformation (bend) when a force is applied.

Clinical Relevance:

Stiffness maintains stability.

Higher the stiffness of a rod, requires more force to bend.

Consider a rod with higher stiffness to maintain correction under high construct demands.

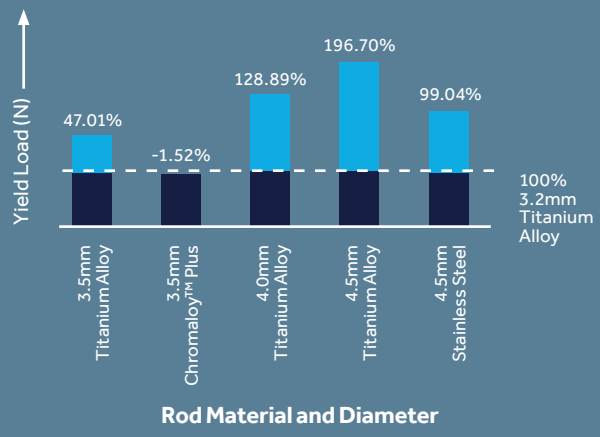


Yield Strength*

The amount of force necessary to cause a permanent bend in the rod.

Clinical Relevance:

A rod with lower yield strength requires less force to permanently bend and hold its shape (i.e., less spring back).



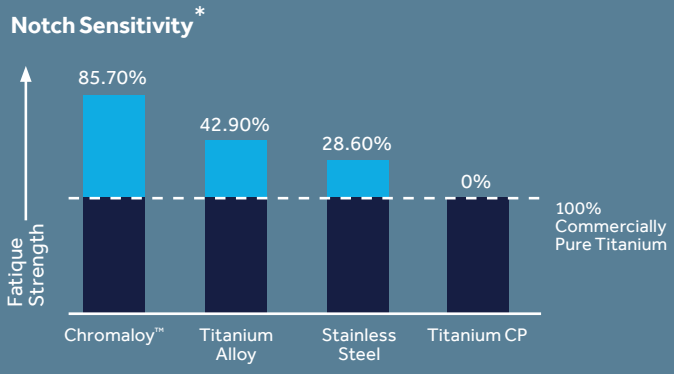
Notch Sensitivity*

The tendency of notches to form in the rod.

Clinical Relevance:

Notches are indentions on the rod caused by bending, and can reduce fatigue strength of a rod and ultimately lead to rod breakage or construct failure.

Materials that are less notch sensitive can withstand higher compression fatigue loads.

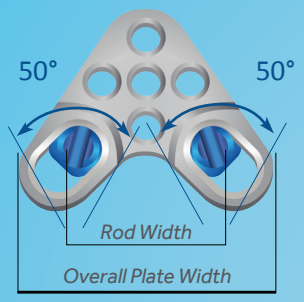


* Based on internal testing per ATSM F2193. Data on file.

VERSATILITY AT THE JUNCTIONS **SIMPLIFYING THE COMPLEX WITH SEAMLESS TRANSITIONS**

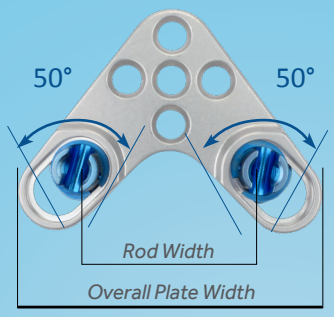
Multiple OC Fixation Options

Small Adjustable Plate

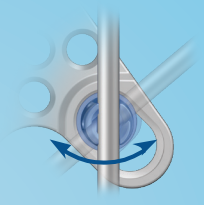


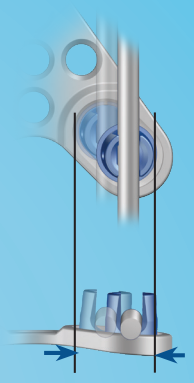
Min Rod Width	Max Rod Width	Overall Plate Width
24mm	32mm	46.9mm

Standard Adjustable Plate



Min Rod Width	Max Rod Width	Overall Plate Width
32mm	40mm	54.75mm



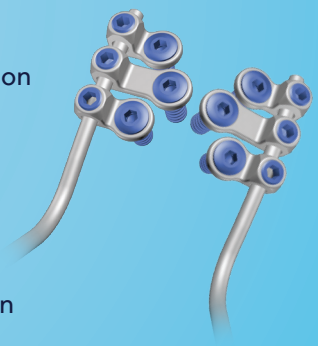


OC Adjustable Plate

- Three hole midline fixation to maximize bone purchase in the midline
- Rotating and translating saddles allow for flexibility in rod placement
- Space between saddles of the plate for bone grafting
- Pre-machined radius of curvature for proper fit onto the occipital anatomy
- Multiple Sizes

OC Screw Connectors

- Low-profile occipital fixation option
- Allows for six points of occipital midline fixation
- Flexibility in screw placement on the occiput
- Dorsal height adjustment capabilities accommodate uneven bone surfaces



IMPLANTS DESIGNED FOR EASY CONSTRUCT CONNECTIONS.

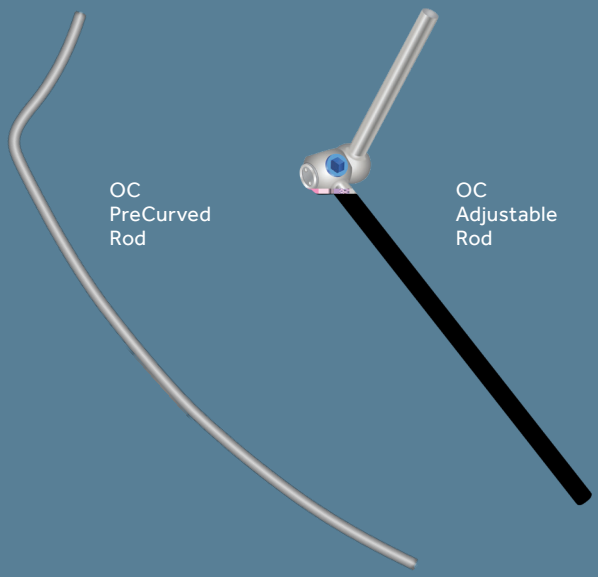
Multiple OC Rod Options to Best Fit Anatomy at the OC Junction

OC Adjustable Rods

- Hinge portion adjustability to accommodate various OCJ anatomical angles
- Angulation can be adjusted after it has been placed in the construct in order to achieve OCT alignment goals
- Reduced profile of hinge for improved fit*
- Adjustability without disassembly

OC Pre-Curved Rods

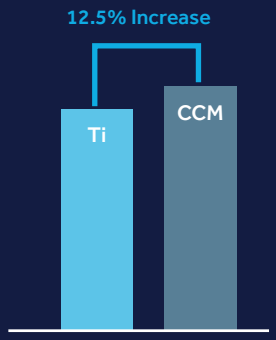
- Pre-contoured to match anatomy of the OCJ
- Low profile option for difficult anatomy



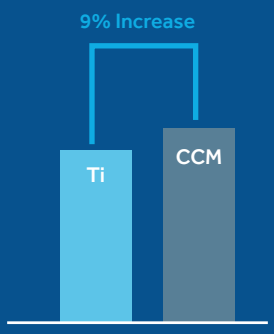
Available in Titanium and Chromaloy™ Plus

Shown to withstand higher compression and torsion loads as compared to Titanium, the metal properties and mechanical performance of Chromaloy™ Plus make this rod material a viable and preferred choice to provide increased construct strength and meet the high construct demands of OCJ procedures.

COMPRESSION FATIGUE CONSTRUCT STRENGTH



TORSION FATIGUE CONSTRUCT STRENGTH



Chromaloy™ Plus OC AdjustableRods outperformed Titanium Adjustable Rods in both compression and torsion fatigue**

Multiple OC Bone Screw Options

Standard Tip Design

- 4.5mm x 6-14mm
- 5.0mm x 6-14mm
- Increased Thread Volume

Tapered Tip Design

- 4.5mm x 6-14mm
- 5.0mm x 6-14mm

*As compared to Vertex Select ™ Reconstruction System

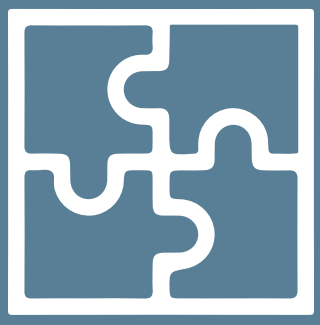
**Based on internal test data using Titanium and Chromaloy™ Plus OC Adjustable Rods

THE RIGHT TOOLS, FOR SMALL SPACES.

VISIBILITY. FUNCTIONALITY. EXPERIENCE.

SEE MORE,
IN A SMALL SPACE

DO MORE,
IN A SMALL SPACE

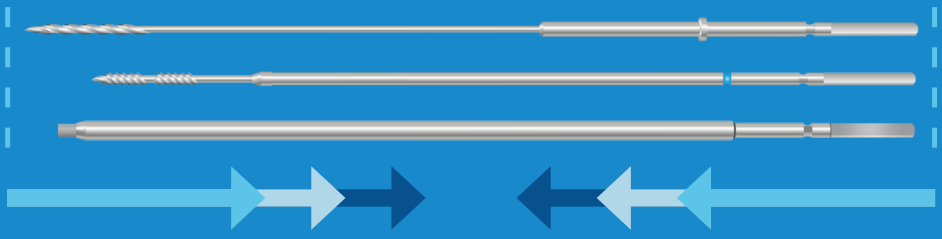


SOLVE FOR MORE,
IN A SMALL SPACE

THE RIGHT TOOLS, FOR SMALL SPACES

SEE MORE, IN ASMALL SPACE

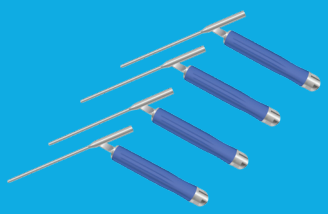
Reduced length and profile for improved line of site and closer position to anatomy*



DO MORE, IN ASMALL SPACE

Screw Hole Prep

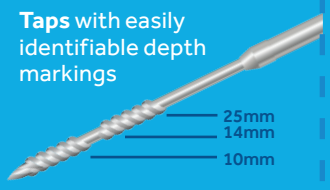
Fixed drill guides for the most common size screws



Optimized Adjustable Drill Guide

- Reduced length and barrel size*
- Enhanced locking mechanism*
- Easily identifiable depth markings

Taps with easily identifiable depth markings



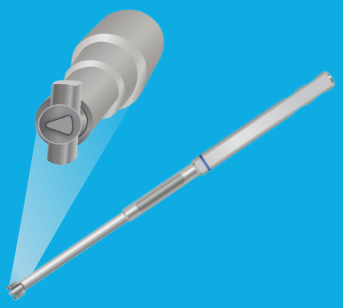
Probes in both straight and curved geometries to optimize fit in the pedicles

Screw Insertion / Alignment

Screwdrivers designed for improved engagement and release of MAS

- New Self-Holding Sleeve Driver
- Self-Holding and Threaded screwdrivers with optimized interfaces
- 20% deeper hex engagement*

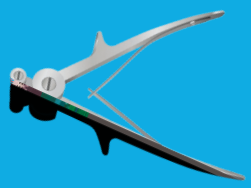
Increased Angle Positioner to direct the additional angulation of the MAS where it's needed...



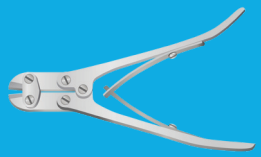
Rod Manipulation

Rod Reducer with self-aligning mating features and open barrel design to promote ease of alignment and engagement with MAS.

Rod Bender with adjustments to bending wheels to allow for short segment rod bending.



Rod Cutter for in situ cutting



Final Tightening

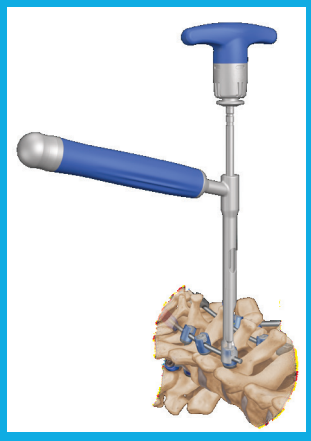
Optimized Final Tightening Experience

Torque Limiting Screwdrivers

- Increased engagement with set screw*
- Length reduction facilitates alignment with set screw

Counter Torques

- Tighter "fit" on MAS for more control*



*as compared to Vertex Select™ Reconstruction System

SOLVE FOR MORE,
IN A SMALL SPACE

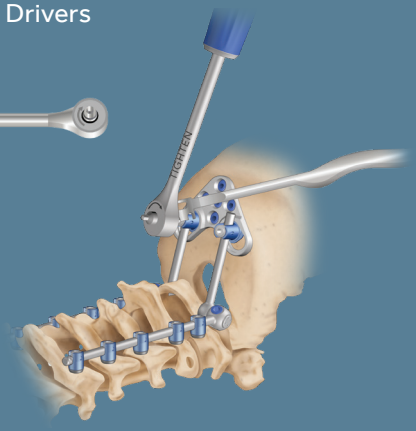
More tools to address the challenging anatomy of the **OccipitoCervical Junction***

New OC Drill Tap Guides and Screw Guide

Screw Guide end for additional control during OC bone screw insertion

New OC Torque Limiting Drivers:

- Right Angled Ratchet Torque Driver for efficiency during final tightening
- Flexible and Straight Torque Drivers

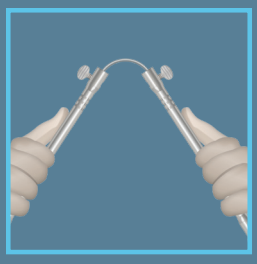


New OC Rod Pusher / Counter Torques:

- 45 degree and 90 degree angle positions
- Flexibility in placement on any of the OC implants

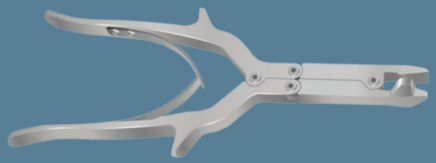
OC Tube Benders:

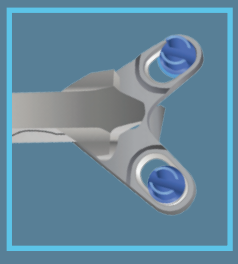
Provides an additional rod bending option for the increased rod curvature needed specifically at the Occipital Cervical Junction



New OC Plate Bender:

Create bends in the OC plate for an anatomic fit against the occiput.





*as compared to Vertex Select™ Reconstruction System

BRINGING FULLY ENABLED SOLUTIONS TO YOUR OR. **PRECISION. CONFIDENCE. INTEGRATION.**

Synergy PCF with Navigated Infinity™ OCT system

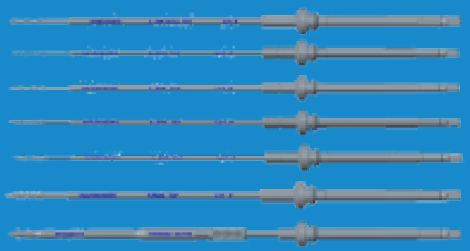
Medtronic's Surgical Synergy spinal workflow streamlines your procedures by eliminating certain intraoperative steps.

Reduction in Radiation Exposure to Near Zero

Increased Surgeon Confidence with Precise Screw Trajectories and Placement

Refined Set of Navigated Instruments

- Designed for the posterior cervical-upper thoracic working space
- Reduced length and profile for improved line of site and closer position to anatomy with all guides, drills, taps, and drivers *
- Longer Drilling Depths*
- Drill Guide with NavLock Positioner for efficiency in holding the NavLock Tracker



*as compared to Vertex Select™ Reconstruction System

FULLY ENABLED PROCEDURE

Powerease™ Compatible

- Procedural Efficiency through System Integration
- Navigated Drill Bit, Taps, and Driver integrated with The Powerease™ System

Neuromonitoring Integration

- Early warning/detection to help avoid neural injury/compromise
- Aids in the efforts to reduce instances of C5 nerve root palsy (brachial plexus)[2]
- Using multi-modality intraoperative monitoring (MEPs/SSEPs) has been shown to help reduce iatrogenic injury to somatic sensory & motor systems.[3]

Biologics Solutions that Empower

DEGENERATIVE SHORT CONSTRUCT

Surgeons that desire
CONTAINMENT

Surgeons that desire
PACKABILITY

0 D V W H U J U D I W w [illegible]

0 D V W H U B u t t y I W w

Mastergraft wPutty, and Mastergraft w Matrix

- Osteoconductive
- Cell Carrier

DEFORMITY LONG CONSTRUCT

Surgeons that desire
($ 6 (2) 8 6 (

Surgeons that desire
PACKABILITY

* U D I W R Q w U L [6 W U L S V * U D I W R Q w [illegible]

* U D I W R Q w U L [6 W U L S V D Q G * U D I W R Q w '

- Osteoconductive Fibers
- Performance driven by High Osteoinductivity[1]

[1]Animal testing is not necessarily indicative of human clinical outcome.Histological scoring table based on images from Edwards, JT et al. Clin Orthop Relat Res.1998;357:219-228 Data on File from Medtronic internal testing (11/2016).

[2]Neurophysiological detection of iatrogenic C-5 nerve deficit during anterior cervical spinal surgery, BB et all. JNeurosurg Spine 6:381-385,2007

[3]Efficacy of introoperative monitoring of transcranial electrical stimulation-induced motor evoked potentials and spontaneous electromyography activity to identify acute-versus delayed-onset C-5 nerve root palsy during cervical spine surgery, VB et all. JNS 10.3171/2013.6SPINE12355

INDICATIONS

The INFINITY™ OCT System is intended to provide immobilization and stabilization of spinal segments as an adjunct to fusion for the following acute and chronic instabilities of the craniocervical junction, the cervical spine (C1 to C7), and the thoracic spine from T1-T3:

- Traumatic spinal fractures and/or traumatic dislocations.
- Instability or deformity.
- Failed previous fusions (e.g. pseudarthrosis).
- Tumors involving the cervical spine.
- Degenerative disease, including intractable radiculopathy and/or myelopathy, neck and/or arm pain of discogenic origin as confirmed by radiographic studies, and degenerative disease of the facets with instability.

The INFINITY™ OCT System is also intended to restore the integrity of the spinal column even in the absence of fusion for a limited time in patients with advanced stage tumors involving the cervical spine in whom life expectancy is of insufficient duration to permit achievement of fusion.

In order to achieve additional levels of fixation, the INFINITY™ OCT System may be connected to the CD HORIZON™ Spinal System and VERTEX™ Reconstruction System rods with the INFINITY™ OCT System rod connectors. Transition rods with differing diameters may also be used to connect the INFINITY™ OCT System to the CD HORIZON™ Spinal System. Refer to the CD HORIZON™ Spinal System package insert and VERTEX™ Reconstruction System package insert for a list of the indications of use.

Note: The 3.0mm multi axial screw (MAS) requires the use of MAS CROSSLINK™ at each level in which the 3.0mm screw is intended to be used.

The lateral offset connectors and MAS extension connectors are intended to be used with 3.5mm and larger diameter multi axial screws. The lateral offset connectors and MAS extension connectors are not intended to be used with 3.0mm screws.

Note: Segmental fixation is recommended for these contructs.

RISKS

Along with the benefits of this technology, there are also potential risks. Risks associated with the INFINITY™ OCT System include, but are not limited to:

- Disassembly, bending, and/or breakage of any or all of the components
- Pressure on the skin from component parts in patients with inadequate tissue coverage over the implant, possibly causing skin penetration, irritation, fibrosis, necrosis, and/or pain.
- Tissue or nerve damage caused by improper positioning and placement of implants
- Scar formation possibly causing neurological compromise or compression around nerves and/or pain.

INDICATIONS

GRAFTON™ DBM and GRAFTON PLUS™ DBM are intended for use as a bone graft extender, bone graft substitute, and bone void filler in bony voids or gaps of the skeletal system (i.e., spine, pelvis, and extremities) not intrinsic to the stability of the bony structure. The voids or gaps may be surgically created defects or defects created by traumatic injury to the bone. GRAFTON™ DBM (excluding the Orthoblend form) and GRAFTON PLUS™ DBM are also intended to be packed into bony voids or gaps to fill and/or augment dental intraosseous, oral, and cranio-/maxillofacial defects. These defects may be surgically created osseous defects or osseous defects created from traumatic injury to the bone, including periodontal/infrabony defects; alveolar ridge augmentation (sinusotomy, osteotomy, cystectomy); dental extraction sites (ridge maintenance, implant preparation/placement); sinus lifts; cystic defects; craniofacial augmentation. GRAFTON™ DBM and GRAFTON PLUS™ DBM may be used alone in a manner comparable to autogenous bone chips or allograft bone particulate (demineralized

IUHH]H GULHG ERQH RU WKH\ PD\ EH PL[HG ZLWK HLWKHU
DOORJUDIW RU DXWRJUDIW ERQH RU ERQH PDUURZ DV D ERQH
JUDIW H[WHQGHU *5$)721w '%0 DQG *5$)721
3/86w '%0 DUH LQGLFDWHG RQO\ IRU ERQ\ YRLGV RU
JDSV WKDW DUH QRW LQWULQVLF WR WKH VWDELOLW\ RI WKH ERQ\
VWUXFWXUH *5$)721w '%0 DQG *5$)721 3/86w
'%0 DUH DEVRUEHG UHPRGHOHG DQG UHSODFHG E\ KRVW
ERQ[U L[JHVD OLQ HQ F H1RW WK HX H[RXOG
FRQVLGHE EwDW$*)721w%0 5&81&+
FRQWUDLQGLFDWLRQV RQ HUURQHRXVE DR[LPDWHO\ P
• PP LQ GHWHUPLQLQJ WKH DSSURSULDWHQHVV RI WKLV
DOORJUDIW IRU XVH LQ VPDOO GHIHFWV

Note: Segmental fixation is recommended for these contructs.

CONTRAINDICATIONS

The following are contraindications for the use of GRAFTON™ DBM and GRAFTON PLUS™ DBM:

- The presence of infection at the transplantation site.
- Treatment of spinal insufficiency fractures.
- In the epephyseal areas of patients whose growth plates have not yet closed.
- Pregnancy
- Renal-compromised patients.

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The surgical technique shown is for illustrative purposes only. The technique(s) actually employed in each case will always depend upon the medical judgment of the surgeon exercised before and during surgery as to the best mode of treatment for each patient.

Please see the package insert for the complete list of indications, warnings, precautions, and other important medical information.

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