PERLA® TL

CORTICAL TRAJECTORY

CONTENT

CONCEPT AND DESIGN

Since 2005 Spineart has been true to the philosophy: quality, innovation, simplicity, by developing highly performing systems for the treatment of spinal pathologies.

The PERLA® TL Posterior Thoraco-Lumbar Fixation System incorporates smart technologies and simplified instrumentation.

This system offers a complete range of spinal implants delivered sterile with an intuitive and compact instrumentation.

PERLA® TL Cortical Trajectory consists of streamlined instrumentation for midline placement of PERLA® TL screws to address thoracolumbar pathologies of the spine.

AT A GLANCE

MODULAR SCREW
better surgical site visualization

CORTICAL THREAD DESIGN
optimized pull-out strength

LOW TOP AND REDUCTION MODULAR HEADS
intraoperative versatility

CORTICAL RETRACTOR AND SCREW DISTRACTOR
easy access to the disc space

INDICATIONS

PERLA® TL System

The PERLA® TL Posterior Thoraco-lumbar Fixation System is intended to provide immobilization and stabilization of spinal segments in skeletally mature patients as an adjunct to fusion in the treatment of the following acute and chronic instabilities or deformities of the thoracic, lumbar, and sacral spine:

- degenerative disc disease;
- spondylolisthesis;
- fracture;
- dislocation;
- scoliosis;
- kyphosis;
- spinal tumor;
- and failed previous fusion (pseudarthrosis).

When used for posterior non-cervical pedicle screw fixation in pediatric patients, the PERLA® TL Posterior Thoraco-lumbar Fixation System is indicated as an adjunct to fusion to treat adolescent idiopathic scoliosis. The PERLA® TL Posterior Thoraco-lumbar Fixation System is intended to be used with autograft and/or allograft. Pediatric pedicle screw fixation is limited to a posterior approach.

When used in conjunction with TEKTONA® HV US bone cement system, the PERLA®TL system is intended to restore the integrity of the spinal column even in the absence of fusion for a limited period of time, in patients whom life expectancy is of insufficient duration to permit achievement of fusion in advanced stage of thoracic and lumbar spine tumors. The PERLA®TL 35mm to 60mm lengths Screws augmented used with TEKTONA® HV US bone cement system are intended to be used at spinal levels where the structural integrity is not severely compromised.

TEKTONA® HV US Bone Cement

TEKTONA® HV US Bone Cement is indicated for the treatment of pathological fractures of the vertebral body using a vertebroplasty or kyphoplasty procedure. Painful vertebral compression fractures may result from osteoporosis, benign lesions (hemangioma), and malignant lesions (metastatic cancers, myeloma).

When used in conjunction with PERLA®TL system, TEKTONA® HV US Bone Cement is 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 thoracic and lumbar spine in whom life expectancy is of insufficient duration to permit achievement of fusion. PERLA®TL Screws augmented with TEKTONA® HV US Bone Cement are for use at spinal levels where the structural integrity of the spine is not severely compromised.

CONTRAINDICATIONS

Include but not limited to:

- mental illness.
- infection.
- severely damaged bone structures that could prevent stable implantation of the implant.
- neuromuscular or vascular disorders or illness.
- inadequate activity.
- pregnancy
- bone tumor in the region of implant.

For further information and recommended directions for the use of bone cement, please refer to instructions for use of TEKTONA® HV US bone cement.

Please refer to the PERLA® TL – PERLA® TL MIS Instructions for Use for complete system description, indications, contraindications, precautions and warnings.

Refer to Tecres specific Instructions for Use for cement related contraindications, potential adverse events and warnings when using this specific cement.

TECHNICAL FEATURES

MODULAR SCREW

While offering a better visualization of the surgical site, the modularity aspect brings the possibility for the surgeon to choose the type of head that fits better.

CORTICAL THREAD DESIGN

A double thread coupled with a low pitch design maximize the screw purchase to the cortical bone.

LOW TOP AND REDUCTION MODULAR HEADS

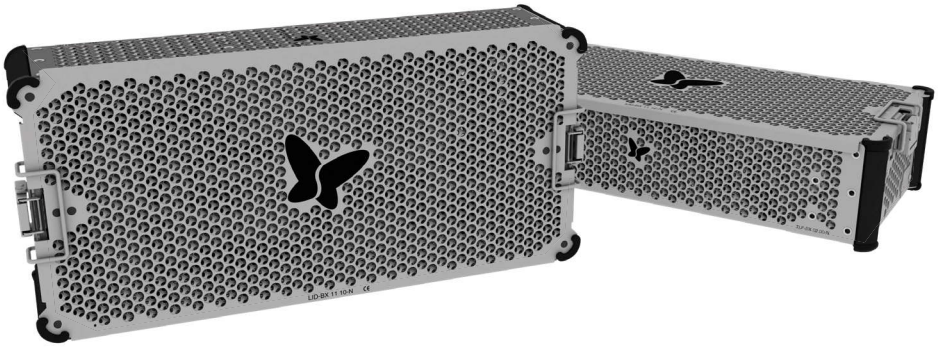
More specifically in spondylolisthesis indications, the reduction modular head offers a 15 mm reduction of the rod.

TECHNICAL FEATURES

CORTICAL RETRACTOR AND SCREW DISTRACTOR

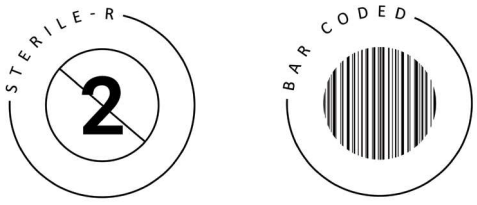
Allows a screw based distraction and a minimally invasive access to the spine by dissection and traction of soft and bony tissue.

COMPLETE INSTRUMENTATION

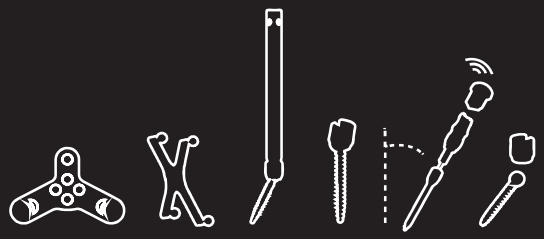


All the instrumentation needed fits in only 3 boxes, including standard instrumentation for pre-assembled screw.

SAFETY



PERLA® TL implants are sterile-packed and barcoded ensuring sterility and traceability.



PERLA® PLATFORM

Make it yours

Offering a full spine posterior fixation solution,
the PERLA® PLATFORM partners with you, the way you need it.

ANATOMY

OCT | Thoraco-lumbar-pelvis | Thoraco-lumbar

APPROACH

Open | MIS

TECHNIQUE

K-wire | K-wire / Cement | K-wire / K-wireless / Cement | Modularity

TECHNOLOGY

Navigation compatible

IMPLANTS

CORTICAL BONE SCREWS

LENGTH/ DIAMETER	Ø4.5	Ø5.0	Ø5.5	Ø6.0	Ø6.5	Ø7.5
L25	TLF-CS 45 25-S	TLF-CS 50 25-S	TLF-CS 55 25-S	TLF-CS 60 25-S	TLF-CS 65 25-S	TLF-CS 75 25-S
L30	TLF-CS 45 30-S	TLF-CS 50 30-S	TLF-CS 55 30-S	TLF-CS 60 30-S	TLF-CS 65 30-S	TLF-CS 75 30-S
L35	TLF-CS 45 35-S	TLF-CS 50 35-S	TLF-CS 55 35-S	TLF-CS 60 35-S	TLF-CS 65 35-S	TLF-CS 75 35-S
L40	TLF-CS 45 40-S	TLF-CS 50 40-S	TLF-CS 55 40-S	TLF-CS 60 40-S	TLF-CS 65 40-S	TLF-CS 75 40-S
L45	TLF-CS 45 45-S	TLF-CS 50 45-S	TLF-CS 55 45-S	TLF-CS 60 45-S	TLF-CS 65 45-S	TLF-CS 75 45-S
L50		TLF-CS 50 50-S	TLF-CS 55 50-S	TLF-CS 60 50-S	TLF-CS 65 50-S	TLF-CS 75 50-S

DEGENERATIVE BONE SCREWS

LENGTH/ DIAMETER	Ø4.5	Ø5.5	Ø6.5	Ø7.5	Ø8.5	Ø9.5
L25	TLF-BS 45 25-S	TLF-BS 55 25-S	TLF-BS 65 25-S			
L30	TLF-BS 45 30-S	TLF-BS 55 30-S	TLF-BS 65 30-S	TLF-BS 75 30-S	TLF-BS 85 30-S	TLF-BS 95 30-S
L35	TLF-BS 45 35-S	TLF-BS 55 35-S	TLF-BS 65 35-S	TLF-BS 75 35-S	TLF-BS 85 35-S	TLF-BS 95 35-S
L40	TLF-BS 45 40-S	TLF-BS 55 40-S	TLF-BS 65 40-S	TLF-BS 75 40-S	TLF-BS 85 40-S	TLF-BS 95 40-S
L45	TLF-BS 45 45-S	TLF-BS 55 45-S	TLF-BS 65 45-S	TLF-BS 75 45-S	TLF-BS 85 45-S	TLF-BS 95 45-S
L50		TLF-BS 55 50-S	TLF-BS 65 50-S	TLF-BS 75 50-S	TLF-BS 85 50-S	TLF-BS 95 50-S
L55			TLF-BS 65 55-S	TLF-BS 75 55-S	TLF-BS 85 55-S	TLF-BS 95 55-S
L60			TLF-BS 65 60-S	TLF-BS 75 60-S	TLF-BS 85 60-S	TLF-BS 95 60-S
L70			TLF-BS 65 70-S	TLF-BS 75 70-S	TLF-BS 85 70-S	TLF-BS 95 70-S
L80			TLF-BS 65 80-S	TLF-BS 75 80-S	TLF-BS 85 80-S	TLF-BS 95 80-S
L90			TLF-BS 65 90-S	TLF-BS 75 90-S	TLF-BS 85 90-S	TLF-BS 95 90-S
L100				TLF-BS 75 10-S	TLF-BS 85 10-S	TLF-BS 95 10-S
L110				TLF-BS 75 11-S	TLF-BS 85 11-S	TLF-BS 95 11-S
L120				TLF-BS 75 12-S	TLF-BS 85 12-S	TLF-BS 95 12-S

Polyaxial screw allows for an easy insertion of the rod by giving angulation to the screw head. This angulation eases the rod insertion and connection.

IMPLANTS

SETSCREWS

SETSCREW (PACKED WITH SCREW)	TLF-SC 00 00-S
SETSCREWS (PACKED BY 2)	TLF-SC 02 00-S

There is no size selection. Setscrew is the same for screws, hooks and connectors.
Differentiation is about the quantity of setscrew per box.

MODULAR HEADS

POLYAXIAL	TLF-MH PL 00-S
REDUCTION	TLF-MH RE 00-S

The modular bone screw is intended for the same use as the polyaxial screw or the reduction screw. The modularity aspect brings the possibility for the surgeon to choose the type of head he needs:

- Modular polyaxial head: for an easy insertion of the rod by giving angulation to the screw head. This angulation eases the rod insertion and connection.
- Modular reduction head: longer screw head offers to the surgeon more capability to reduce the spine (15mm), more specifically in spondylolisthesis indications. When the rod is properly sited in the screw, the tabs must be removed, and the implant will be strictly similar to a polyaxial screw.

IMPLANTS

RODS / PREBENT TITANIUM ALLOY

LENGTH/DIAMETER	Ø5.5	Ø6
L30	TLF-5P T0 30-S	TLF-6P T0 30-S
L35	TLF-5P T0 35-S	TLF-6P T0 35-S
L40	TLF-5P T0 40-S	TLF-6P T0 40-S
L45	TLF-5P T0 45-S	TLF-6P T0 45-S
L50	TLF-5P T0 50-S	TLF-6P T0 50-S
L55	TLF-5P T0 55-S	TLF-6P T0 55-S
L60	TLF-5P T0 60-S	TLF-6P T0 60-S
L70	TLF-5P T0 70-S	TLF-6P T0 70-S
L80	TLF-5P T0 80-S	TLF-6P T0 80-S
L90	TLF-5P T0 90-S	TLF-6P T0 90-S
L100	TLF-5P T1 00-S	TLF-6P T1 00-S
L110	TLF-5P T1 10-S	TLF-6P T1 10-S
L120	TLF-5P T1 20-S	TLF-6P T1 20-S
L130	TLF-5P T1 30-S	TLF-6P T1 30-S

The longitudinal rods are intended to connect the different anchoring implants (pedicle screws or hook), in order to correct, maintain, and stabilize fusion of the instrumented vertebrae.
The rod template will help the surgeon to select the appropriate length and to shape the rod.
A range of pre-bent rod is also available for simple curvatures.
The rods feature a longitudinal line to help the user to visualize the curvature during implantation.

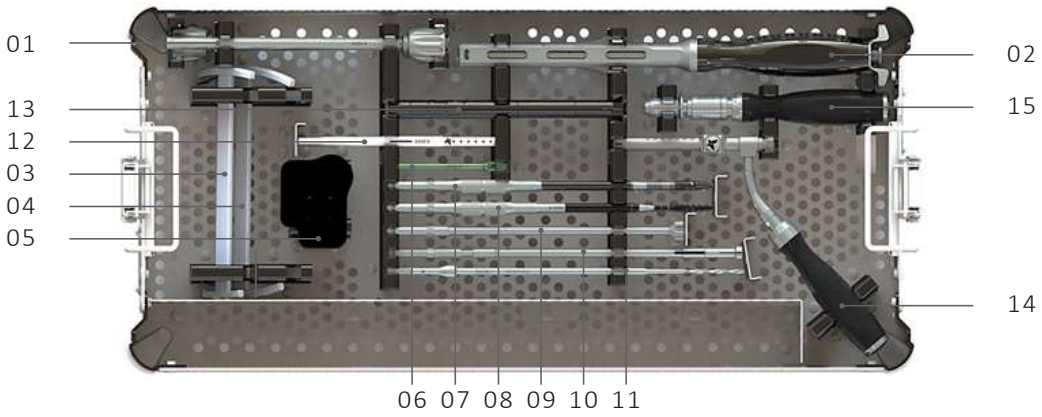
CROSS CONNECTORS MONOBLOC	
L18	TLF-CC ST 18-S
L21	TLF-CC ST 21-S
L24	TLF-CC ST 24-S
L27	TLF-CC ST 27-S
L30	TLF-CC ST 30-S

MULTIAXIAL CROSS CONNECTORS		
LENGTH	**STRAIGHT**	**PREBENT**
L30 TO L31	TLF-CC MU 30-S	
L31 TO L33	TLF-CC MU 31-S	TLF-CC MP 31-S
L33 TO L36	TLF-CC MU 33-S	TLF-CC MP 33-S
L36 TO L43	TLF-CC MU 36-S	TLF-CC MP 36-S
L43 TO L55	TLF-CC MU 43-S	TLF-CC MP 43-S
L55 TO L80	TLF-CC MU 55-S	TLF-CC MP 55-S

The transverse and cross connectors implants are being used to connect 2 longitudinal rods to strengthen the overall construct. The length will be chosen with the caliper. The shape and the type of cross connector will be chosen in function of the anatomy of the patient and the instrumented level.

INSTRUMENT SET

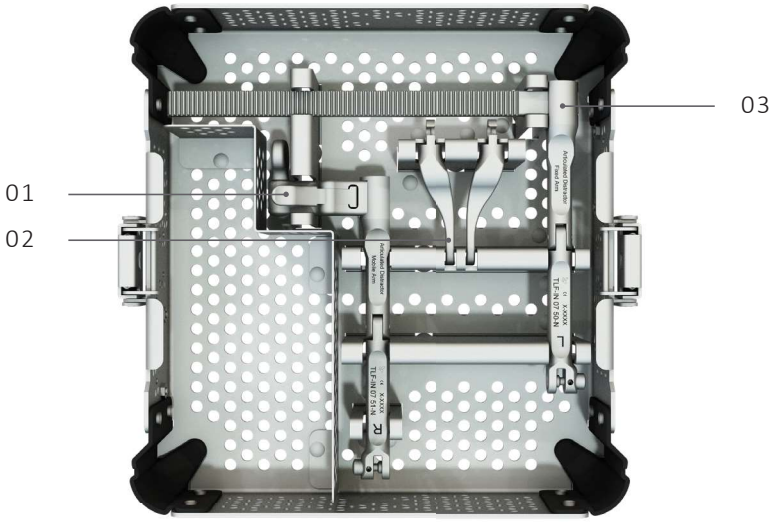
10 - MODULAR CORTICAL



#	DESCRIPTION	REFERENCE
00	PERLA TL BOX 10 - MODULAR CORTICAL	TLF-BX 10 00-N
00	UNIVERSAL LID	LID-BX 11 10-N
01	CORTICAL SCREWDRIVER TUBE	TLF-IN 13 11-N
02	HEAD CLIPPER	TLF-IN 14 11-N
03	ROD TRIAL SHORT	ELL-IN 24 01-N
04	ROD TRIAL LONG	ELL-IN 24 02-N
05	CLIPPING BASE	TLF-IN 14 00-N
06	HEAD CLIPPER SHAFT REDUCTION	TLF-IN 14 31-N
07	CORTICAL TAP Ø7.5 (Ø7.5 SCREW) CORTICAL TAP Ø6.5 (Ø6.5 SCREW)	TLF-IN 12 75-N TLF-IN 12 65-N
08	CORTICAL TAP Ø5.5 (Ø5.5 SCREW) CORTICAL TAP Ø4.5 (Ø4.5 SCREW)	TLF-IN 12 55-N TLF-IN 12 45-N
09	BALL REAMER	TLF-IN 11 21-N
10	CORTICAL SCREWDRIVER SHAFT	TLF-IN 13 21-N
11	DRILL Ø3.1	TLF-IN 11 01-N
12	DRILL GUIDE ADJUSTABLE SLEEVE Ø3.1	NAV-IN 50 31-N
13	CORTICAL SCREWDRIVER SLEEVE	TLF-IN 13 40-N
14	DRILL GUIDE	NAV-IN 50 00-N
15	STRAIGHT HANDLE RATCHET AO Ø20	HAN-RA AO 20-N

INSTRUMENT SET

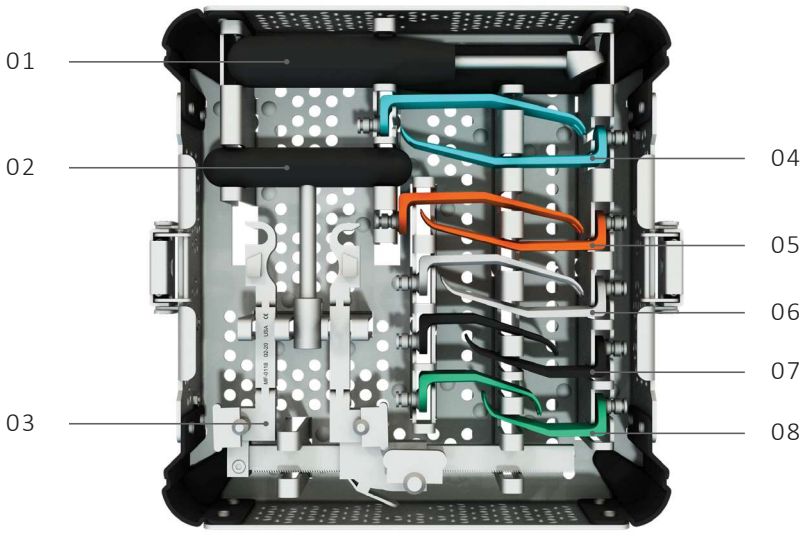
DISTRACTOR



#	DESCRIPTION	REFERENCE
00	PERLA TL BOX 4 - ARTICULATED DISTRACTOR	TLF-BX 04 00-N
01	ARTICULATED DISTRACTOR - MOBILE ARM	TLF-IN 07 51-N
02	ARTICULATED DISTRACTOR - LEFT END TIP	TLF-IN 07 60-N
02	ARTICULATED DISTRACTOR - RIGHT END TIP	TLF-IN 07 61-N
03	ARTICULATED DISTRACTOR - FIXED ARM	TLF-IN 07 50-N

INSTRUMENT SET

RETRACTOR



#	DESCRIPTION	REFERENCE
00	PERLA TL BOX 3 - RETRACTOR	TLF-BX 03 00-N
01	SCREW-ON RETRACTOR HANDLE	MF-0098
02	RETRACTOR T-HANDLE	MF-0438
03	TL TRANSVERSE RETRACTOR, PIVOTING, 160MM	MF-0118
04	85MM LIGHTED LUMBAR FAN BLADE, TURQUOISE, LEFT	MF-2385FL
04	85MM LIGHTED LUMBAR FAN BLADE, TURQUOISE, RIGHT	MF-2385FR
05	75MM LIGHTED LUMBAR FAN BLADE, ORANGE, LEFT	MF-2375FL
05	75MM LIGHTED LUMBAR FAN BLADE, ORANGE, RIGHT	MF-2375FR
06	65MM LIGHTED LUMBAR FAN BLADE, GRAY, LEFT	MF-2365FL
06	65MM LIGHTED LUMBAR FAN BLADE, GRAY, RIGHT	MF-2365FR
07	55MM LIGHTED LUMBAR FAN BLADE, BLACK, LEFT	MF-2355FL
07	55MM LIGHTED LUMBAR FAN BLADE, BLACK, RIGHT	MF-2355FR
08	45MM LIGHTED LUMBAR FAN BLADE, GREEN, LEFT	MF-2345FL
08	45MM LIGHTED LUMBAR FAN BLADE, GREEN, RIGHT	MF-2345FR

INSTRUMENTS

EXPOSURE

SCREW-ON RETRACTOR HANDLE	MF-0098

RETRACTOR T-HANDLE	MF-0438

MIS TOEABLE RETRACTOR, 160MM RACK, 60MM ARM	MF-0118

85MM LIGHTED LUMBAR FAN BLADE, TURQUOISE, LEFT	MF-2385FL
85MM LIGHTED LUMBAR FAN BLADE, TURQUOISE, RIGHT	MF-2385FR

75MM LIGHTED LUMBAR FAN BLADE, ORANGE, LEFT	MF-2375FL
75MM LIGHTED LUMBAR FAN BLADE, ORANGE, RIGHT	MF-2375FR

65MM LIGHTED LUMBAR FAN BLADE, GRAY, LEFT	MF-2365FL
65MM LIGHTED LUMBAR FAN BLADE, GRAY, RIGHT	MF-2365FR

55MM LIGHTED LUMBAR FAN BLADE, BLACK, LEFT	MF-2355FL
55MM LIGHTED LUMBAR FAN BLADE, BLACK, RIGHT	MF-2355FR

45MM LIGHTED LUMBAR FAN BLADE, GREEN, LEFT	MF-2345FL
45MM LIGHTED LUMBAR FAN BLADE, GREEN, RIGHT	MF-2345FR

INSTRUMENTS

DRILL Ø3.1	TLF-IN 11 01-N

BALL REAMER	TLF-IN 11-21-N

DRILL GUIDE	NAV-IN 50 00-N

CORTICAL TAP Ø4.5	TLF-IN 12 45-N
CORTICAL TAP Ø5.5	TLF-IN 12 55-N
CORTICAL TAP Ø6.5	TLF-IN 12 65-N
CORTICAL TAP Ø7.5	TLF-IN 12 75-N

DRILL GUIDE ADJUSTABLE SLEEVE Ø3.1	NAV-IN 50 31-N

INSTRUMENTS

SCREW INSERTION

CORTICAL SCREWDRIVER SLEEVE	TLF-IN 13 40-N

CORTICAL SCREWDRIVER SHAFT	TLF-IN 13 21-N

CORTICAL SCREWDRIVER TUBE	TLF-IN 13 11-N

CLIPPING BASE	TLF-IN 14 00-N

HEAD CLIPPER	TLF-IN 14 11-N

HEAD CLIPPER SHAFT REDUCTION	TLF-IN 14 31-N

HANDLE

STRAIGHT HANDLE RATCHET AO Ø20	HAN-RA AO 20-N

INSTRUMENTS

ROD SELECTION AND CONTOURING

ROD TRIAL SHORT	ELL-IN 24 01-N

ROD TRIAL LONG	ELL-IN 24 02-N

DISTRACTION FOR POSTERIOR CAGE

ARTICULATED DISTRACTOR – FIXED ARM	TLF-IN 07 50-N

ARTICULATED DISTRACTOR – MOBILE ARM	TLF-IN 07 51-N

ARTICULATED DISTRACTOR – LEFT END TIP	TLF-IN 07 60-N

ARTICULATED DISTRACTOR – RIGHT END TIP	TLF-IN 07 61-N

SURGICAL TECHNIQUE

_STEP 1

EXPOSURE

After surgical site identification and exposure adapted to a midline approach, measure the depth from skin to the pars interarticularis for appropriate blade length.

Place contour of **Blades** over facet joints with deep section of blades in recess of pars. Attach blades to **Retractor**.

Retract until **Blades** sit atop facet capsules and lateral border of pars is visualized.

INSTRUMENT	REFERENCE
SCREW-ON RETRACTOR HANDLE	MF-0098
RETRACTOR T-HANDLE	MF-0438
MIS TOEABLE RETRACTOR, 160MM RACK, 60MM ARM	MF-0118
85MM LIGHTED LUMBAR FAN BLADE, TURQUOISE, LEFT	MF-2385FL
85MM LIGHTED LUMBAR FAN BLADE, TURQUOISE, RIGHT	MF-2385FR
75MM LIGHTED LUMBAR FAN BLADE, ORANGE, LEFT	MF-2375FL
75MM LIGHTED LUMBAR FAN BLADE, ORANGE, RIGHT	MF-2375FR
65MM LIGHTED LUMBAR FAN BLADE, GRAY, LEFT	MF-2365FL
65MM LIGHTED LUMBAR FAN BLADE, GRAY, RIGHT	MF-2365FR
55MM LIGHTED LUMBAR FAN BLADE, BLACK, LEFT	MF-2355FL
55MM LIGHTED LUMBAR FAN BLADE, BLACK, RIGHT	MF-2355FR
45MM LIGHTED LUMBAR FAN BLADE, GREEN, LEFT	MF-2345FL
45MM LIGHTED LUMBAR FAN BLADE, GREEN, RIGHT	MF-2345FR

_STEP 2

——— Entry point
------ Entry point of cephalad screws

PEDICLE PREPARATION – ENTRY POINT

Using the **Bone Awl**, score the cortical bone of the pars to create a starting point.

NOTE 1: If necessary, remove hypertrophic tissue of degenerative facets overriding entry points. Take care to respect facet capsule above intended fused level.

The screw entry point is located:

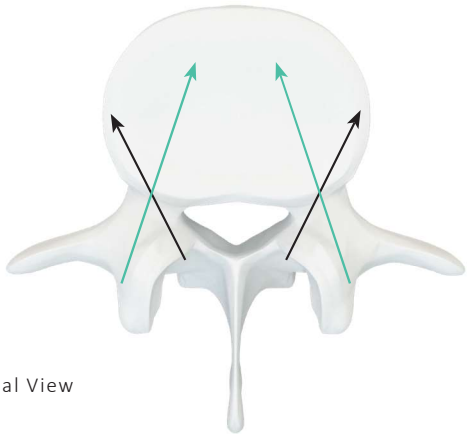
- 3-5mm medial to the lateral edge of the pars interarticularis
- In line with the inferior aspect of the transverse process

NOTE 2: To avoid facet impingement, the starting point for the cephalad-most screw is 1-2mm inferior compared to the starting point for caudal screws for a steeper trajectory and placement of a longer screw.

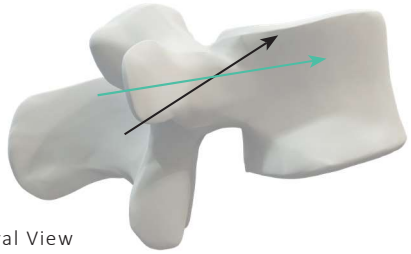
INSTRUMENT	REFERENCE
*BONE AWL	TLF-IN 00 00-N

* See PERLA® TL Surgical Technique

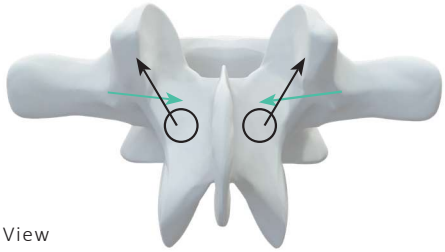
_STEP 3



Axial View



Lateral View



A/P View

Cortical trajectory

Traditional trajectory

PEDICLE PREPARATION - TRAJECTORY

Choose the appropriate length to be drilled by sliding the **Drill Guide Adjustable Sleeve Ø3.1** into the **Drill Guide**. Press the lateral button on the **Drill Guide** and use the scale to select the desired drill depth.

Connect the **Drill Ø3.1** to the **Straight Handle Ratchet AO Ø20**.

Insert the **Drill Ø3.1** into the **Drill Guide Adjustable Sleeve Ø3.1** and target the entry point.
With the tip placed at the entry point, use fluoroscopy to direct the **Drill Guide**:

- 30° to 45° caudal-to-cephalad on lateral view
- 20° medial-to-lateral on AP view, aiming for posterior superior lateral border of vertebral body

INSTRUMENT	REFERENCE
STRAIGHT HANDLE RATCHET AO Ø20	HAN-RA AO 20-N
DRILL Ø3.1	TLF-IN 11 01-N
DRILL GUIDE	NAV-IN 50 00-N
DRILL GUIDE ADJUSTABLE SLEEVE Ø3.1	NAV-IN 50 31-N

_STEP 4

PEDICLE SOUNDING

Insert the **Pedicle Sounder** to verify integrity of the screw path.

INSTRUMENT	REFERENCE
*PEDICLE SOUNDER	TLF-IN 00 10-N

* See PERLA® TL Surgical Technique

SURGICAL TECHNIQUE

_STEP 5

HOLE TAPPING

Tap must be used to prepare the screw path. Placement of screw in untapped, dense cortical bone can split the pars or pedicle.

Attach the appropriate **Tap** to a **Straight Ratchet Handle** or a **T-Handle** and tap the length of the intended screw.

NOTE 1: Taps in the set are line-to-line. Under-tapping may result in splitting cortical bone of the pars. If the screw hole is compromised, a "standard" pedicle screw trajectory is recommended (lateral to medial) as a rescue technique.

NOTE 2: Information about insertion of degenerative pre-assembled screws and their adapted instrumentations are available in the PERLA® TL Thoracolumbar System's Surgical Technique.

NOTE 3: Lateral fluoroscopy images should be saved for screw trajectory reference.

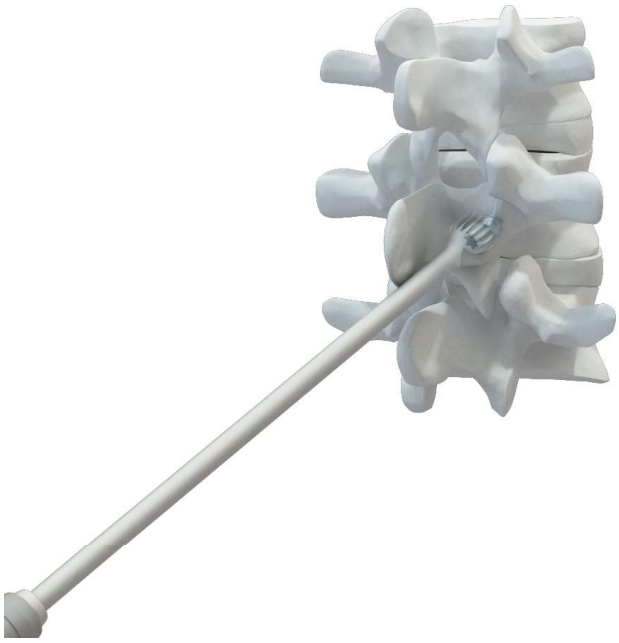
⚠ **CAUTION:** Select the appropriate **Cortical Taps** (TLF-IN 12 XX-N) for Cortical Bone Screws (TLF-CS XX XX-S). The standard **Taps** (TLF-IN 02 XX-N) are dedicated to all other pedicle screws. To avoid any confusion the **Cortical Tap** is colour coded and contains the mention Cortical Tap.

INSTRUMENT	REFERENCE
CORTICAL TAP Ø4.5	TLF-IN 12 45-N
CORTICAL TAP Ø5.5	TLF-IN 12 55-N
CORTICAL TAP Ø6.5	TLF-IN 12 65-N
CORTICAL TAP Ø7.5	TLF-IN 12 75-N
*STRAIGHT RATCHET HANDLE	HAN-SB RF ST-N
*T-HANDLE RATCHET	HAN-SB RF TE-N

* See PERLA® TL Surgical Technique

SURGICAL TECHNIQUE

_STEP 6



REAMER (OPTIONAL)

The **Ball Reamer** can be used after the Bone Screw insertion in order to fine-tune the implant site for the screw head clipping.

Attach the appropriate reamer to the **Straight Handle Ratchet AO Ø20**.

Put the distal end of the **Ball Reamer** over the bone screw and rotate clockwise to remove tissue.

NOTE: Take care to avoid facets cephalad to fused levels to prevent damage to the non-fused segments.

INSTRUMENT	REFERENCE
BALL REAMER	TLF-IN 11 21-N
STRAIGHT HANDLE RATCHET AO Ø20	HAN-RA AO 20-N
*T-HANDLE RATCHET	HAN-SB RF TE-N
*STRAIGHT HANDLE RATCHET	HAN-SB RF ST-N

* See PERLA® TL Surgical Technique

_STEP 7

SCREW SELECTION

PERLA® TL Cortical offers a large range of diameters and length for both Polyaxial and Reduction screws. The modularity feature allows to choose the desired type of screw head after the bone screw insertion.

1. Polyaxial screw, with a 60° conical range of motion.
2. Reduction screw, also called spondylo screw. With a 60° conical range of motion, it allows for a 15mm reduction.

SURGICAL TECHNIQUE

_STEP 8

SCREWDRIVER ASSEMBLY

The screwdriver is composed of:

- **Cortical Screwdriver Shaft** 01
- **Cortical Screwdriver Tube** 02
- **Straight Handle Ratchet** or **T-Handle Ratchet** 03
- **Cortical Screwdriver Sleeve** 04

Screw the Screwdriver Tube knob until the START indication.

Press the button on the **Cortical Screwdriver Tube** and then slide the proximal end of the **Cortical Screwdriver Shaft** into the distal end of **Cortical Screwdriver Tube**.

Be sure that the 2 pins located on the distal part of the **Cortical Screwdriver Shaft** are going up into the groove placed on distal part of the **Cortical Screwdriver Tube**.

Slide the proximal end of the **Cortical Screwdriver Sleeve** into the distal end of the assembly (**Cortical Screwdriver Tube and Cortical Screwdriver Shaft**) until it clicks.

Connect the assembly (**Cortical Screwdriver Shaft + Cortical Screwdriver Tube+ Cortical Screwdriver Sleeve**) to the preferred handle.

INSTRUMENT	REFERENCE
CORTICAL SCREWDRIVER SHAFT	TLF-IN 13 21-N
CORTICAL SCREWDRIVER TUBE	TLF-IN 13 11-N
*STRAIGHT RATCHET HANDLE	HAN-SB RF ST-N
*T-HANDLE RATCHET	HAN-SB RF TE-N
CORTICAL SCREWDRIVER SLEEVE	TLF-IN 13 40-N

* See PERLA® TL Surgical Technique

SURGICAL TECHNIQUE

_STEP 9

SCREW INSERTION

Insert the tip of the screwdriver assembly into the screw hexalobe recess.

Rotate the knob of the **Cortical Screwdriver Tube** clockwise to lock the Screwdriver with the screw.

Place the screw tip into the entry site. Align the screwdriver assembly with the prepared hole and rotate it clockwise to advance the screw.

If necessary, adjust the screw depth with the T25 Screwdriver Shaft.

NOTE 1: The **Ball Reamer** can be used to remove tissue and decrease potential screw head impingement prior to head clipping.

NOTE 2: Confirm screw positioning using lateral and A/P radiograph of fluoroscopy.

INSTRUMENT	REFERENCE
CORTICAL SCREWDRIVER SHAFT	TLF-IN 13 21-N
CORTICAL SCREWDRIVER TUBE	TLF-IN 13 11-N
*STRAIGHT RATCHET HANDLE	HAN-SB RF ST-N
*T-HANDLE RATCHET	HAN-SB RF TE-N
*T25 SCREWDRIVER SHAFT	TLF-IN 03 00-N
BALL REAMER	TLF-IN 11 21-N
CORTICAL SCREWDRIVER SLEEVE	TLF-IN 13 40-N

* See PERLA® TL Surgical Technique

SURGICAL TECHNIQUE

_POSTERIOR CAGE NOTE - DISTRACTION

Decompression and posterior cage insertion are performed prior to screw head insertion.

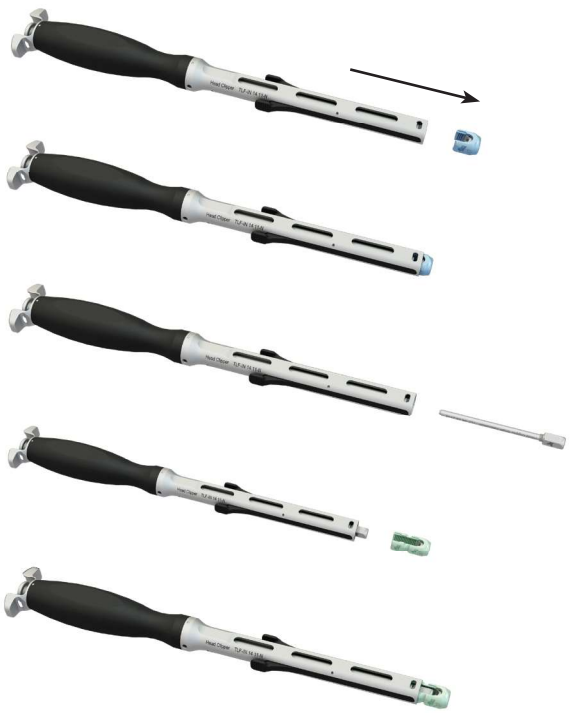
Due to the superior and lateral trajectory, screws head can interfere with a wide decompression or insertion of an oblique TLIF cage.

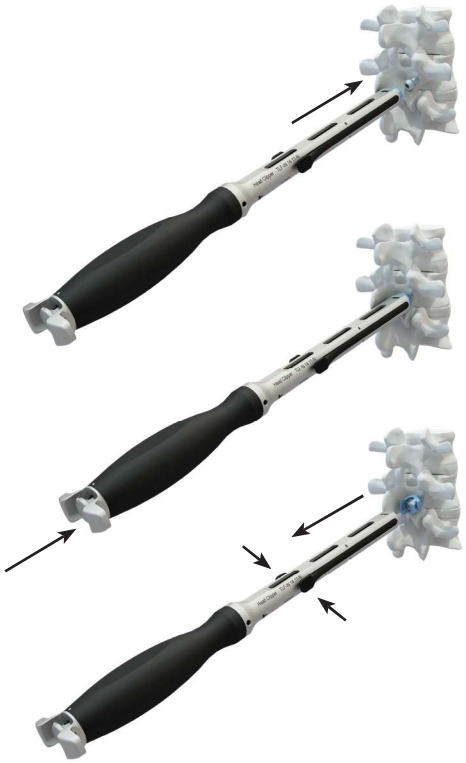
Cortical Bone Screws allow to use an **Articulated Distractor** directly on their head to help opening the disc space while maximizing visualization.

When performing a facetectomy or laminectomy preserve 3-5mm of bone around the screw entry site to prevent splitting cortical bone.

INSTRUMENT	REFERENCE
ARTICULATED DISTRACTOR – FIXED ARM	TLF-IN 07 50-N
ARTICULATED DISTRACTOR – MOBILE ARM	TLF-IN 07 51-N
ARTICULATED DISTRACTOR – LEFT END TIP	TLF-IN 07 60-N
ARTICULATED DISTRACTOR – RIGHT END TIP	TLF-IN 07 61-N

_STEP 10





HEAD CLIPPING

Connect the **Head Clipper** to the appropriate Modular Head.

Clip the **Modular Head** to the **Cortical Bone Screw**.

Then press the button on top of the **Head Clipper** to secure the head connection.

⚠ **WARNING 1:** To secure head connection, press on the **Head Clipper** until the “click“ feedback.

⚠ **WARNING 2:** Check the proper Modular Head connection to the Cortical Bone Screw by pulling backwards on the **Head Clipper**.

Push on the lateral wings of the **Head Clipper** to release the implant.

To use the **Head Clipper** with a **Reduction Modular Head**, first insert and screw the **Head Clipper Shaft Reduction** into the distal part of the **Head Clipper**.

Then proceed as describe previously for **Modular Head** and **Cortical Bone** screw connection.

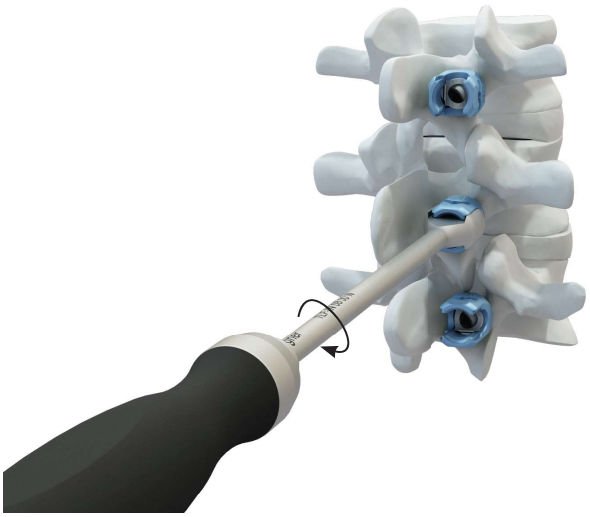
SURGICAL TECHNIQUE

NOTE: The Modular Head can be clipped to the Cortical Bone Screw prior to the bone screw insertion by using the same instruments with the **Clipping Base**. In this case, use the appropriate Screwdriver and technique listed in the PERLA® TL Thoracolumbar Fixation Surgical Technique.

INSTRUMENT	REFERENCE
HEAD CLIPPER	TLF-IN 14 11-N
HEAD CLIPPER SHAFT REDUCTION	TLF-IN 14 31-N
CLIPPING BASE	TLF-IN 14 00-N

SURGICAL TECHNIQUE

_STEP 11



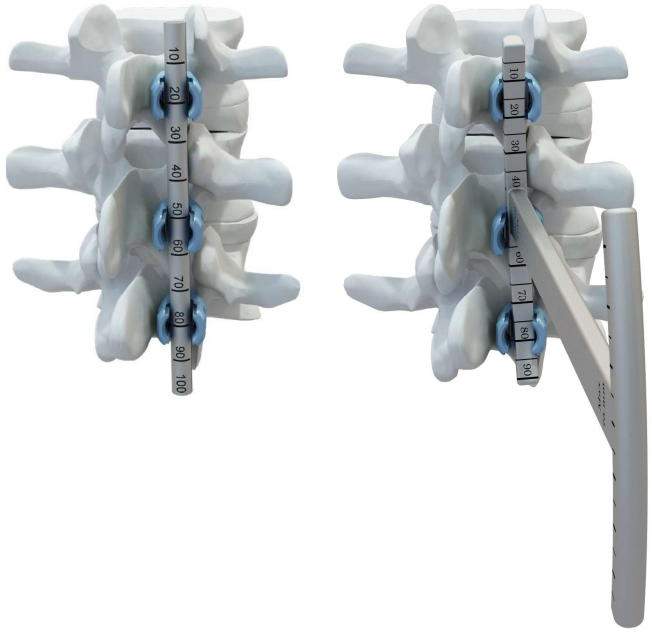
SCREW HEAD ADJUSTMENT

Set the orientation of the head with the **Head Aligner**.

INSTRUMENT	REFERENCE
*HEAD ALIGNER	TLF-IN 08 00-N

* See PERLA® TL Surgical Technique

_STEP 12



ROD SELECTION

Choose the appropriate length of rod with the **Rod Template** or **Rod Trial**.

INSTRUMENT	REFERENCE
*ROD TEMPLATE L100	TLF-IN 10 10-N
ROD TRIAL SHORT	TLF-IN 24 01-N
ROD TRIAL LONG	TLF-IN 24 02-N

* See PERLA® TL Surgical Technique

FOR ALL REMAING STEPS, REFER TO THE PERLA® TL SURGICAL TECHNIQUE.

SURGICAL TECHNIQUE

_FINAL CONSTRUCT

_REVISION

Loosen and remove all setscrews using the **Counter Torque** and the **Setscrew Tightener** connected to the **T-Handle Ratchet**. Remove rods. Fully secure the **Screwdriver** to the screw recess and turn counterclockwise to remove screws.

INSTRUMENT	REFERENCE
*T-HANDLE RATCHET	HAN-SB RF TE-N
*STRAIGHT HANDLE RATCHET	HAN-SB RF ST-N
*SETSCREW TIGHTENER	TLF-IN 05 20-N
*COUNTER TORQUE	TLF-IN 05 30-N
*SCREWDRIVER UNIVERSAL SHAFT	TLF-IN 03 50-N
*SCREWDRIVER SHAFT MS-PS	TLF-IN 03 30-N
*SCREWDRIVER SLEEVE	TLF-IN 03 20-N
*SCREWDRIVER TUBE	TLF-IN 03 10-N
*T25 SCREWDRIVER SHAFT	TLF-IN 03 00-N

* See PERLA® TL Surgical Technique

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