Simplicity when you want it. Security when you need it.

NUVASIVE® HELIX ACP™



NUVASIVE®
Creative Spine Technology®

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NUVASIVE® HELIX ACP™ SYSTEM OVERVIEW

NuVasive® Helix ACP™

- NuVasive Helix ACP plate has a 2.4mm profile to reduce the chance of postoperative discomfort.
- 5-Level plates available via special order.
- Fixed and Variable Angle Bone Screws for the perfect construct type, depending on patient needs.
- Variable Angle Bone Screws feature a 20º cone-of-angulation to accommodate surgeon needs.





Unlocked

Ledge of bone screw is visible, and head of screw is proud to plate surface.

Locked

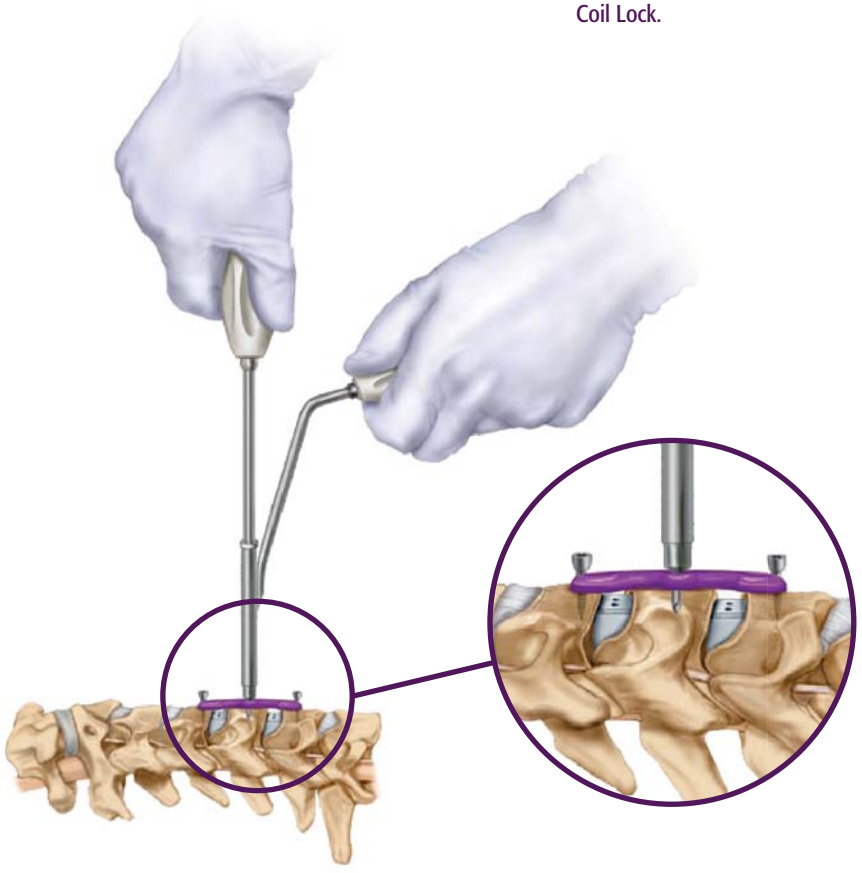
Ledge of bone screw is completely covered, and head of screw is seated below Helix Canted Coil Lock.

Helix Canted Coil Lock (CCL)

- Helix Canted Coil Lock consistently and securely blocks bone screws into the plate while still allowing the plate to be securely lagged to bone for a tight fit.
- Bone screws can be removed and repositioned easily while maintaining CCL integrity.
- Aggressive bone screws in a full complement of lengths and diameters accommodate a variety of surgical scenarios.

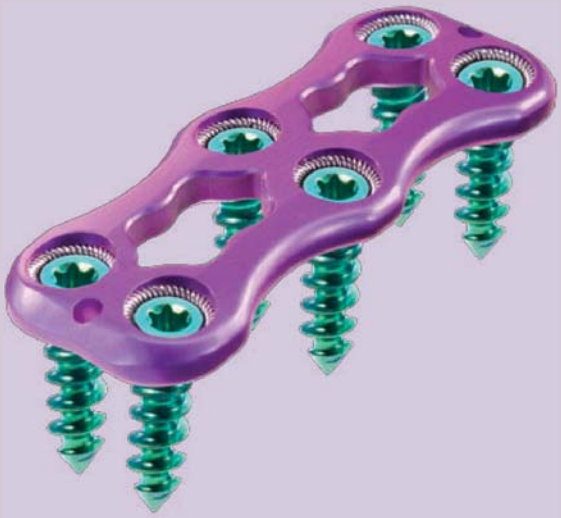
Balanced and Intuitive Instrumentation

- DTS Guides allow pre-drilling, tapping, and bone screw placement without changing insertion angle.



Low-Profile Leading Edge

- Plate sits flush against anterior cervical spine.
- Decreased "step" on leading edge of plate to reduce esophageal discomfort postoperatively.
  - 1mm leading profile.



Narrow Plate Reduces Retraction During Placement

- Reduced retraction for easy placement.
- Less than 16mm at widest point.



Intraoperative Visualization

- Large portals allow for graft placement verification.

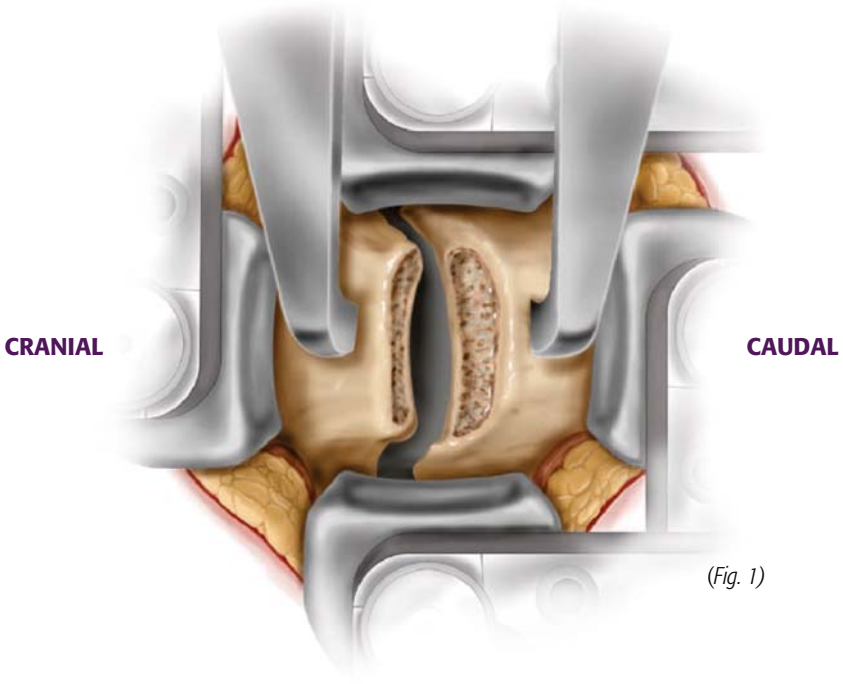


NUVASIVE® HELIX ACP™ SURGICAL TECHNIQUE

STEP 1:

DISCECTOMY AND DECOMPRESSION

a. Place the patient's neck in a supine position, chin extended on the operating table. Carry out the anterior approach to the appropriate levels of the cervical spine in the usual manner. The technique must allow for direct anterior access to the disc and adjacent vertebral bodies. Apply a standard vertebral body distractor to the adjacent vertebrae in the usual manner *(Fig. 1)*.

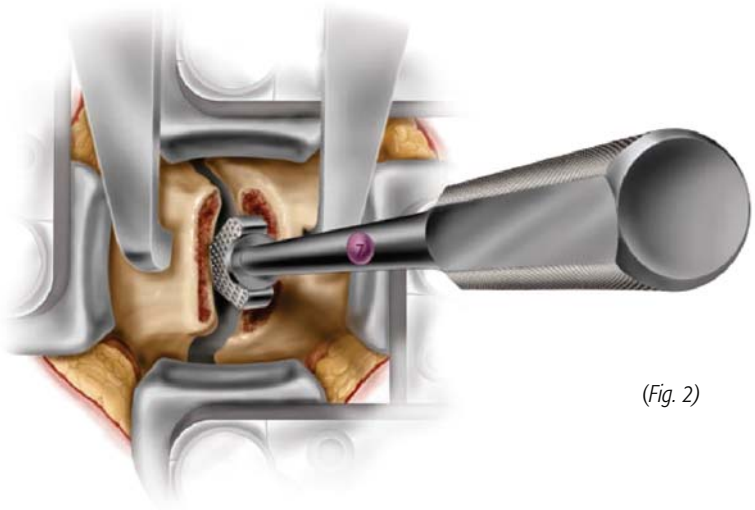


(Fig. 1)



The NeuroVision® JJB system has proven useful when used in Free Run Mode to monitor for any spontaneous neurological activity during discectomy, decompression, interbody placement, and bone screw placement. Refer to the NeuroVision JJB Reference Guide for furthur information on the utility of NeuroVision in the cervical spine.

b. Perform a complete discectomy and decompression. After thorough removal of the disc material, remove the cartilaginous endplates with standard curettes, drill, or rasps *(Fig. 2)*.



(Fig. 2)

STEP 2:

INTERBODY PLACEMENT (2-LEVEL)

a. Place interbody graft into the evacuated disc spaces *(Figs. 3, 4)*.



For best results, use saline-packaged Triad® Cervical Allograft.



(Fig. 3)

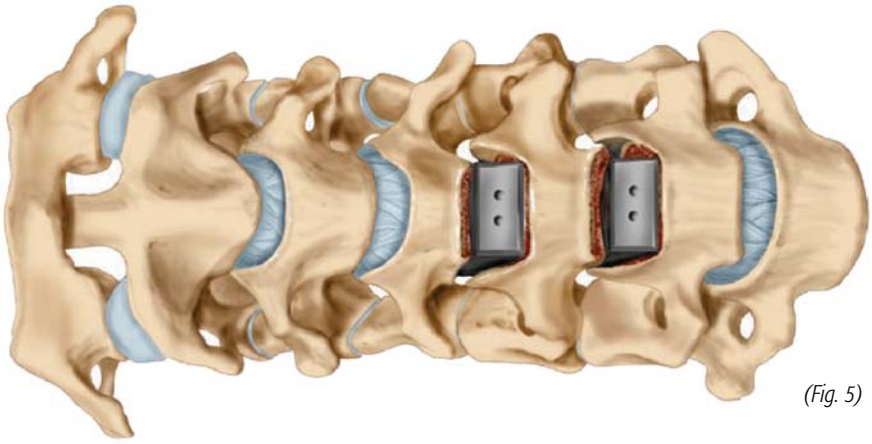


(Fig. 4)

NUVASIVE® HELIX ACP™ SURGICAL TECHNIQUE

Surface Preparation

The surface of the vertebral body may require some preparation (commonly called gardening) in order for the plate to fit flush to the spine *(Figs. 5, 6)*.



(Fig. 5)



(Fig. 6)

STEP 3:
PLATE PLACEMENT

Proper Plate Sizing

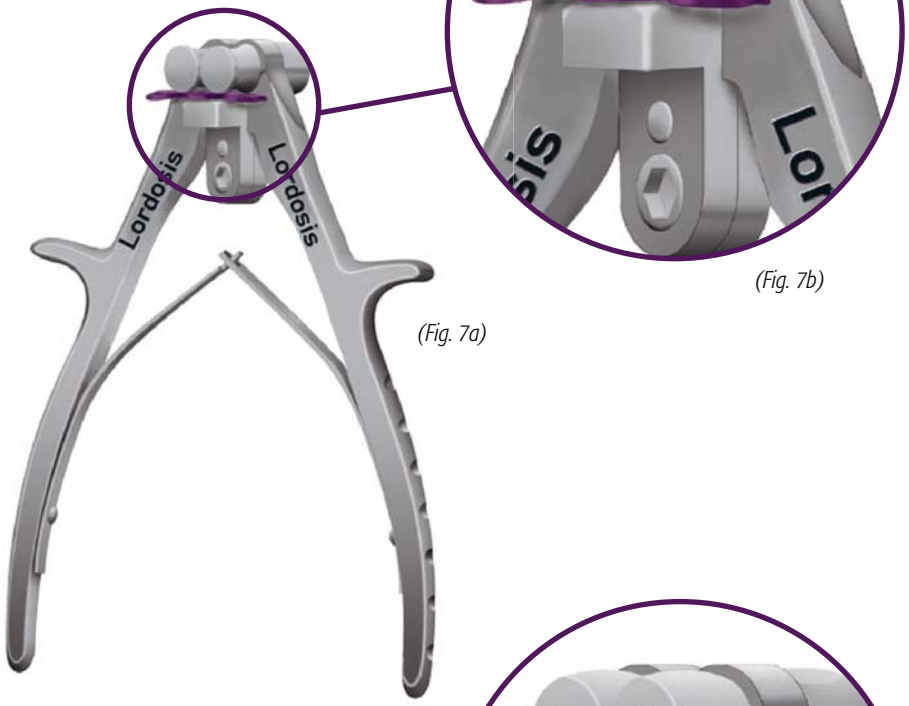
Select the proper length NuVasive® Helix ACP™ such that the bone screw holes are positioned over the inferior-most portion of the cranial vertebral body and the superior-most portion of the caudal vertebral body.

Plate Bending (optional)

The plate may be bent into either further lordosis or into kyphosis in order to accommodate patient pathology.

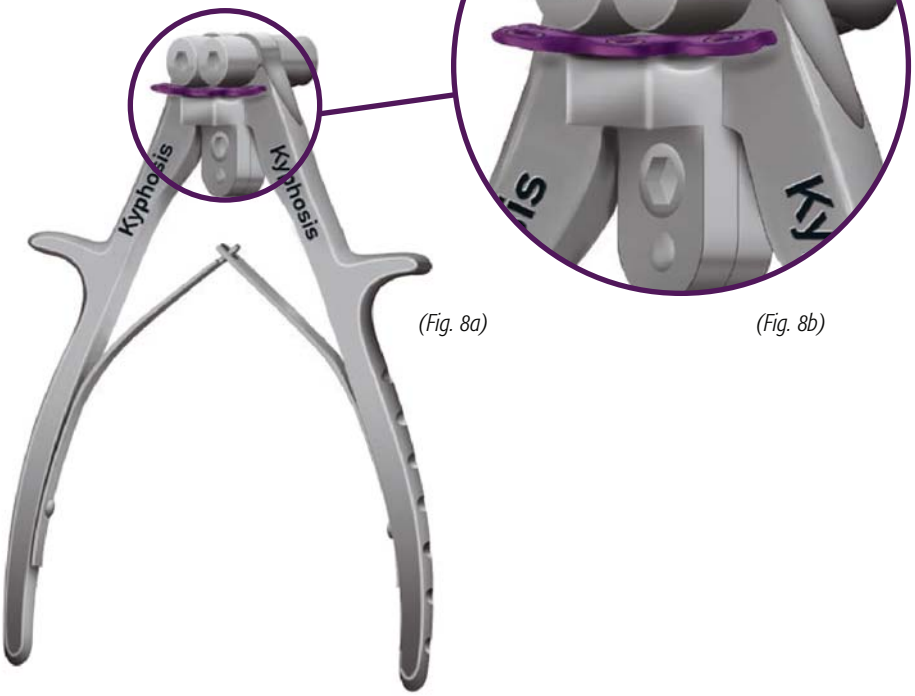
Plate bending: To bend the plate into further lordosis, ensure that the plate bender is aligned properly with "LORDOSIS" laser mark facing the user. The plate should be bent in the bend zones between the bone screw holes *(Fig. 7a, 7b)*.

To bend the plate into further kyphosis, reverse the plate bender so that the "KYPHOSIS" laser mark faces the user *(Fig. 8a, 8b)*.



(Fig. 7a)

(Fig. 7b)



(Fig. 8a)

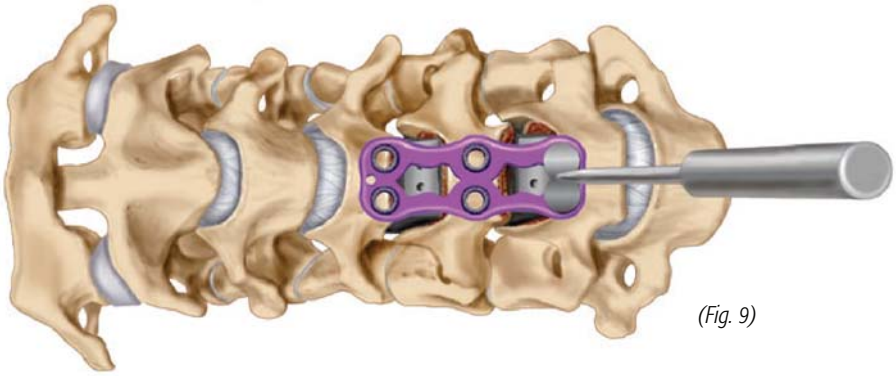
(Fig. 8b)

NUVASIVE® HELIX ACP™ SURGICAL TECHNIQUE

Plate Holder

The plate holder may be used to place the plate. The plate holder may be used to hold the plate in place during freehand bone screw placement, or prior to temporary tack placement *(Figs. 9, 10)*.

To disengage the plate holder, rock the instrument to one side until it disengages from the plate.



(Fig. 9)



(Fig. 10)

Temporary Tack Placement (optional)

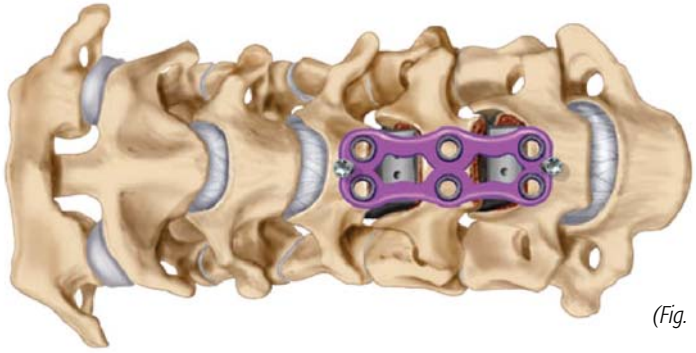
Using the bone screw driver, the temporary tacks may be placed at the cranial and/or caudal end of the plate. Driving the tack into bone in the same manner that you would a bone screw will allow for secure purchase in host bone as well as allow for easy removal *(Figs. 11-13)*.



(Fig. 11)



(Fig. 12)



(Fig. 13)

NUVASIVE® HELIX ACP™ SURGICAL TECHNIQUE

STEP 4:
BONE SCREW PLACEMENT

Fixed or Variable Angle Awl

Because the bone screws are either self-drilling or self-tapping, some users may prefer to use the self-centering awl (either fixed or variable) prior to bone screw placement. The self-centering awls allow for broaching of the anterior cortex with an awl tip extending 10mm into bone, and subsequent freehand bone screw placement *(Figs. 14a-14c)*.

! To ensure proper utility of the CCL mechanism during free-hand screw placement, use the self-centering awl to create a centered screw hole in the vertebral bodies.



Continue to monitor for Free Run EMG events during bone screw placement and final tightening, indicating spontaneous nerve activity.

(Fig. 14a)

(Fig. 14b)

Fixed-Angle Awl broaches cortex at fixed angle only.

(Fig. 14c)

Variable-Angle Awl engages plate within full 20° cone of angulation.

Fixed or Variable Angle Drill Guide

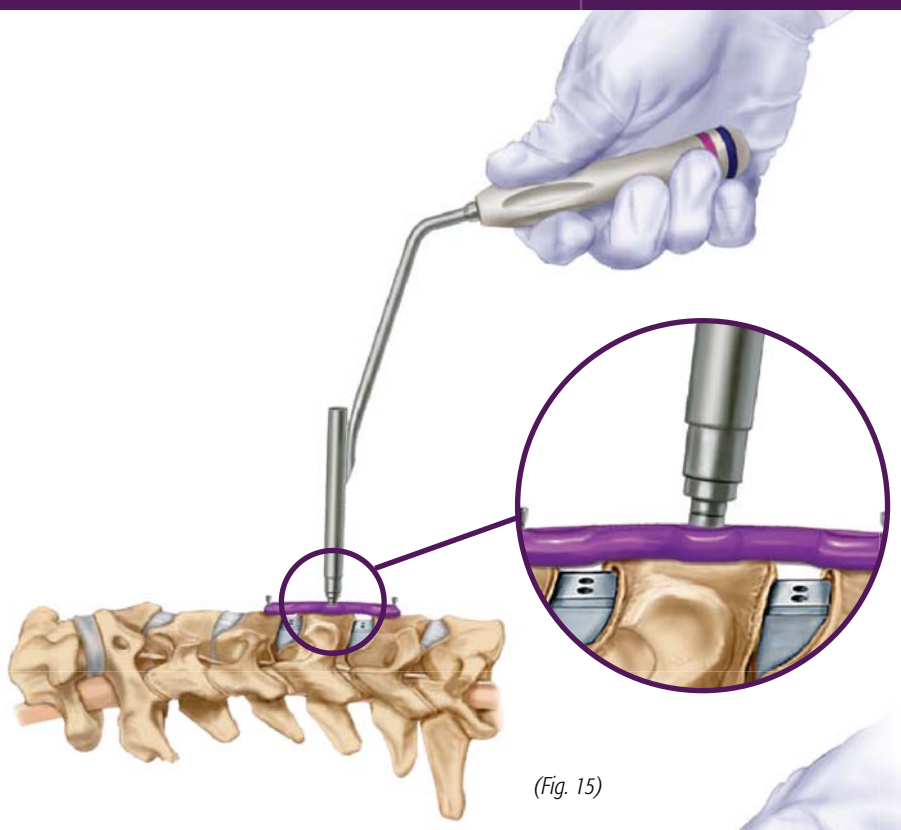
Pre-drilling of the host bone may be performed with either a fixed or variable angle drill guide. The fixed angle guide prepared the bone for 7º insertion trajectory at the cranial and caudal ends of the plate and 0º at all intermediate levels. The variable angle guide will prepare angle trajectories of -3º to +17º cranial or caudal, for a 20º cone of angulation *(Fig. 15)*.

Fixed Angle



Variable Angle

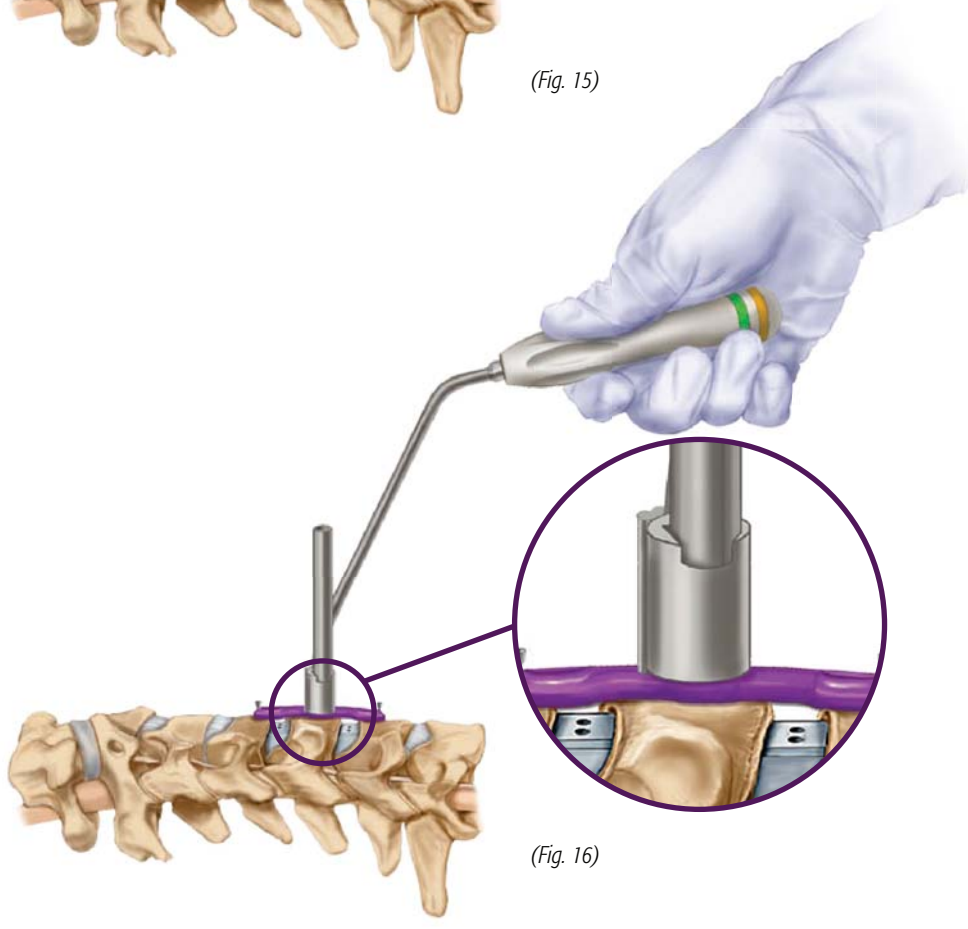




(Fig. 15)

DTS Guide Usage:

In addition, the DTS guides may be used at both the cranial and caudal ends of the construct (7º DTS Guide), or at intermediate levels (0º DTS Guide). The DTS Guides engage securely onto the plate and allow centered awl placement, pre-drilling, pre-tapping, and finally, bone screw placement - all without removal of the guide instrument *(Fig. 16)*.



(Fig. 16)

NUVASIVE® HELIX ACP™ SURGICAL TECHNIQUE

Drill Guide Awl

Once the guide is placed, use the awl to broach the cortex and allow easy bone screw placement in hard bone. The Drill Guide Awl must be used in conjunction with a Guide (Fixed, Variable, or DTS) *(Figs. 17, 18)*.

! Do not use Drill Guide Awl without a drill guide or DTS Guide. For freehand bone screw insertion where an awl is desired, use of the Self-Centering Awl is required at all times.



(Fig. 17)



(Fig. 18)

13mm Sterile Drill Bit (optional)

The 13mm drill bit can be used with the Universal Handle if hand drilling is preferred. If power is preferred, the drill bit may be used with the power drill for even more efficient pre-drilling. The drill bit measures 13mm in bone when fully seated through the Fixed, Variable, or DTS Guides. The drill bit comes sterile packaged and is single use only *(Figs. 19-21)*.

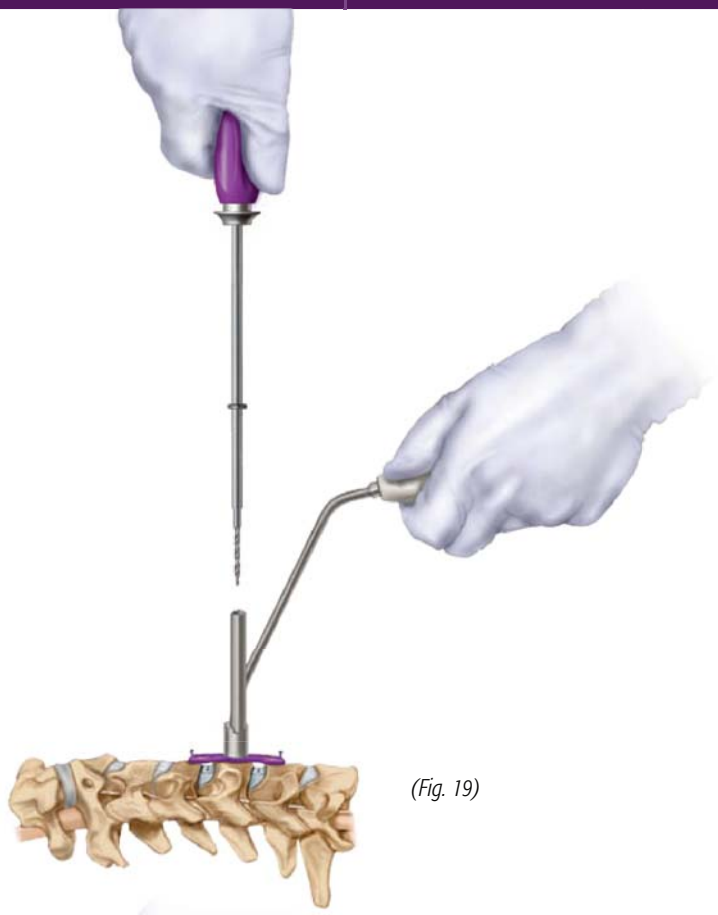
Tap Bit (optional)

(Not illustrated) In order to maximize purchase in hard cortical bone the tap may be used through the DTS Guides.

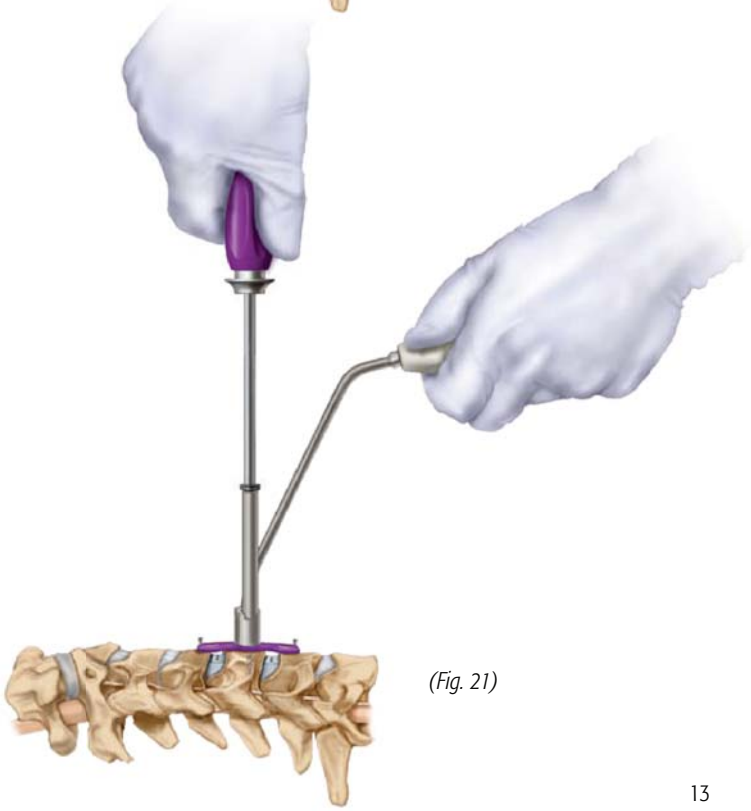
Drill Bit may be attached to the Universal Handle for hand drilling or used with a power drill.



(Fig. 20)



(Fig. 19)



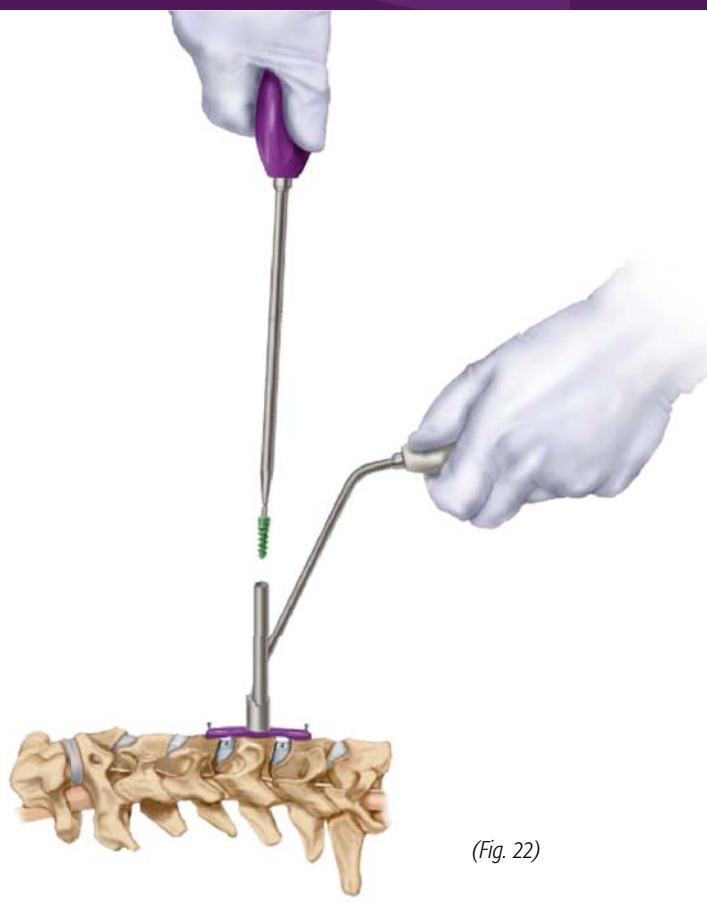
(Fig. 21)

NUVASIVE® HELIX ACP™ SURGICAL TECHNIQUE

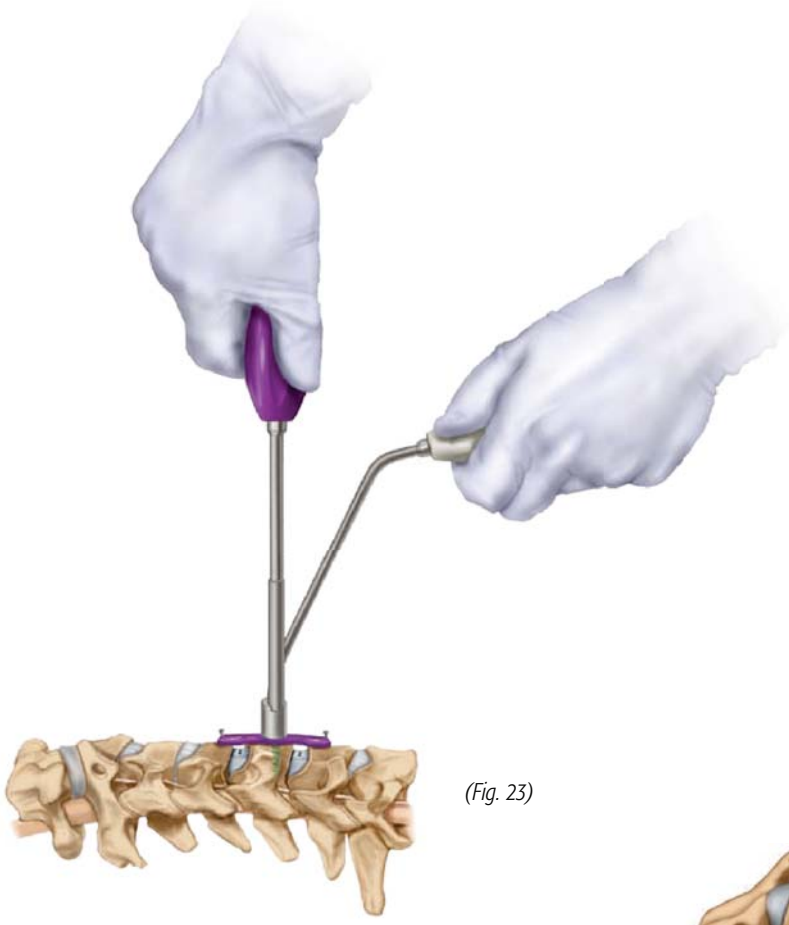
STEP 5:

FINAL BONE SCREW TIGHTENING

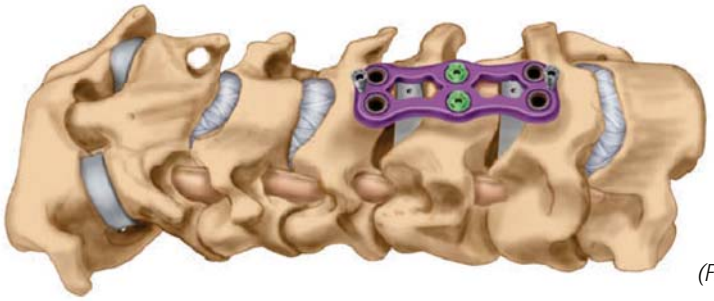
If inserting bone screws in a two-level construct, it is recommended that bone screws be placed at the intermediate levels first. Tighten bone screws to 75% and insert subsequent bone screws. Leave all bone screws slightly proud until final tightening *(Figs. 22-24)*.



(Fig. 22)



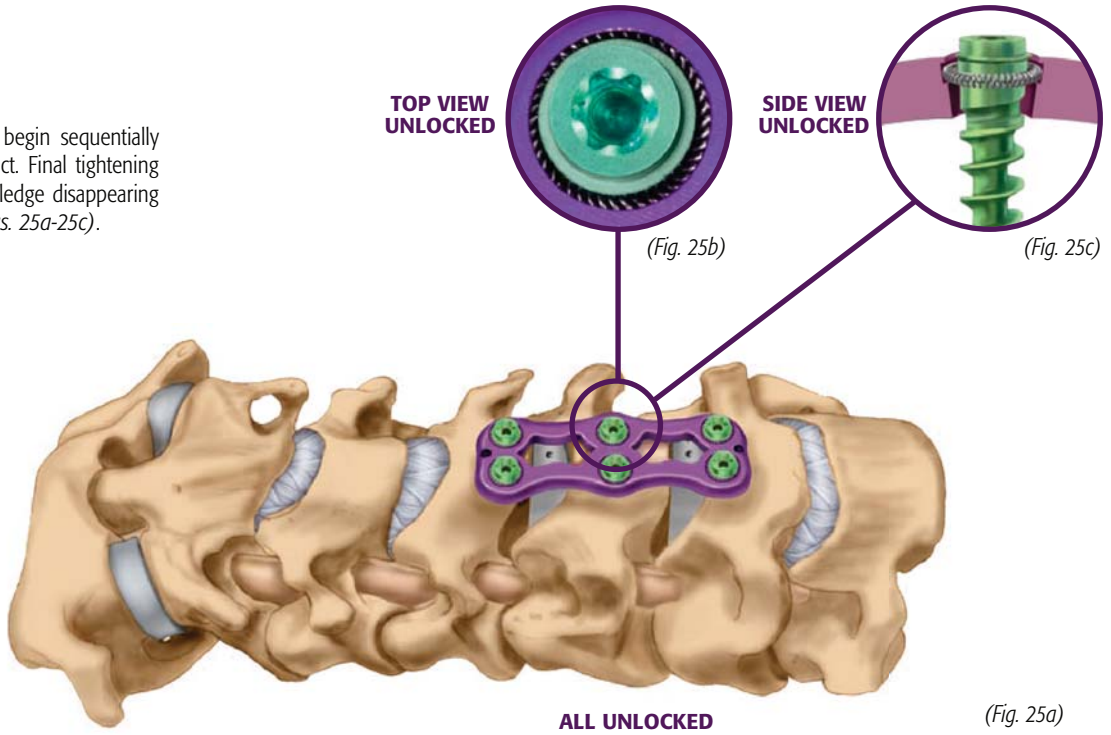
(Fig. 23)



(Fig. 24)

STEP 5 (cont.):

Once all bone screws are inserted, begin sequentially tightening each screw in the construct. Final tightening will be indicated by the bone screw ledge disappearing below the Helix Canted Coil Lock *(Figs. 25a-25c)*.



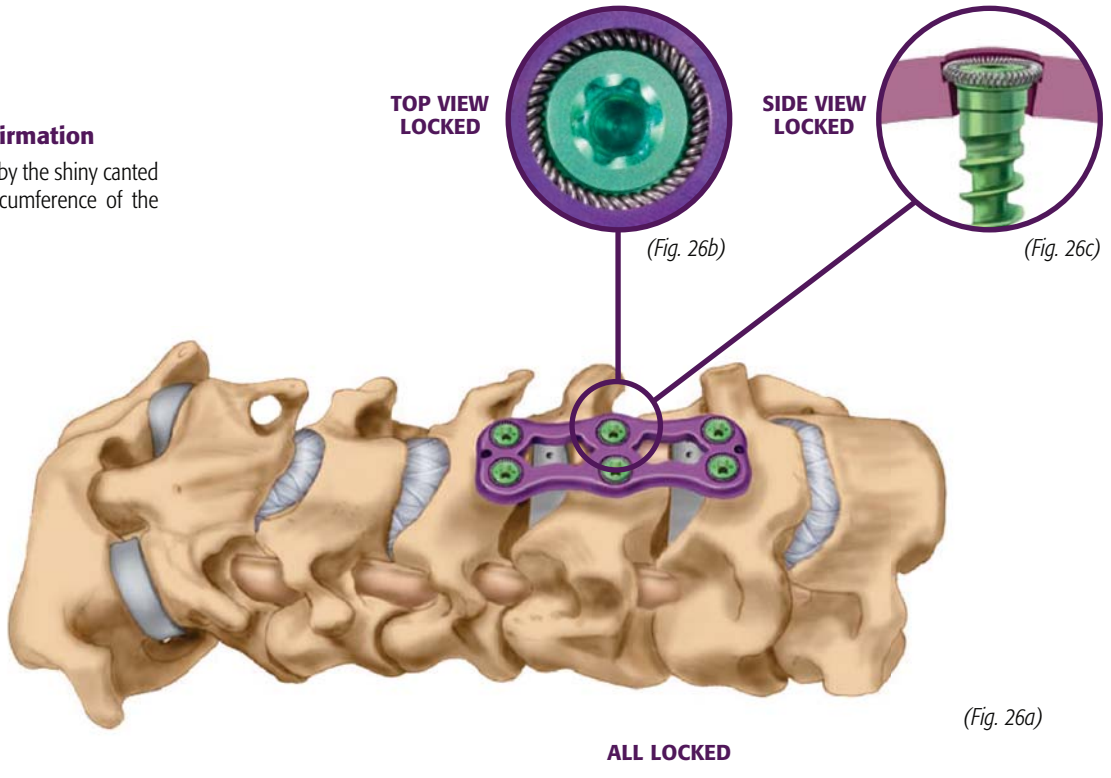
(Fig. 25b)

(Fig. 25c)

(Fig. 25a)

Helix Canted Coil Lock Confirmation

Confirmation of final lock is indicated by the shiny canted coil being visible around the full circumference of the screw ledge *(Figs. 26a-26c)*.



(Fig. 26b)

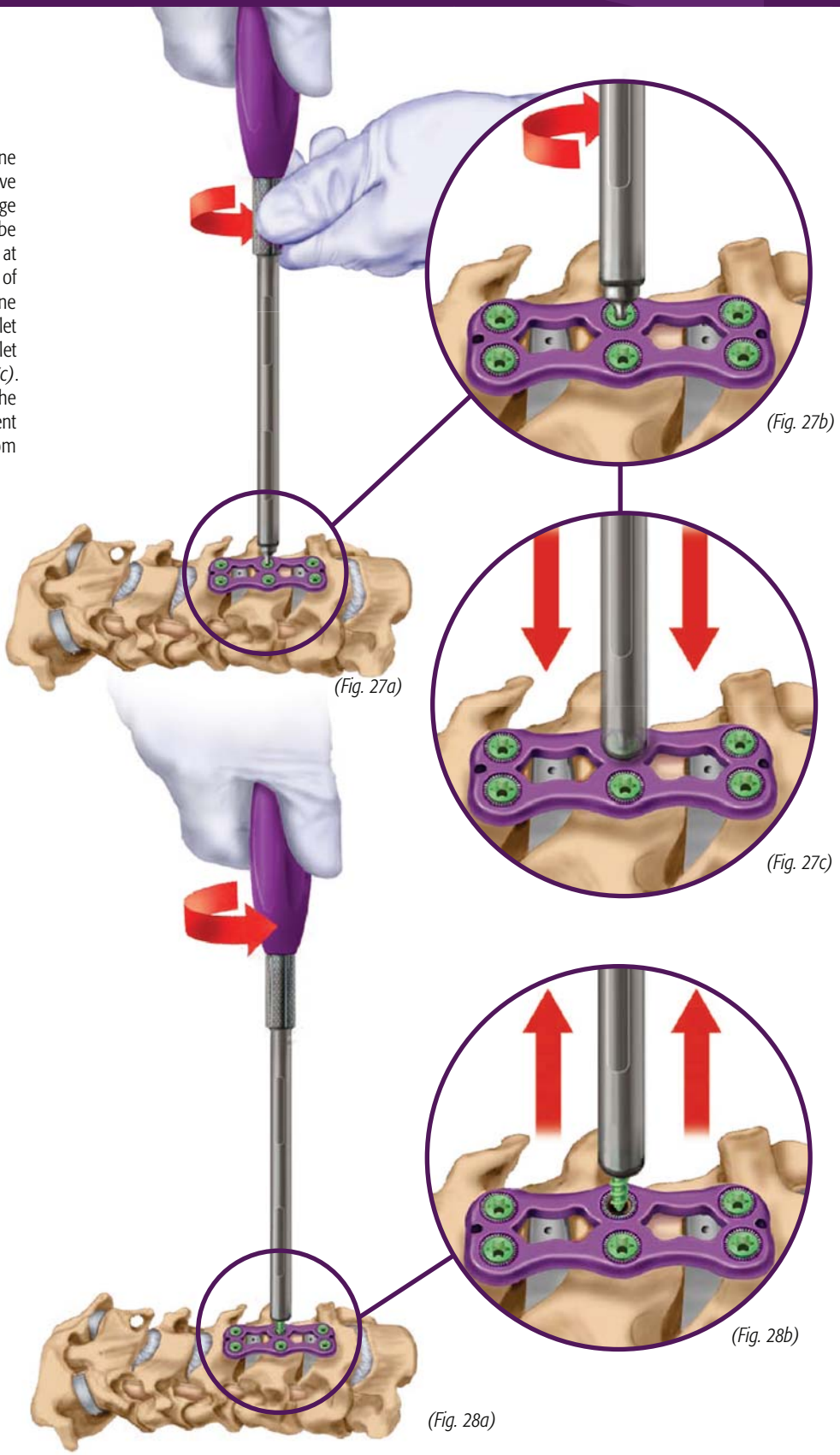
(Fig. 26c)

(Fig. 26a)

NUVASIVE® HELIX ACP™ SURGICAL TECHNIQUE

Screw Extraction

If repositioning of the bone screw is needed, the Bone Screw Extractor may be used to reengage and remove the bone screw. To use the Bone Screw Extractor, engage the male Hexalobe of the driver into the female Hexalobe of the Bone Screw. Using the knurled spindle handle at the proximal tip of the handle, tighten the inner shaft of the instrument into the female engagement in the Bone Screw. Once this has been tightened, rotate the collet sleeve of the instrument clockwise to bring the collet sleeve down to the plate's anterior surface *(Figs. 27a-27c)*. With the collet sleeve held static and pushing against the plate, rotate the larger purple handle of the instrument counter-clockwise to remove the bone screw from the construct *(Figs. 28a, 28b)*.



(Fig. 27b)

(Fig. 27a)

(Fig. 27c)

(Fig. 28b)

(Fig. 28a)

Post-Op Verification

Verify bone screw and plate placement via postoperative fluoroscopy.



PRE-OP



POST-OP

NUVASIVE® HELIX ACP™ INSTRUMENTS

DRILL BIT



TAP



BONE SCREW DRIVER



DRILL GUIDE AWL



SELF-CENTERING AWL, VARIABLE



SELF-CENTERING AWL, FIXED



BONE SCREW EXTRACTION TOOL



TEMPORARY TACK



NUVASIVE® HELIX ACP™ INSTRUMENTS

VARIABLE ANGLE DRILL GUIDE



FIXED ANGLE DRILL GUIDE



PLATE BENDER



UNIVERSAL HANDLE



NUVASIVE® HELIX ACP™ IMPLANTS

4.0MM SELF-DRILLING VARIABLE BONE SCREW



4.0MM SELF-DRILLING FIXED BONE SCREW



4.0MM SELF-TAPPING VARIABLE BONE SCREW



4.0MM SELF-TAPPING FIXED BONE SCREW



4.5MM SELF-TAPPING VARIABLE BONE SCREW



4.5MM SELF-TAPPING FIXED BONE SCREW



1-LEVEL PLATE



2-LEVEL PLATE



3-LEVEL PLATE



4-LEVEL PLATE



NUVASIVE® HELIX ACP™ INSTRUMENTS/IMPLANTS

IMPLANTS	CATALOG #
Self-Drilling Bone Screws (Variable, 4.0)	
4.0 x 11mm Self-Drilling Variable Screw	7731111
4.0 x 13mm Self-Drilling Variable Screw	7731113
4.0 x 15mm Self-Drilling Variable Screw	7731115
Self-Tapping Bone Screws (Variable, 4.0)	
4.0 x 11mm Self-Tapping Variable Screw	7733111
4.0 x 13mm Self-Tapping Variable Screw	7733113
4.0 x 15mm Self-Tapping Variable Screw	7733115
4.0 x 17mm Self-Tapping Variable Screw	7733117
4.0 x 19mm Self-Tapping Variable Screw	7733119
Self-Tapping Bone Screws (Variable, 4.5)	
4.5 x 13mm Self-Tapping Variable Screw	7735113
4.5 x 15mm Self-Tapping Variable Screw	7735115
4.5 x 17mm Self-Tapping Variable Screw	7735117
4.5 x 19mm Self-Tapping Variable Screw	7735119
Self-Drilling Bone Screws (Fixed, 4.0)	
4.0 x 11mm Self-Drilling Fixed Screw	7732111
4.0 x 13mm Self-Drilling Fixed Screw	7732113
4.0 x 15mm Self-Drilling Fixed Screw	7732115
Self-Tapping Bone Screws (Fixed, 4.0)	
4.0 x 11mm Self-Tapping Fixed Screw	7734111
4.0 x 13mm Self-Tapping Fixed Screw	7734113
4.0 x 15mm Self-Tapping Fixed Screw	7734115
4.0 x 17mm Self-Tapping Fixed Screw	7734117
4.0 x 19mm Self-Tapping Fixed Screw	7734119
Self-Tapping Bone Screws (Fixed, 4.5)	
4.5 x 13mm Self-Tapping Fixed Screw	7736113
4.5 x 15mm Self-Tapping Fixed Screw	7736115
4.5 x 17mm Self-Tapping Fixed Screw	7736117

TEMPORARY FIXATION	CATALOG #
Temporary Fixation Pin (Temporary Tack)	7737110

IMPLANTS	CATALOG #
1-Level NuVasive® Helix ACP,™ 20mm	7738120
1-Level NuVasive Helix ACP, 22mm	7738122
1-Level NuVasive Helix ACP, 24mm	7738124
1-Level NuVasive Helix ACP, 26mm	7738126
1-Level NuVasive Helix ACP, 28mm	7738128
1-Level NuVasive Helix ACP, 30mm	7738130
1-Level NuVasive Helix ACP, 32mm	7738132
1-Level NuVasive Helix ACP, 34mm	7738134
2-Level NuVasive Helix ACP, 36mm	7738236
2-Level NuVasive Helix ACP, 38mm	7738238
2-Level NuVasive Helix ACP, 40mm	7738240
2-Level NuVasive Helix ACP, 42mm	7738242
2-Level NuVasive Helix ACP, 44mm	7738244
2-Level NuVasive Helix ACP, 46mm	7738246
2-Level NuVasive Helix ACP, 48mm	7738248
2-Level NuVasive Helix ACP, 50mm	7738250
2-Level NuVasive Helix ACP, 52mm	7738252
2-Level NuVasive Helix ACP, 54mm	7738254
3-Level NuVasive Helix ACP, 56mm	7738356
3-Level NuVasive Helix ACP, 58mm	7738358
3-Level NuVasive Helix ACP, 60mm	7738360
3-Level NuVasive Helix ACP, 62mm	7738362
3-Level NuVasive Helix ACP, 64mm	7738364
3-Level NuVasive Helix ACP, 66mm	7738366
3-Level NuVasive Helix ACP, 68mm	7738368
4-Level NuVasive Helix ACP, 70mm	7738470
4-Level NuVasive Helix ACP, 74mm	7738474
4-Level NuVasive Helix ACP, 78mm	7738478
4-Level NuVasive Helix ACP, 82mm	7738482
4-Level NuVasive Helix ACP, 86mm	7738486
4-Level NuVasive Helix ACP, 90mm	7738490

5-Level NuVasive Helix ACP plates are not part of the standard configuration, but may be ordered separately by contacting NuVasive Customer Service.

INSTRUMENTS	CATALOG #
13mm Drill (Sterile)	7730016
13mm Tap Bit	7730026
Bone Screw Driver	7730041
Awl	7730062
Self-Centering Awl (Variable)	7730063
Self-Centering Awl (Fixed)	7730064
Bone Screw Extractor	7730071
Drill Guide, Fixed	7730081
Drill Guide, Variable	7730091
Plate Bender	7730701
NuVasive Helix ACP Sterilization Tray	7730002
DTS Guide - Fixed, 0°	7730086
DTS Guide - Fixed, 7°	7730088
Plate Holder	7730043
Universal Handle	7730600



To order, please contact your NuVasive Sales Consultant or Customer Service Representative today at:
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