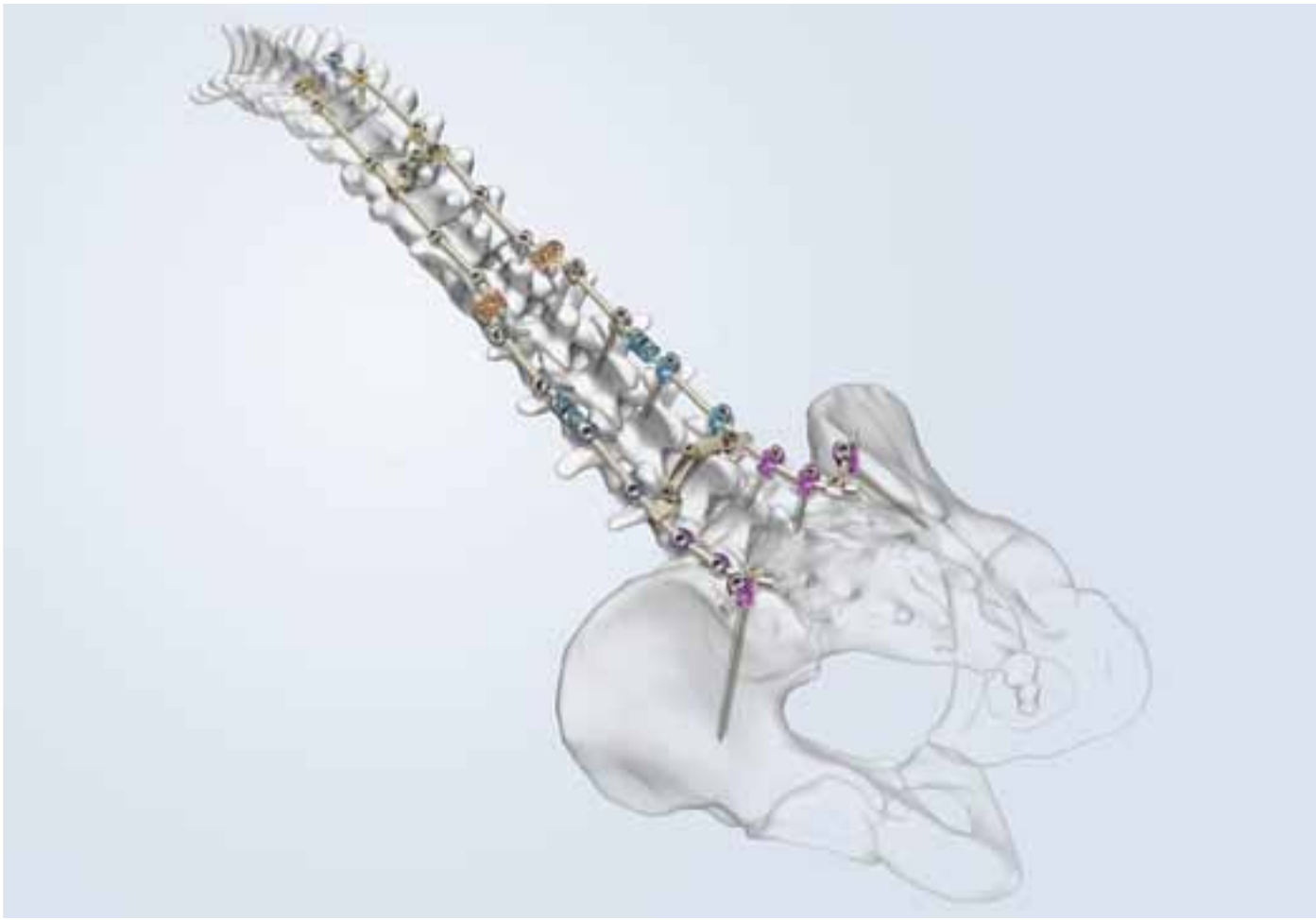
S4 Element®

Surgical Technique



Aesculap Spine

AESCULAP®
Implant Systems

S4 Element®

Surgical Technique

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I. System Overview

The S⁴ Element® Spine System is a low profile and innovative thoracolumbar pedicle fixation system designed to address complex posterior pathologies. The S⁴ Element system features a sophisticated pressure vessel locking design capable of delivering biomechanical stability while maintaining an ultra-low profile.

The S⁴ Element Spine System is a top-loading low profile pedicle screw system that offers a broad selection of implants and instruments that are designed to meet the surgeons' demand for a quicker yet simpler surgical procedure. The trays are configured to include polyaxial screws, Ilium screws, pre-cut straight and pre-bent rods, rigid & adjustable cross connectors, and a variety of rod-to-rod connectors used to extend an existing construct in the event of a revision surgery or for new multilevel construct.

System Features & Advantages

- Small Implant Volume
  - Maximize screw head range of motion
  - Reduce the risk of facet and soft tissue impingement
- Patented Interlocking Thread Design
  - Minimize splaying of screw body
- Pressure Vessel Technology
  - Transfer energy throughout the polyaxial screw construct transforming it into a solid monoaxial construct, achieving maximum construct stability.
- Undercut Thread Design
  - Help eliminate cross threading by directing the force inward, improving force transmission and efficiency throughout the rod-screw construct.

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II. Indications and Contraindications

The S⁴ Element Spinal System is intended for anterior/ anterolateral and posterior, non-cervical pedicle and non-pedicle fixation. Fixation is limited to skeletally mature patients and is intended to be used as an adjunct to fusion using autograft or allograft. The device is indicated for treatment of the following acute and chronic instabilities or deformities:

1. **Degenerative disc disease (defined as discogenic back pain with degeneration of the disc confirmed by history and radiographic studies),**
2. **Spondylolisthesis,**
3. **Trauma (i.e., fracture or dislocation),**
4. **Spinal Stenosis,**
5. **Deformities or Curvatures (i.e., scoliosis, kyphosis, and/or lordosis),**
6. **Tumor,**
7. **Pseudoarthrosis, and**
8. **Failed previous fusion**

Contraindications

Contraindications of the S⁴ Element Spinal System are similar to other commercially available posterior spinal fixation systems of similar design and material. Contraindications include, but are not limited to, the following:

1. Use in the Cervical Spine
2. Active systemic or local infection
3. Obesity
4. Pregnancy
5. Mental illness
6. Severe osteoporosis or osteopenia
7. Metal sensitivity/ allergies to the implant material
8. Alcohol or drug abuse
9. Patients unwilling or unable to follow postoperative instructions
10. Neuromuscular diseases/ disorders
11. Soft tissue deficit not allowing wound closure
12. Any medical or physical condition that would preclude the potential benefit of spinal implant surgery
13. Congenital abnormalities, tumors or other conditions that would prevent secure component fixation that has the potential to decrease the useful life of the device.
14. Any medical or mental condition which would exclude the patient or put the patient at high risk from surgery of this severity.
15. For pedicle screw cases, inadequate pedicles of the fifth lumbar (L5) vertebrae.

Complications and possible adverse effects

Prior to surgery, patients should be made aware of the following possible adverse effects in addition to the potential for additional surgery to correct these effects:

1. Loosening, disassembly, bending or breakage of components
2. Tissue sensitivity to implant material
3. Potential for skin breakdown and/ or wound complications
4. Non-union or delayed union
5. Infection
6. Nerve damage, including loss of neurologic function, dural tears, paralysis, paresthesia, and cerebral spinal fluid leakage
7. Fracture of vertebrae
8. Infection
9. Loss of fixation
10. Vascular or visceral injury
11. Chance of normal spinal curvature
12. Gastrointestinal, urological and/ or reproductive system compromise
13. Pain or discomfort
14. Bursitis
15. Decrease in bone density due to stress shielding
16. Loss of bone or fracture of bone above or below the level of surgery
17. Bone graft donor site pain, fracture, and/ or delayed wound healing
18. Restriction of activities
19. Lack of effective treatment of symptoms for which the surgery was intended
20. Death

III. Warnings and Precautions

No component of the S⁴ Element® Spinal System should be reused after being removed from the body. An implant should never be re-sterilized after contact with body tissues or body fluids.

Damage to the implant can occur if the clamping screw is overtightened. Do not tighten the clamping screw without using the countering instrument or screw head expansion can occur.

Damage to the implant can occur when implant set screw is over torqued.

Damage to the implant can occur if the repositioning instruments are positioned too high in relation to the implant. Always apply repositioning instruments (e.g. distraction and compression forceps) below the rod at the implant.

During derotation, screw head expansion may occur if derotation Sleeves are not used.

The implant can be damaged by spondylolisthesis repositioning through the clamping screw. Always use the rod persuader for spondylolisthesis repositioning.

This system should only be used with instrumentation specifically designed for this system and the surgeon should be familiar with the surgical technique.

PRECAUTION

The S⁴ Element system has not been evaluated for safety and compatibility in the MR environment. The S⁴ system has not been tested for heating or migration in the MR environment.

PRECAUTION

Components of competitive spinal fixation systems should not be used with components of the S⁴® Spinal System. Components of dissimilar material should not be used together due to the potential for accelerating the corrosion process by mixing of dissimilar materials.

PRECAUTION

The implantation of pedicle screw spinal systems should be performed only by experienced spinal surgeons with specific training in the use of this pedicle screw spinal system because this is a technically demanding procedure presenting a risk of serious injury to the patient.

PRECAUTION

Based on the fatigue testing results, the physician/surgeon should consider the levels of implantation, patient weight, patient activity level, other patient conditions, etc. which may affect the performance of the system.

WARNING

The safety and effectiveness of pedicle screw spinal systems have been established only for spinal conditions with significant mechanical instability or deformity requiring fusion with instrumentation. These conditions are significant mechanical instability or deformity of the thoracic, lumbar, and sacral spine secondary to degenerative spondylolisthesis with objective evidence of neurological impairment, fracture, dislocation, scoliosis, kyphosis, spinal tumor, and failed previous fusion (pseudarthrosis). The safety and effectiveness of these devices for any other conditions are unknown.

WARNING

The S⁴ Element Spinal System is not intended to be used without bone graft which is required to provide additional spinal support. Use of this product without bone graft or in cases that develop into a non-union will eventually be unsuccessful. A successful result is not always achieved in every surgical case. No posterior spinal fixation system can withstand body loads without the support of bone. In the event that bone is not provided to facilitate fusion, bending, loosening, disassembling, and/ or breakage of the implant will eventually occur.

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IV. Surgical Technique

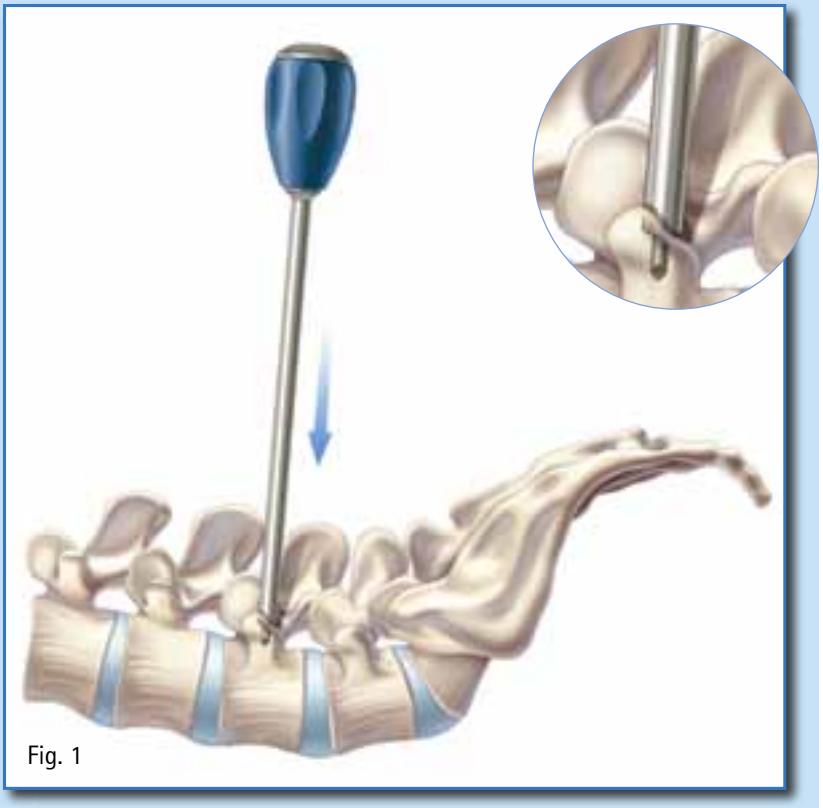

Fig. 1

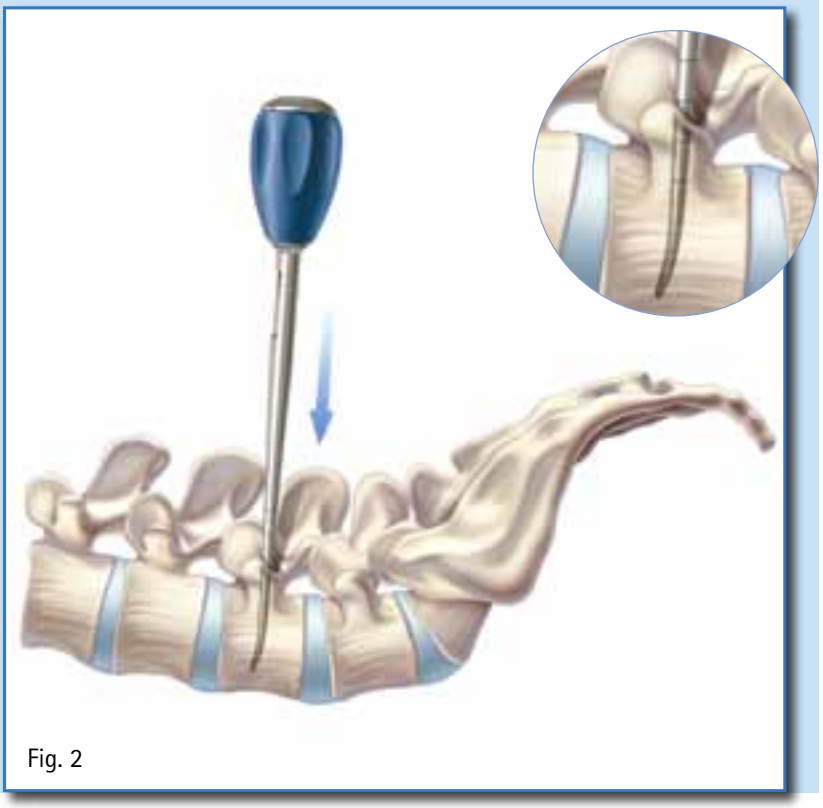

Fig. 2

1. Pedicle Preparation

- Determine pedicle entry point and perforate the cortex using the bone awl (FW190R). (Fig. 1)
- Use the pedicle probe to open the pedicle canal. (Fig. 2)
  - The pedicle probes are available straight or curved blunt-tip (FW188R or FW189R) and straight or curved Lenke (FW248R or FW249R).
  - The probes have ruled markings to determine the depth measurement in the pedicle canal.
- If necessary, single or dual band pedicle markers (FW191R or FW192R) can be used to identify proper anatomic location on intra-operative imaging.

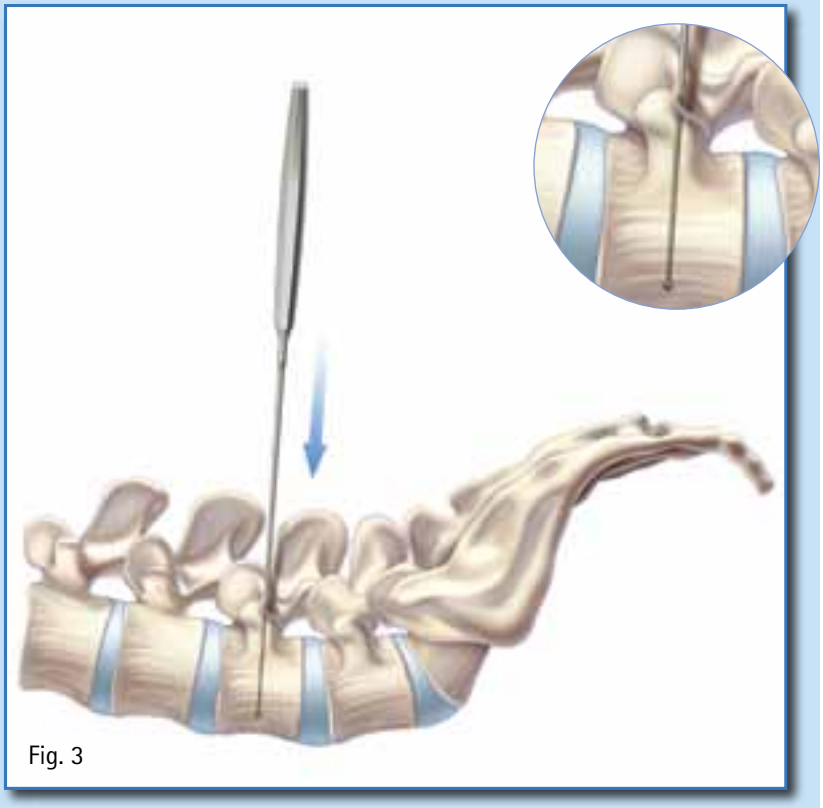

Fig. 3

- Utilize the straight or curved pedicle sounder (FW146R or FW147R) to confirm the patency of the pedicle and vertebral body cortex. (Fig. 3)

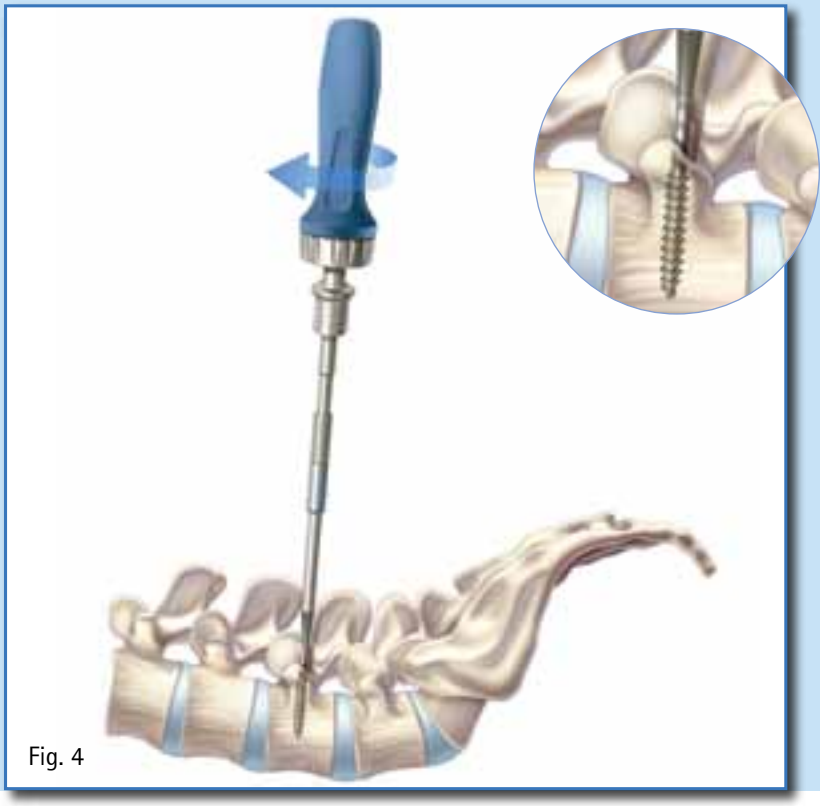

Fig. 4

2. Tapping (Optional)

Although the S[4] Element® Spine System screws are self-tapping, screw taps are available in all diameters if desired.

- To tap, attach the straight ratchet handle or the T-handle (FW165R or FW167R) to the appropriate tap based on the screw diameter. **Refer to page 28 for a complete list of taps sizes.** (Fig. 4)
- If preferred, a Speed Multiplier Handle (FW250R) is also available to expedite tapping.

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Fig. 5

3. Screw Application

Color-coded polyaxial screws are available in various lengths and diameters. **Refer to pages 24–26 for a complete list of implant sizes.**

Polyaxial Screw Application

- Attach and fully engage the hexagonal tip of the rigid fixation screwdriver (FW277R) into the head of the screw. With the rigid fixation screwdriver engaging the screw head, rotate the twist knob in a clockwise fashion while holding the bone screw to lock the threaded end of the screwdriver into the screw head.

Caution: *Ensure that the screwdriver is fully engaged and threaded onto the screw.*

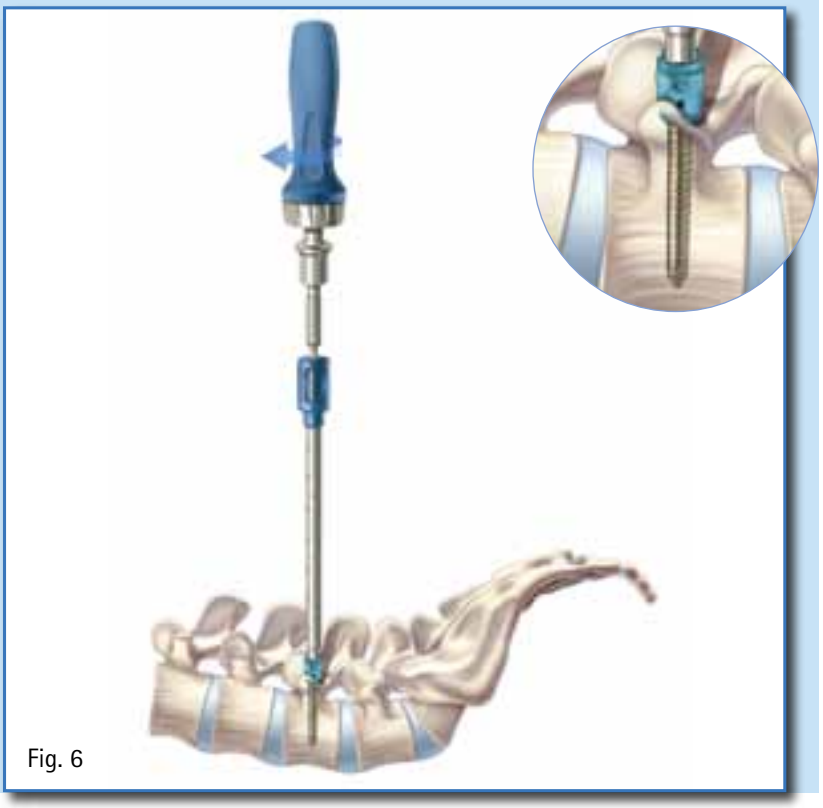

Fig. 6

- Thread the screw into the prepared pedicle and release the screwdriver from the screw head by turning the knob counter clockwise. (Fig. 6)

Caution: *Do not thread the screw all the way into the vertebral body. Ensure that the screw maintains polyaxicity.*

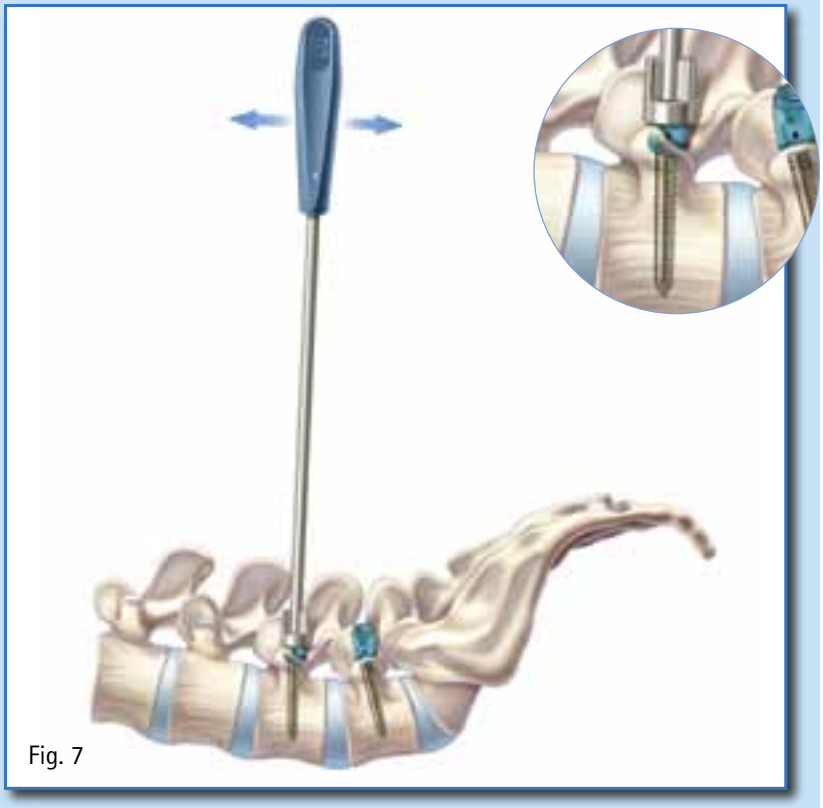

Fig. 7

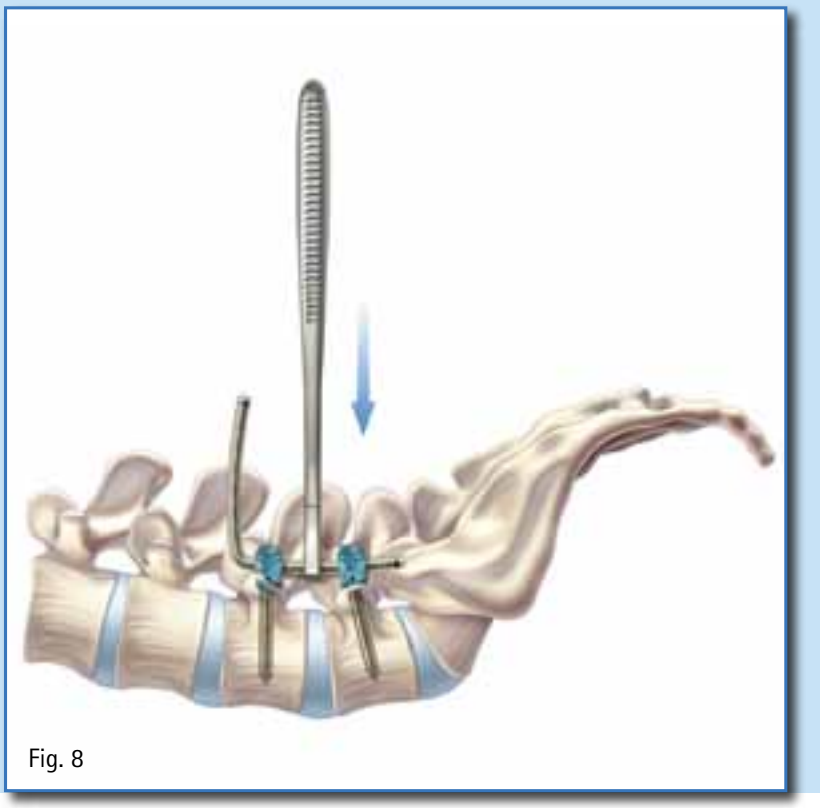

Fig. 8

- All polyaxial screw heads have 42° range of motion. If desired, align the polyaxial screw bodies using the screw body manipulator (FW278R). (Fig. 7)

Note: *In case of soft tissue impingement, the marnay lever (FW154R) can be used to retract soft tissue. If revision is necessary, use the screw manipulator to release the axial lock of the screw body and then use the shank tip screw driver (FW174R) for the safe removal of polyaxial screws.*

4. Rod Placement

- Use the flexible rod trials (FW185R) as a guide for rod bending and measuring correct rod length. (Fig. 8)

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Fig. 9

Both pre-bent and straight rods are available.

- All rods may be contoured using the French rod bender (FW024R).
- To contour the rod, place rod on the bender and squeeze the handle until the desired curvature is achieved. (Fig. 9)

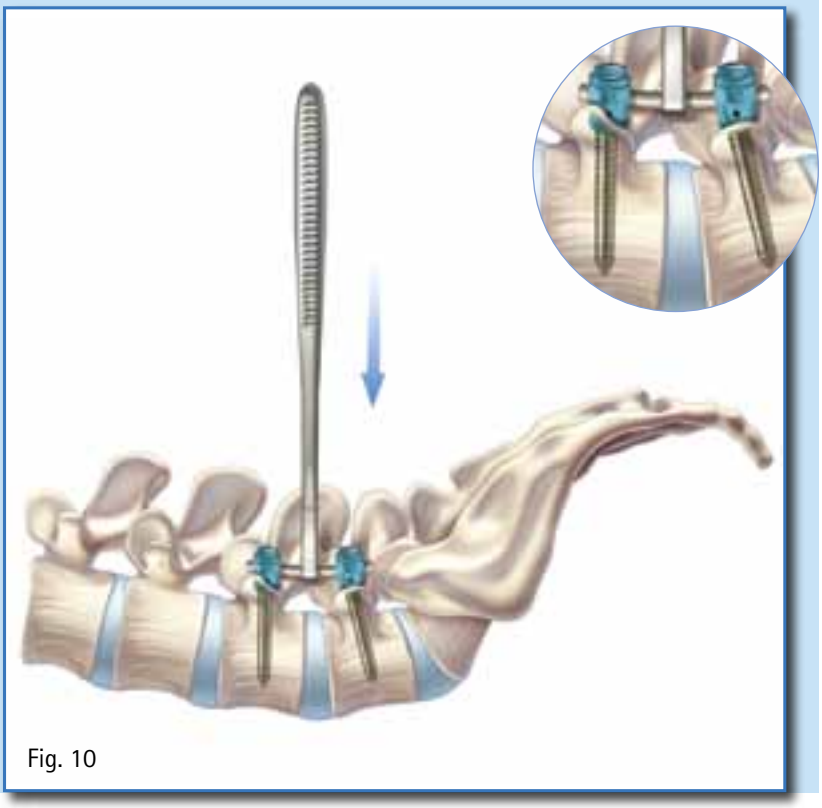

Fig. 10

- Use the rod holding forceps (FW012R) to assist with rod placement or rod manipulation. (Fig. 10)

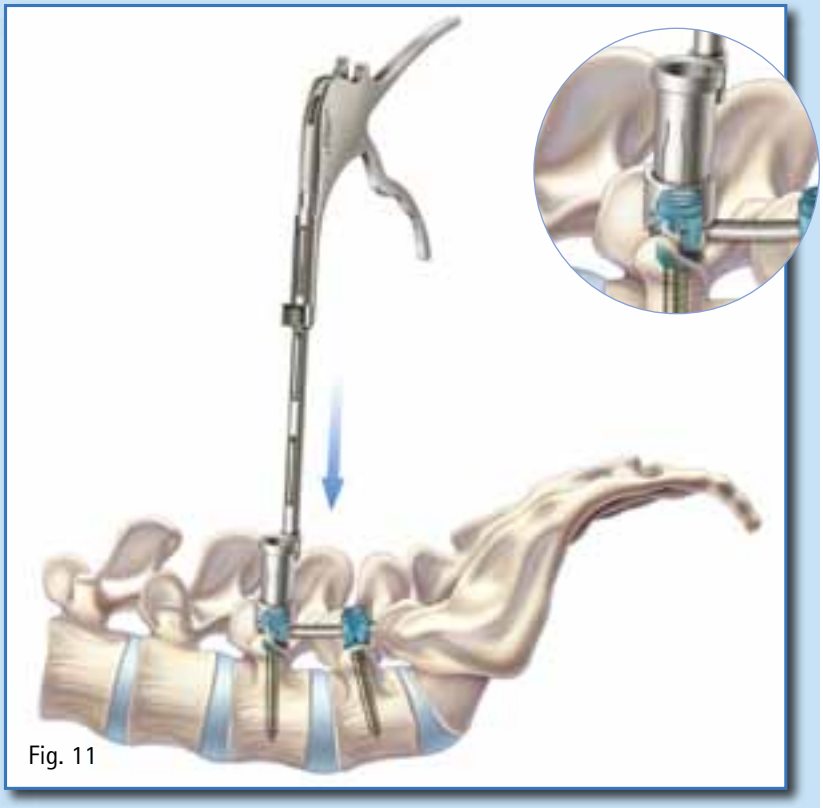

Fig. 11

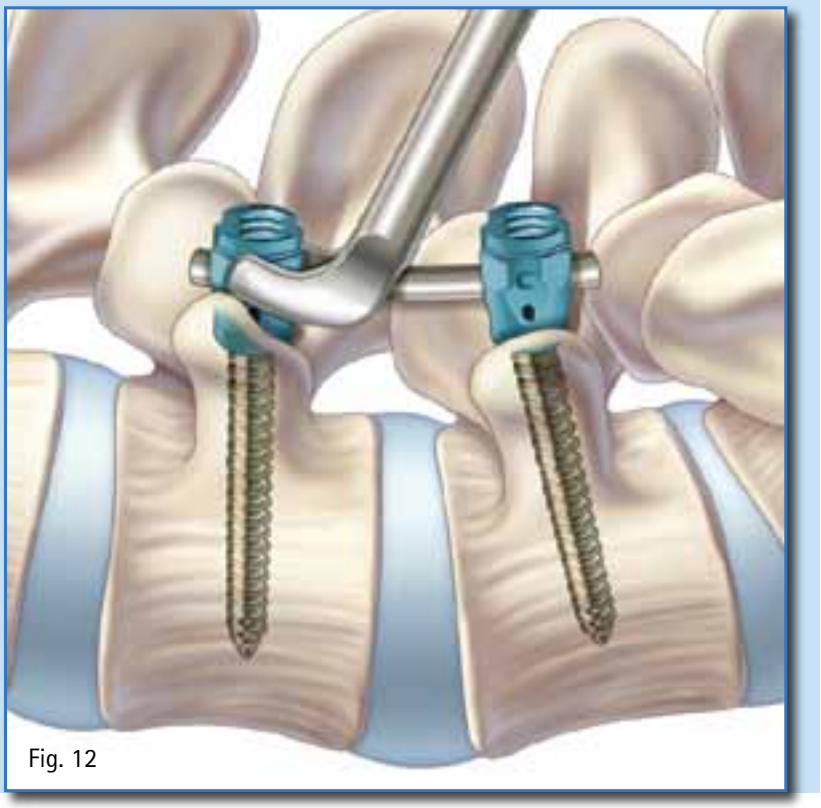

Fig. 12

5. Rod Reduction

a) Reduction by Rod Persuader

- Place the rod persuader (FW285R) over the implant head and ensure the tip of the persuader is fully engaged to the head of the implant. (Fig. 11)
- Squeeze the handle of the persuader to seat the rod into the head of the pedicle screw.

b) Reduction by a Fork Rocker

For minor vertical adjustments to seat the rod into the pedicle screw body, the straight or curved fork rockers (FW288R or FW289R) may be used.

- Align the pins in the fork rocker with the line on the pedicle screw body, and fit into the under cut grooves on the medial and lateral edges. (Fig. 12)

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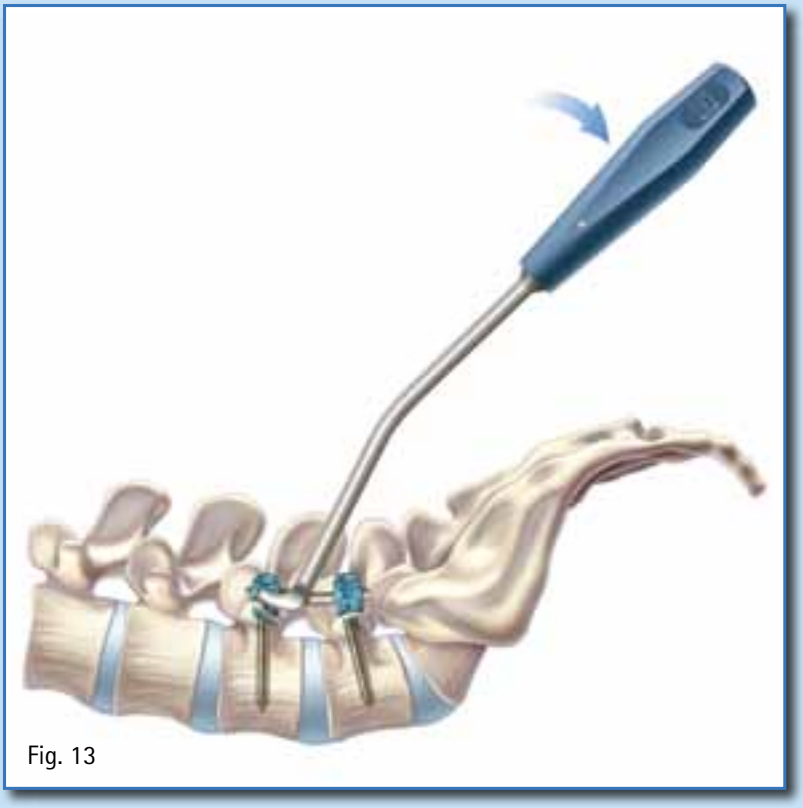

Fig. 13

Fig. 14

Reduction by a Fork Rocker (continued)

- Push down on the handle of the fork rocker to lever the rod into the screw head. (Fig. 13)
- If necessary, the rod pusher (FW513R) can be used to push the rod into position.

6. Set Screw Application

Insert the dual ended or handled set screw starter (FW279R or FW251R) firmly into the set screw and remove the set screw from the caddy. (Fig. 14)

Note: *The set screw must be fully engaged to the set screw starter.*

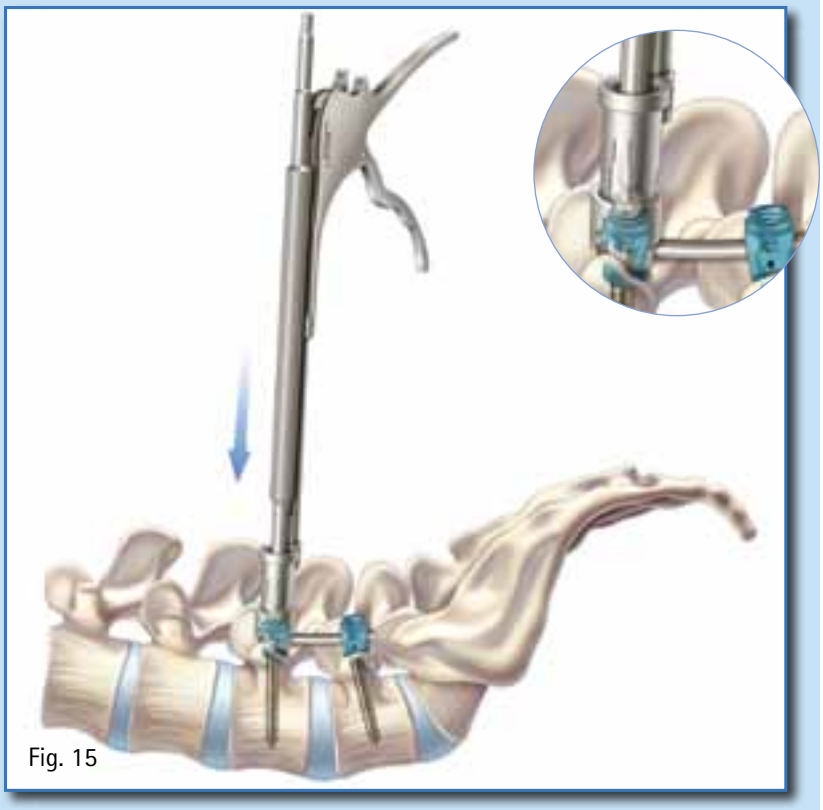

Fig. 15

Finger tighten the set screw into the screw body until it contacts the rod. (Fig. 15)

Caution: *The set screw starter is not designed for final tightening of the construct. It is designed to only tighten to a depth that still allows compression and distraction maneuvers to be performed.*

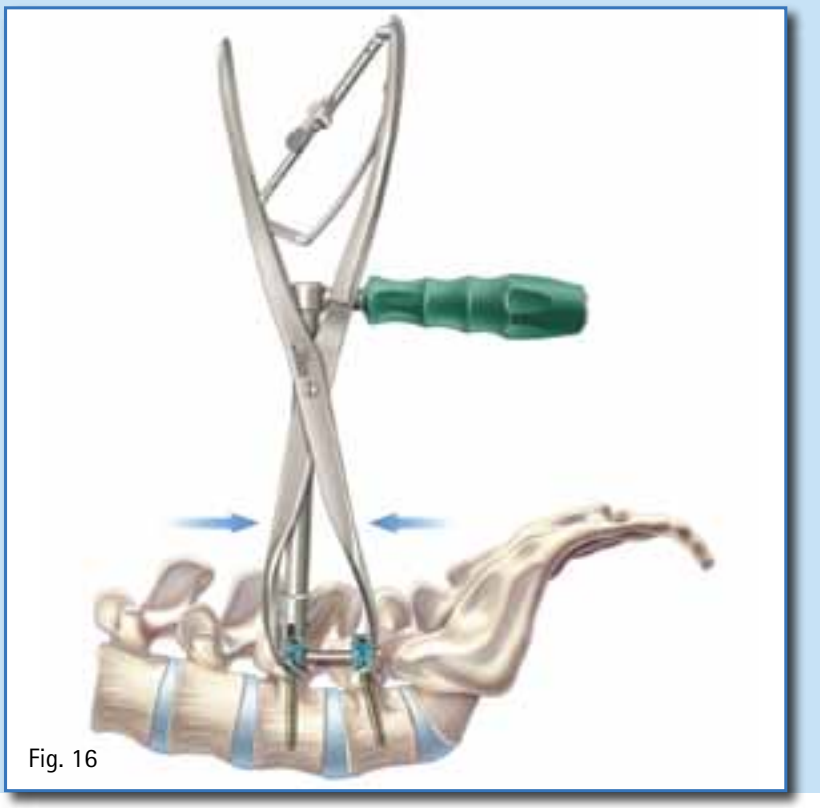

Fig. 16

7. Compression Maneuver

Use the compression forceps (FW282R) to compress the construct. (Fig. 16)

- Fully tighten one set screw to create a fixed point for compression **(as described in section 10 page 15).**
- Fully seat the counter torque L-handle (FW283R) or the derotation sleeves (FW287R) on the unlocked screw body and perform the compression maneuver.
- Once the desired compression is achieved, fully tighten the remaining set screw.

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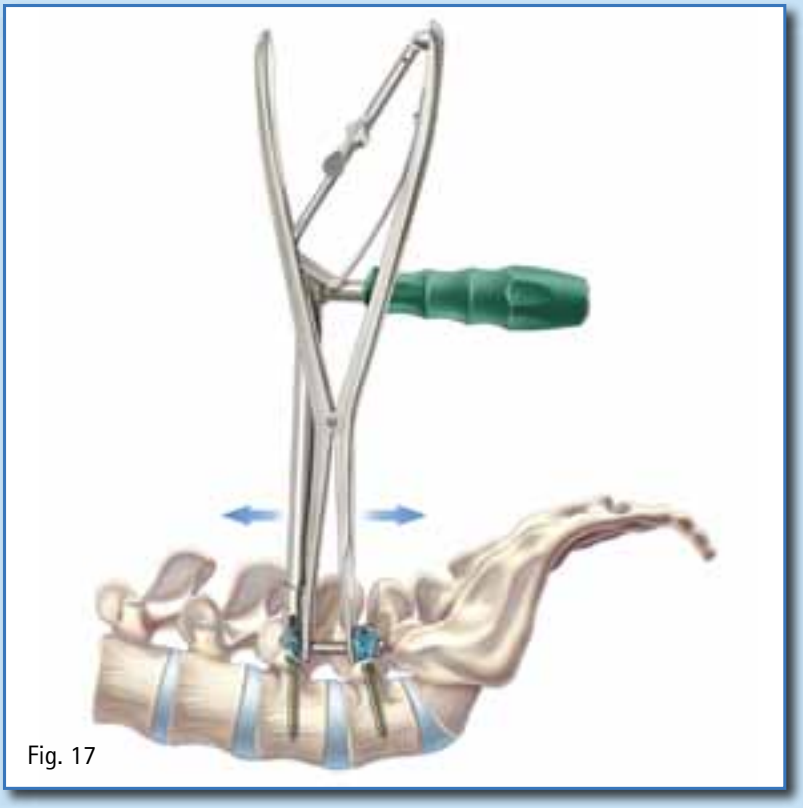

Fig. 17

8. Distraction Maneuver

Use the distraction forceps (FW281R) to distract the construct. (Fig. 17)

- Fully tighten one set screw to create a fixed point for distraction **(as described in section 10 page 15).**
- Fully seat the counter torque L-handle (FW283R) or the derotation sleeves (FW287R) on the unlocked screw body and perform the distraction maneuver.
- Once the desired distraction is achieved, fully tighten the remaining set screw.

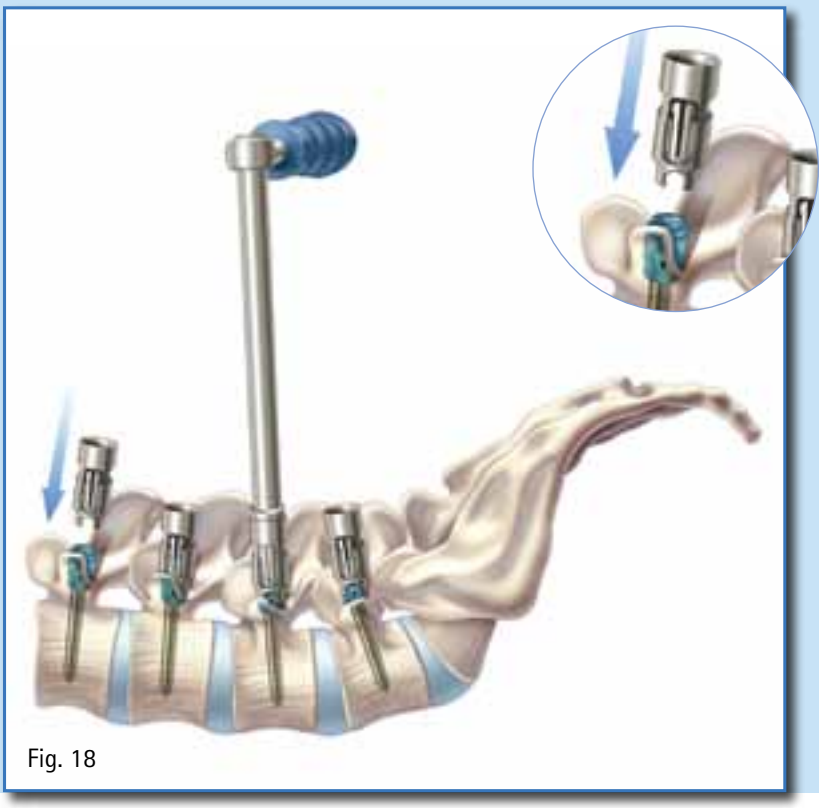

Fig. 18

9. Derotation Maneuver

Use the derotation sleeves (FW287R) and the counter torque L-handle (FW283R) to rotate the rod. (Fig. 18)

- Place the derotation sleeves over the pedicle screws that contain the rod to be rotated.
- Connect the counter torque L-handle to one of the derotation sleeves to perform the rotation maneuver.
- Once the desired rotation is achieved, fully tighten the set screws **(as described in section 10 page 15).**

Caution: *The derotation sleeves should be used during rotation maneuvers to prevent splaying of the implant head.*

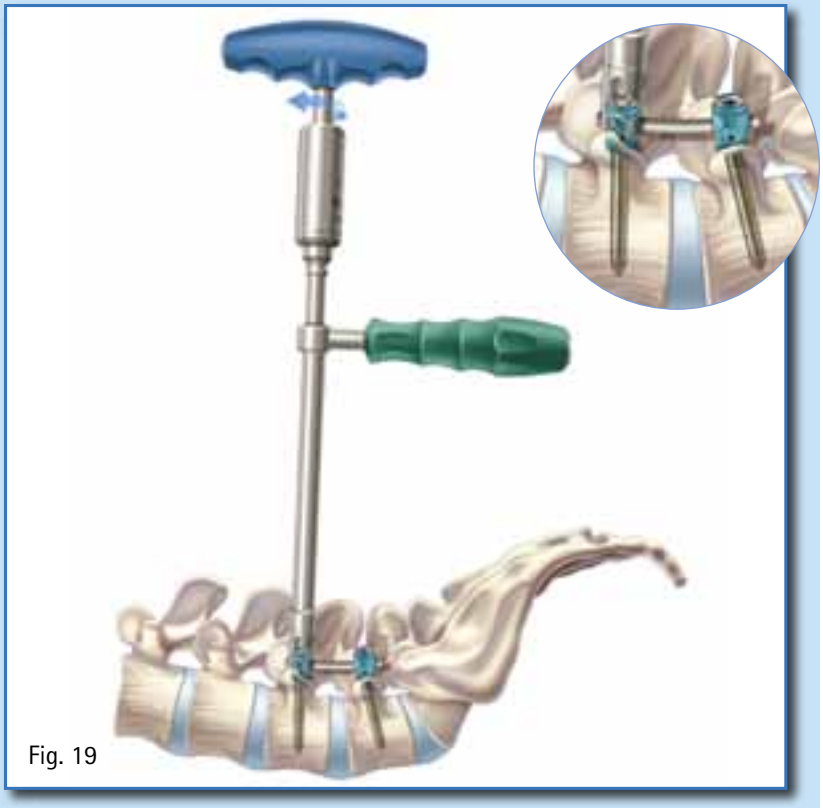

Fig. 19

10. Final Tightening

Final tightening of each set screw is completed using the clicking torque wrench or the line-to-line torque wrench (FW224R or FW170R) along with the counter torque L-handle (FW283R). (Fig. 19)

- Insert the torque wrench through the tube of the counter torque so the tip is exposed.
- Fully seat the tip of the torque wrench into the socket of the set screw
- Engage the counter torque tip with the rod
- Turn the clicking torque wrench (FW224R) in a clockwise direction while firmly holding the counter torque until you hear an audible click.
- If using the line-to-line torque wrench (FW170R), turn the wrench in the clockwise direction until the arrows on the torque wrench line up with each other.

Caution: *Over tightening the set screw more than the specified setting of 10 Nm (90 in/lbs) could lead to implant failure. In the event that the set screw is damaged, it must be replaced.*

- Use the set screw revision screwdriver with the 4 mm hex tip (FW193R) to remove a previously tightened set screw if necessary.

Warning: *Do not use the torque wrench without the counter torque L-handle. This could lead to thread jumping of the set screw within the screw body and, as a consequence to rod loosening.*

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V. ADDENDUM: Cross Connector Application

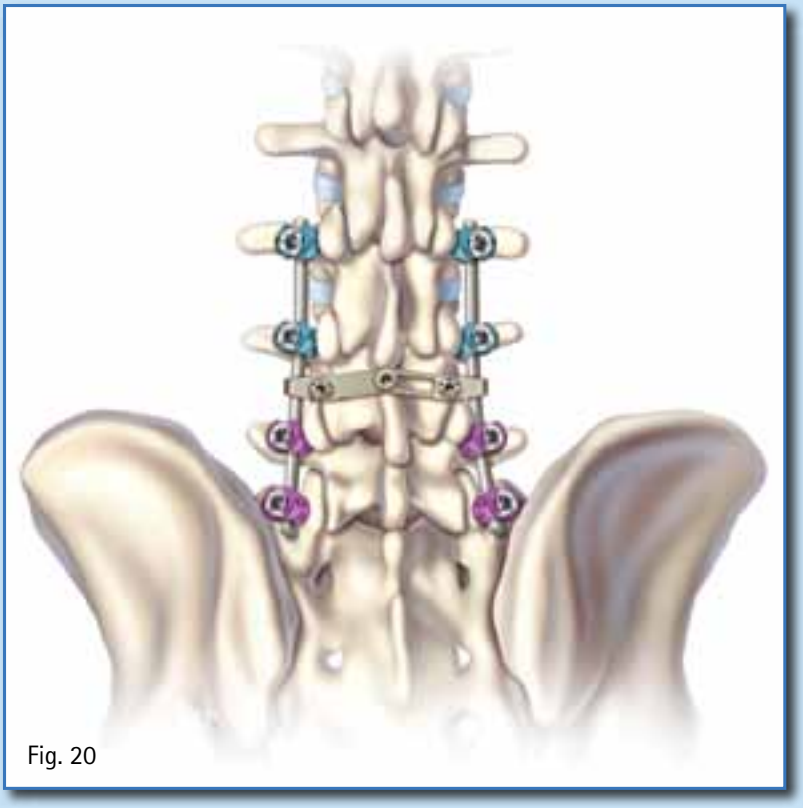

Fig. 20

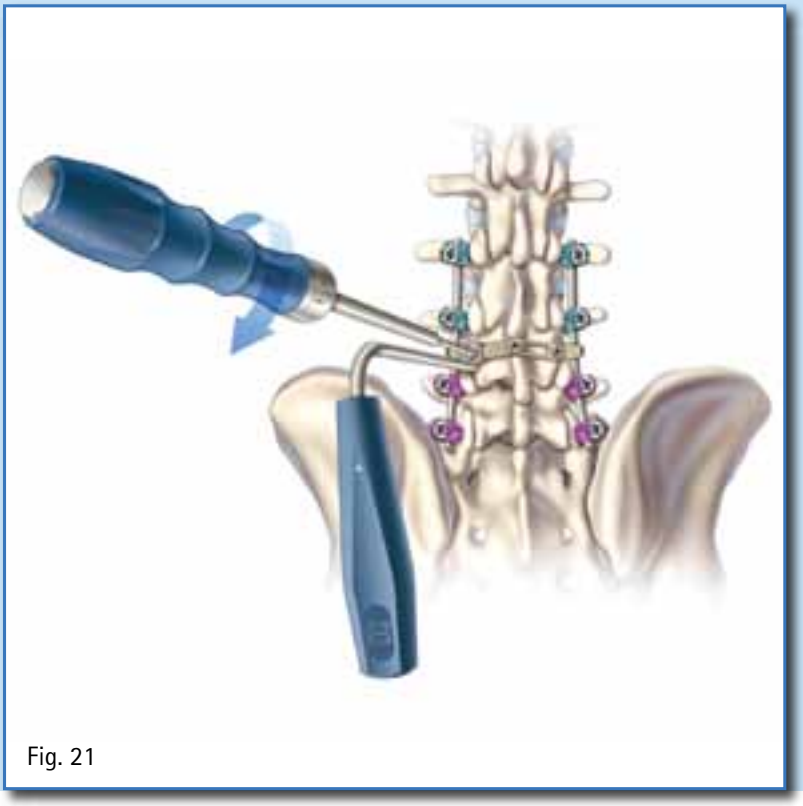

Fig. 21

1. Cross Connector Application

In the event that additional rotational stability of the construct is required, a cross connector may be used.

- Determine the appropriate size using the cross connector sizing template (FW202R).
- Verify there are no obstructions, then insert the cross connector. (Fig. 20)
- If the cross connector fits properly and is fully seated onto both rods, final tightening can be accomplished by applying 4 Nm (36 in/lbs) of torque to the locking screw using the cross connector torque wrench (FW207R) and the cross connector counter torque (FW204R). (Fig. 21)

If necessary, the optional "bar" style adjustable cross can be used.

- The bar style adjustable cross connectors can be contoured using the cross connector bender (FW203R).
- Place the cross connector face-up in the bender and apply the necessary force required to achieve appropriate angle. The maximum angle allowed by the cross connector is 20°.

Refer to pages 24–26 for a complete list of implant sizes.

VI. ADDENDUM: Rod-to-Rod Connector Application

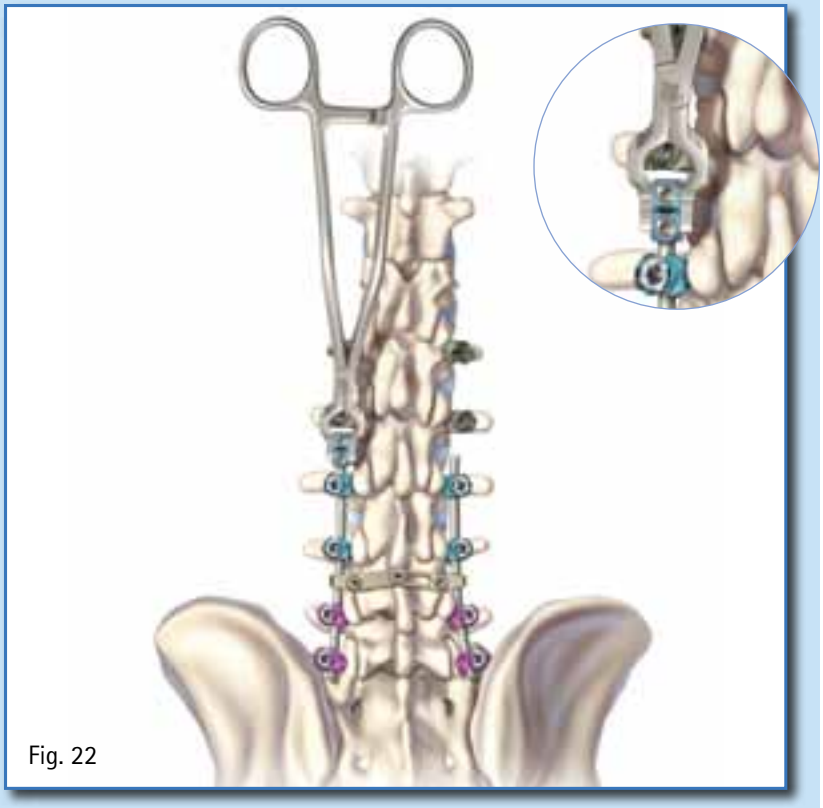

Fig. 22

A rod-to-rod connector may be used to extend an existing construct in the event of a revision surgery or for a new multilevel construct or to connect to an offset screw.

1. Axial Rod-to-Rod Connector Application

- To place the axial rod-to-rod connector, first determine required length (short or long).
- Use the rod-to-rod connector inserter (FW493R) to grab the connector and fully seat the rods inside the connector and confirm adequate rod placement using the provided window on the connector. (Fig. 22)

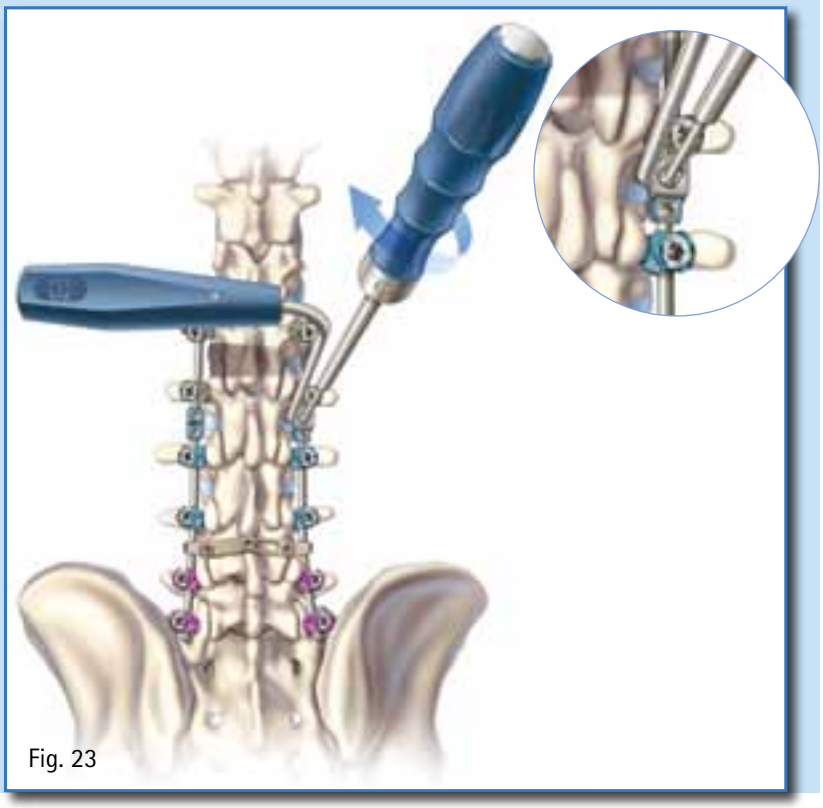

Fig. 23

- Final tighten by applying 4 Nm (36 in/lbs) of torque using the torque wrench screwdriver (FW207R) and the rod-to-rod connector counter torque device (FW495R). (Fig. 23)

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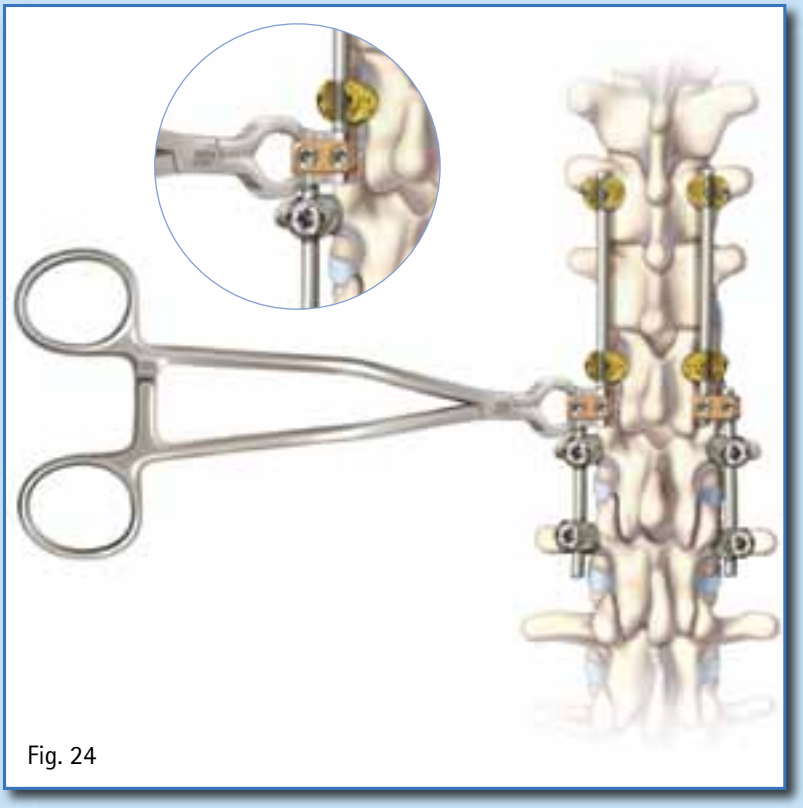

Fig. 24

2. Domino Rod-to-Rod Connector Application

- To place the domino rod-to-rod connector, first determine required length (7 mm or 11 mm) and desired connector type (open/closed or closed)
- For open/closed style, use the rod-to-rod connector inserter (FW493R) to grab the connector and slide a rod into the closed hole and then connect to the other rod using the open hole. (Fig. 24)
- For closed style, use the inserter to grab the connector and slide both rods into the closed holes prior to placing the rods into the pedicle screw tulip heads.

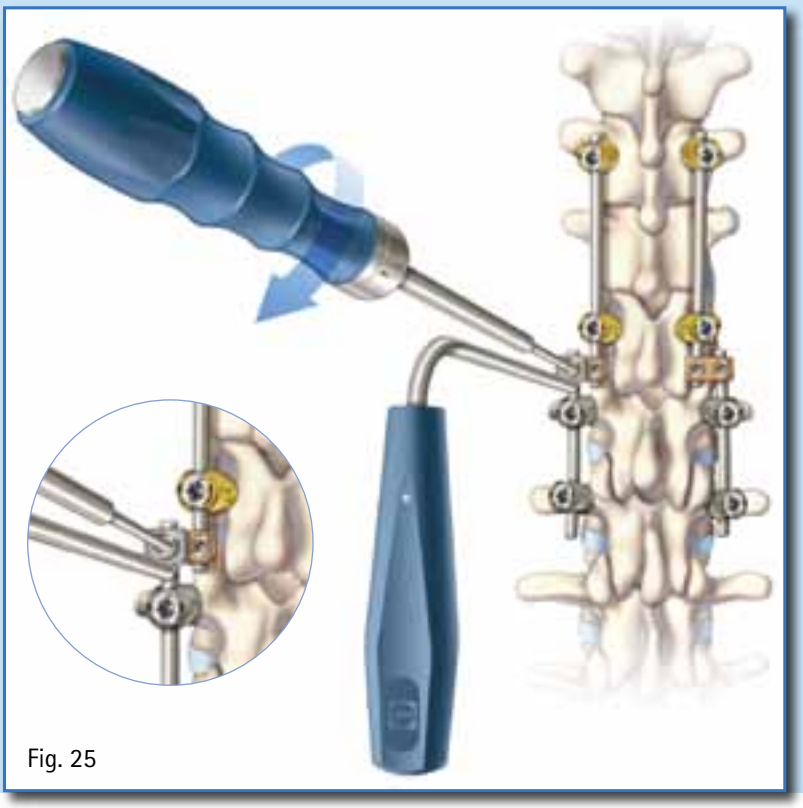

Fig. 25

- Final tighten by applying 4 Nm (36 in/lbs) of torque using the torque wrench screwdriver (FW207R) and rod-to-rod connector counter torque device (FW495R). (Fig. 25)

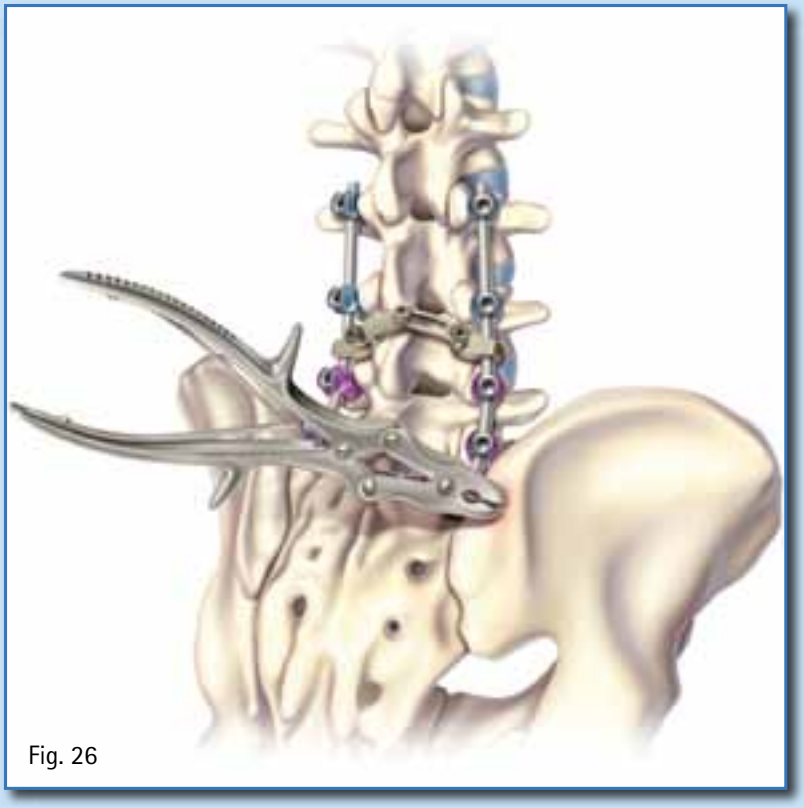

Fig. 26

3. Pelvic Screw & Lateral Offset Connector Application

The posterior of the Iliac crest needs to be exposed for pelvic screw placement. Approximately 1.0 to 2.0 centimeters up from the tip of the spine is an ideal starting point.

- Use a rongeur to make a notch in the crest of sufficient length and depth for the head of the iliac screw. (Fig. 26)

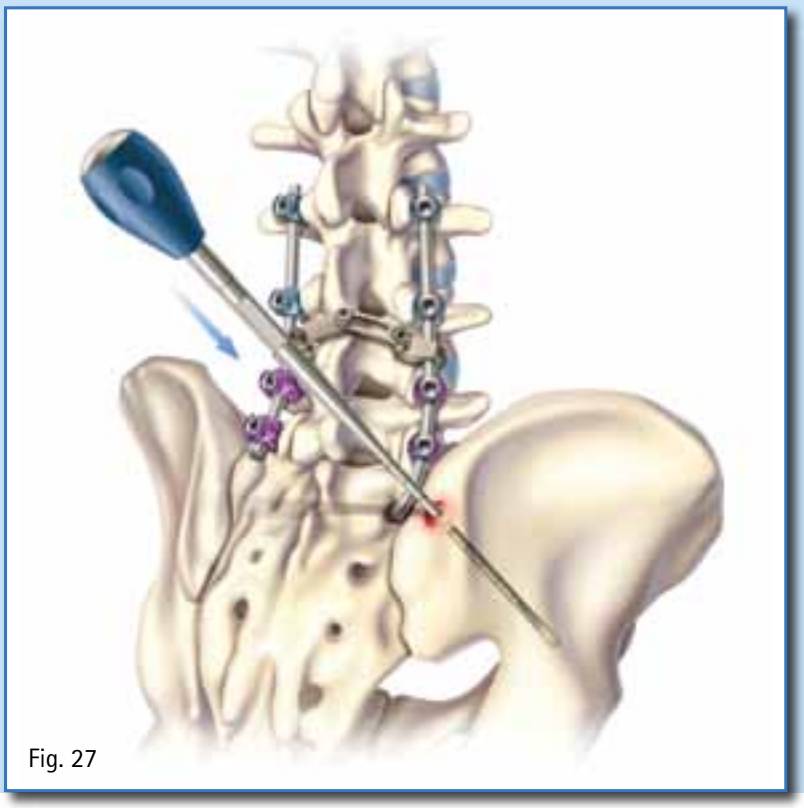

Fig. 27

- Perforate the ilium using a straight or curved extended length bone probe (FW476R or FW477R) or straight or curved extended length thoracic probe (FW474R or FW475R). (Fig. 27)

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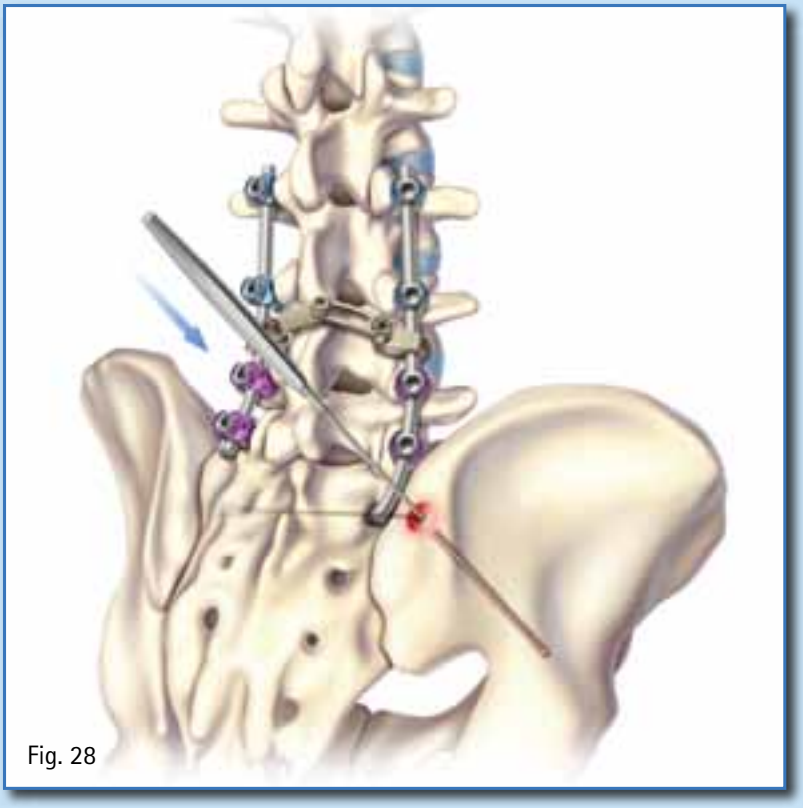

Fig. 28

- Utilize the straight or curved (FW146R or FW147R) pedicle sounder to confirm the patency of the Ilium canal. Stop every few centimeters during perforation to check integrity of the canal. (Fig. 28)

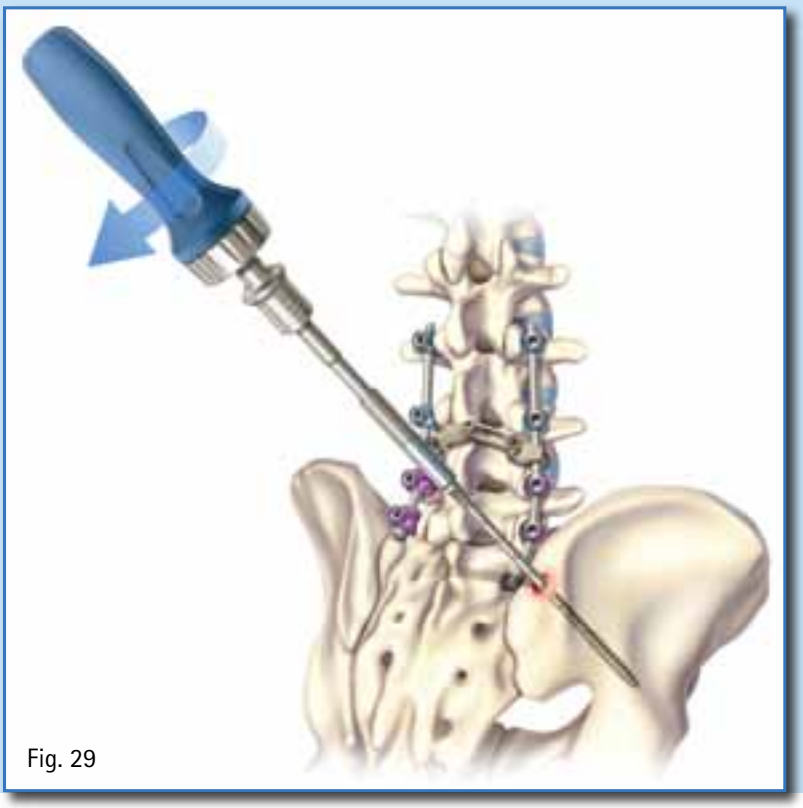

Fig. 29

- Tap canal and identify depth with the desired 7.0 mm extended screw tap (FW497R) or 8.0 mm extended screw tap (FW498R), and choose screw length. (Fig. 29)

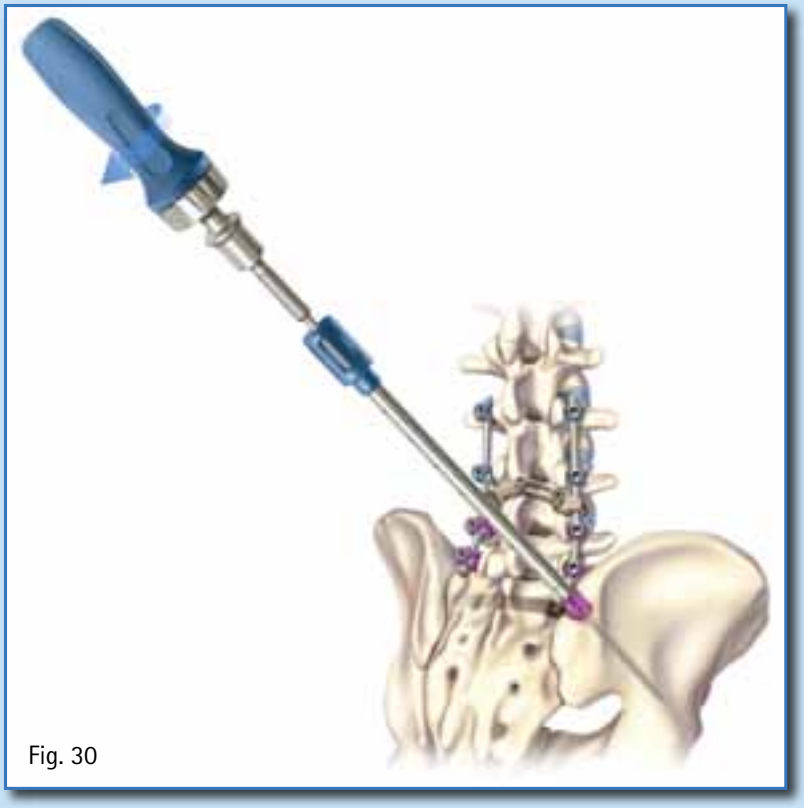

Fig. 30

- Attach desired handle to polyaxial screwdriver (FW277R) and thread the screw into the ilium. (Fig. 30)

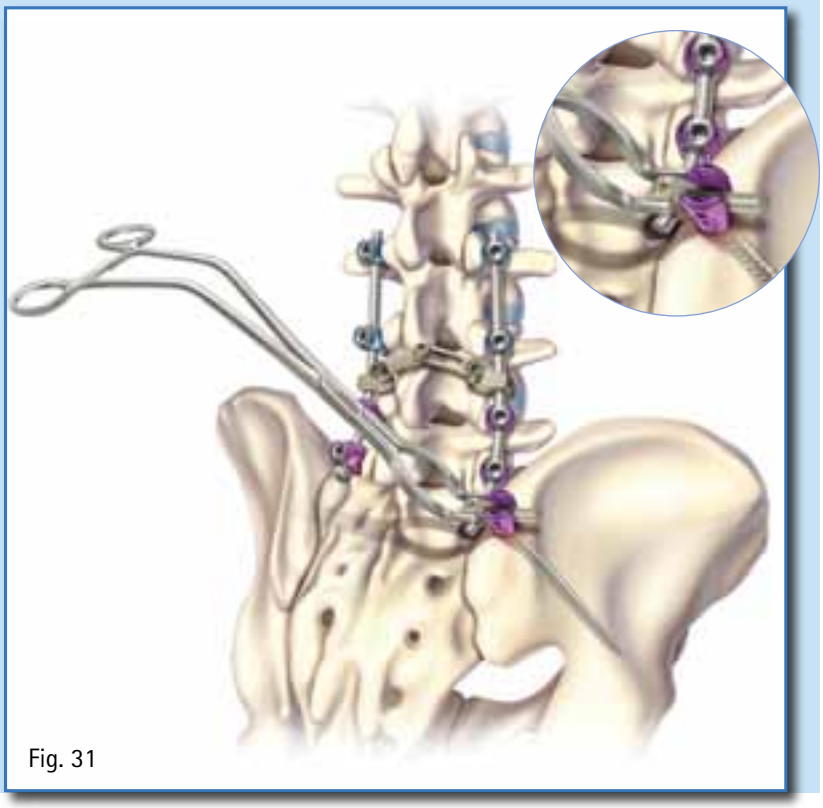

Fig. 31

- Determine offset distance between the pelvic screw and the rod from the main construct and choose desired lateral offset connector type (open/closed or closed).
- Use the rod-to-rod connector inserter (FW493R) to grab the lateral offset connector and attach it to the rod from the main construct. (Fig. 31)

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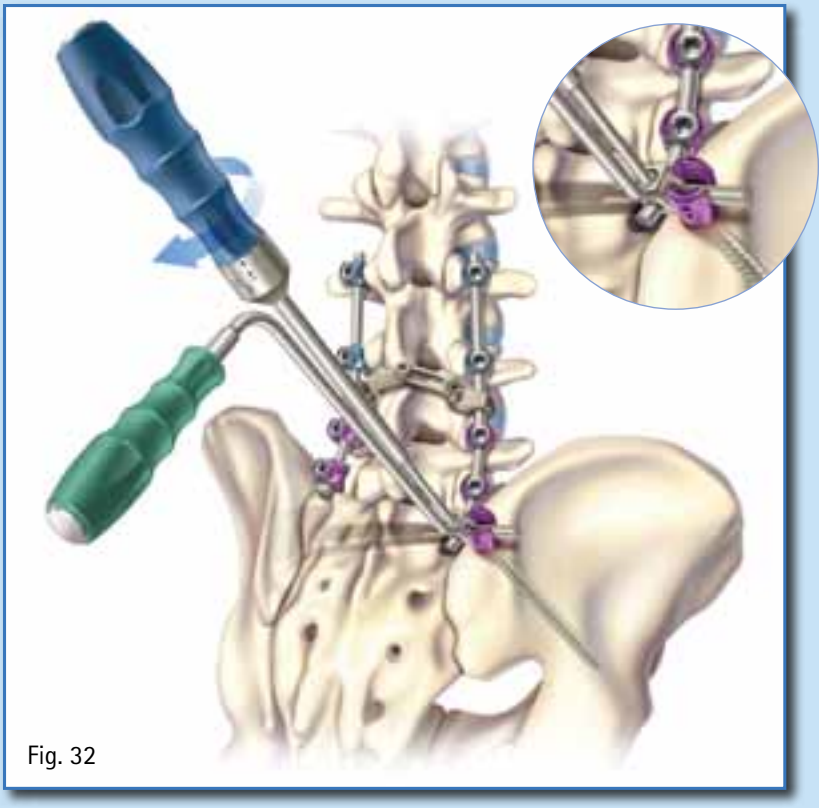

Fig. 32

- Final tighten by applying 4 Nm (36 in/lbs) of torque using the torque wrench screwdriver (FW207R) and rod-to-rod connector counter torque device (FW495R). (Fig. 32)
- After connecting the lateral offset connector to the rod from the main construct, a rocker or rod persuader may be used to fully seat the connector rod into the pelvic screw's tulip head.

Note: *For sacropelvic fixation, it is recommended to place a screw in the sacrum, which is attached to the spinal rod, above or below the attachment of the lateral offset rod connector to the rod.*

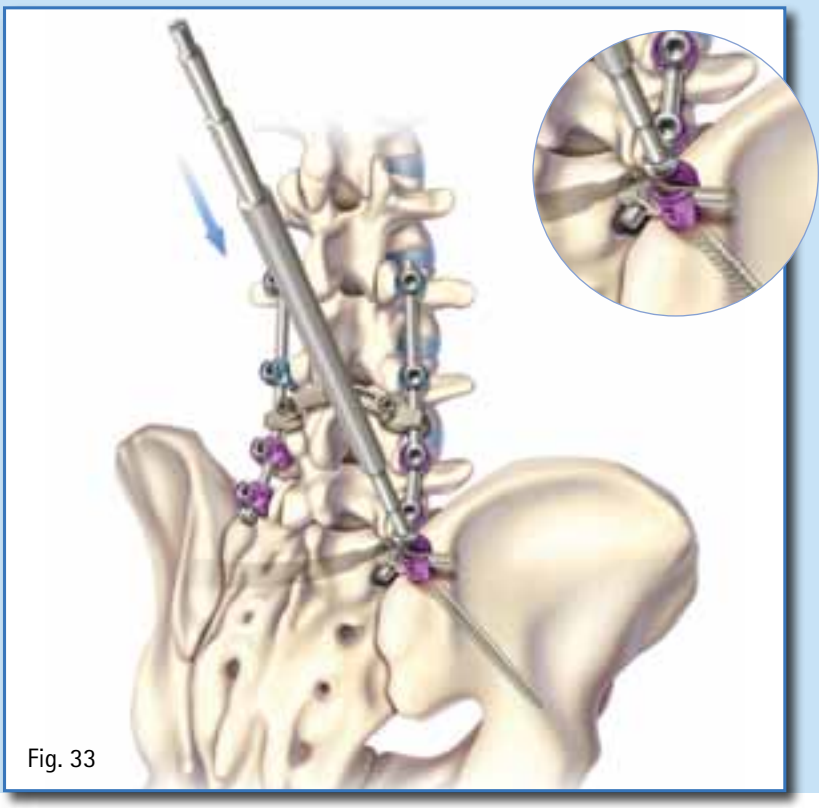

Fig. 33

- Start the set screw on the pelvic screw and finger tighten the set screw. (Fig. 33)

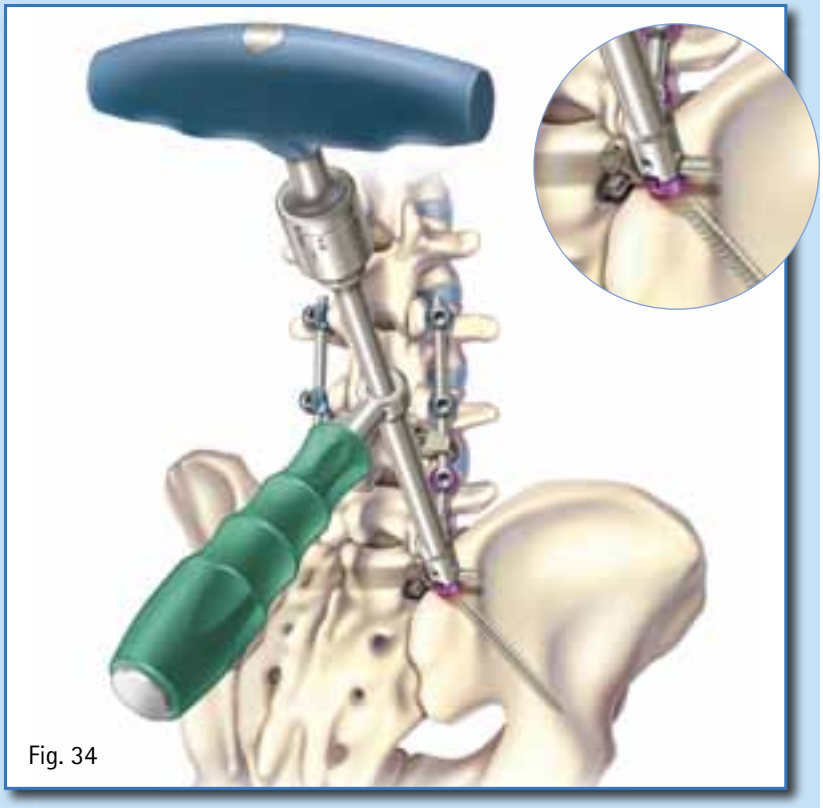

Fig. 34

- Final tighten the set screw by using the clicking torque handle or the line-to-line torque wrench along with the counter torque L-handle (as described in section 10). (Fig. 34)

Note: *For removal of rod connector, use connector revision screwdriver (FW491R). To remove pedicle screw, first use set screw revision screwdriver (FW193R) to disengage set screw and use screwdriver with shank tip (FW174R) to remove the polyaxial screw.*

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VIII. Implant Overview

S⁴ Element Polyaxial Screws

Item No.	Diameter	Length
ST240T	4.5 mm	25 mm
ST241T	4.5 mm	30 mm
ST242T	4.5 mm	35 mm
ST243T	4.5 mm	40 mm
ST244T	4.5 mm	45 mm
ST245T	4.5 mm	50 mm
ST250T	5.0 mm	25 mm
ST251T	5.0 mm	30 mm
ST252T	5.0 mm	35 mm
ST253T	5.0 mm	40 mm
ST254T	5.0 mm	45 mm
ST255T	5.0 mm	50 mm
ST260T	6.0 mm	25 mm
ST261T	6.0 mm	30 mm
ST262T	6.0 mm	35 mm
ST263T	6.0 mm	40 mm
ST264T	6.0 mm	45 mm
ST265T	6.0 mm	50 mm
ST266T	6.0 mm	55 mm
ST267T	6.0 mm	60 mm
ST270T	7.0 mm	25 mm
ST271T	7.0 mm	30 mm
ST272T	7.0 mm	35 mm
ST273T	7.0 mm	40 mm
ST274T	7.0 mm	45 mm
ST275T	7.0 mm	50 mm
ST276T	7.0 mm	55 mm
ST277T	7.0 mm	60 mm
ST230T	7.0 mm	70 mm
ST231T	7.0 mm	80 mm
ST232T	7.0 mm	90 mm
ST233T	7.0 mm	100 mm
ST234T	7.0 mm	110 mm

Ilium Screws

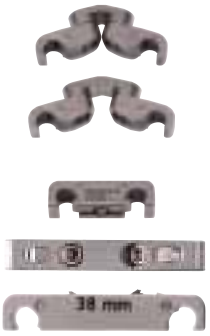
Item No.	Diameter	Length
ST281T	8.0 mm	30 mm
ST282T	8.0 mm	35 mm
ST283T	8.0 mm	40 mm
ST284T	8.0 mm	45 mm
ST285T	8.0 mm	50 mm
ST286T	8.0 mm	55 mm
ST287T	8.0 mm	60 mm
ST235T	8.0 mm	70 mm
ST236T	8.0 mm	80 mm
ST237T	8.0 mm	90 mm
ST238T	8.0 mm	100 mm
ST239T	8.0 mm	110 mm
ST291T	9.0 mm	30 mm
ST292T	9.0 mm	35 mm
ST293T	9.0 mm	40 mm
ST294T	9.0 mm	45 mm
ST295T	9.0 mm	50 mm
ST296T	9.0 mm	55 mm
ST297T	9.0 mm	60 mm
ST301T	10.0 mm	30 mm
ST302T	10.0 mm	35 mm
ST303T	10.0 mm	40 mm
ST304T	10.0 mm	45 mm
ST305T	10.0 mm	50 mm
ST306T	10.0 mm	55 mm
ST307T	10.0 mm	60 mm

S4® Pre-Bent Rods, 5.5 mm	
Item No.	**Length**
SW653T	30 mm
SW654T	35 mm
SW655T	40 mm
SW656T	45 mm
SW657T	50 mm
SW658T	55 mm
SW659T	60 mm
SW661T	70 mm
SW662T	80 mm
SW663T	90 mm
SW684T	100 mm

S4 Straight Rods, 5.5 mm	
Item No.	**Length**
SW674T	35 mm
SW675T	40 mm
SW676T	45 mm
SW677T	50 mm
SW678T	55 mm
SW679T	60 mm
SW681T	70 mm
SW682T	80 mm
SW664T	100 mm
SW666T	120 mm
SW667T	150 mm
SW668T	180 mm
SW669T	200 mm
SW670T	300 mm
SW671T	400 mm
SW672T	500 mm

S4 Adjustable Cross Connectors	
Item No.	**Length**
SW488T	35-36 mm
SW489T	36-38 mm
SW494T	38-42 mm
SW495T	42-50 mm
SW496T	50-60 mm
SW497T	60-77 mm
SW498T	77-107 mm
SW697T	43-49 mm
SW698T	49-60 mm
SW699T	60-75 mm

S4 Rigid Cross Connectors	
Item No.	**Length**
SW490T	28 mm
SW491T	30 mm
SW492T	32 mm
SW493T	34 mm
SW690T	21 mm
SW691T	25 mm
SW695T	38 mm
SW696T	41 mm



S4 Set Screw	
Item No.	**Description**
SW790T	Set Screw

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Rod-to-rod Connectors		
Item No.	**Type**	**Length**
SW842T	Closed Domino Connector	7 mm
SW844T	Closed Domino Connector	11 mm
SW841T	Closed/Open Domino Connector	7 mm
SW843T	Closed/Open Domino Connector	11 mm
SW838T	Axial Connector	Short
SW839T	Axial Connector	Long
SW847T	Closed Lateral Offset Connector	20 mm
SW849T	Closed Lateral Offset Connector	35 mm
SW872T	Closed Lateral Offset Connector	50 mm
SW846T	Open Lateral Offset Connector	20 mm
SW848T	Open Lateral Offset Connector	35 mm
SW871T	Open Lateral Offset Connector	50 mm

VII. Instrument Overview

Bone Awl		
Item No.	**Description**	
FW190R	Bone Awl	

Probes		
Item No.	**Description**	
FW188R	Straight Pedicle Probe	
FW189R	Curved Pedicle Probe	
FW248R	Straight Lenke Probe	
FW249R	Curved Lenke Probe	

Sounders		
Item No.	**Description**	
FW146R	Straight Pedicle Sounder	
FW147R	Curved Pedicle Sounder	

Markers		
Item No.	**Description**	
FW191R	Single Band Pedicle Marker	
FW192R	Dual Band Pedicle Marker	

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Handles	
Item No.	**Description**
FW165R	Ratchet Straight Handle
FW167R	Ratchet T-Handle
FW250R	Speed Multiplier Handle

Screw Taps	
Item No.	**Description**
FW194R	Screw Tap, 4.5 mm
FW195R	Screw Tap, 5.0 mm
FW196R	Screw Tap, 6.0 mm
FW197R	Screw Tap, 7.0 mm
FW198R	Screw Tap, 8.0 mm
FW356R	Screw Tap, 9.0 mm
FW357R	Screw Tap, 10.0 mm

Screwdrivers	
Item No.	**Description**
FW277R	Polyaxial Screws Rigid Fixation Screwdriver
FW278R	Screw Body Manipulator
FW174R	Removal Screwdriver with Shank Tip
FW193R	Set Screw Revision Screwdriver

Screw Starters	
Item No.	**Description**
FW279R	Dual Ended Set Screw Starter
FW251R	Handled Set Screw Starter

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Torque Wrenches	
Item No.	**Description**
FW283R	Counter Torque L-Handle
FW224R	Clicking Torque Wrench
FW170R	Line-to-Line Torque Wrench

Lever	
Item No.	**Description**
FW154R	Marnay Lever

Rod Trial	
Item No.	**Description**
FW185R	Flexible Rod Trial

Rod Bender

Item No.	Description
FW024R	French Rod Bender

Holding Forceps

Item No.	Description
FW012R	Rod Holding Forceps

Rod Pusher

Item No.	Description
FW513R	Rod Pusher

Compression Forceps

Item No.	Description
FW282R	Compression Forceps

Derotation Sleeve

Item No.	Description
FW287R	Derotation Sleeve

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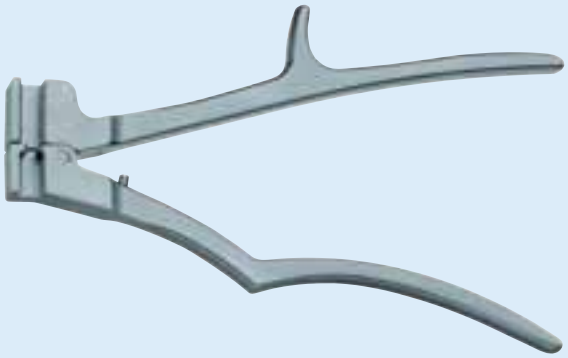
Connector Instruments		
Item No.	**Description**	
FW493R	Rod-to-Rod Connector Inserter	
FW495R	Rod-to-Rod Connector Counter-torque	

Screw Taps & Bone Probes		
Item No.	**Description**	
FW497R	Extended Length Screw Tap, 7.0 mm	
FW498R	Extended Length Screw Tap, 8.0 mm	
FW474R	Extended Length Lenke Probe, Straight	
FW475R	Extended Length Lenke Probe, Curved	
FW476R	Extended Length Bone Probe, Straight	
FW477R	Extended Length Bone Probe, Curved	

Cross Connector Instruments		
Item No.	**Description**	
FW202R	Cross Connector Sizing Template	
FW203R	Cross Connector Bender	
FW204R	Cross Connector Counter Torque	
FW207R	Cross Connector Torque Wrench, 4 Nm	

For additional information, contact Customer Service at 1-866-229-3002 or visit our website at www.aesculapimplantsystems.com.

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