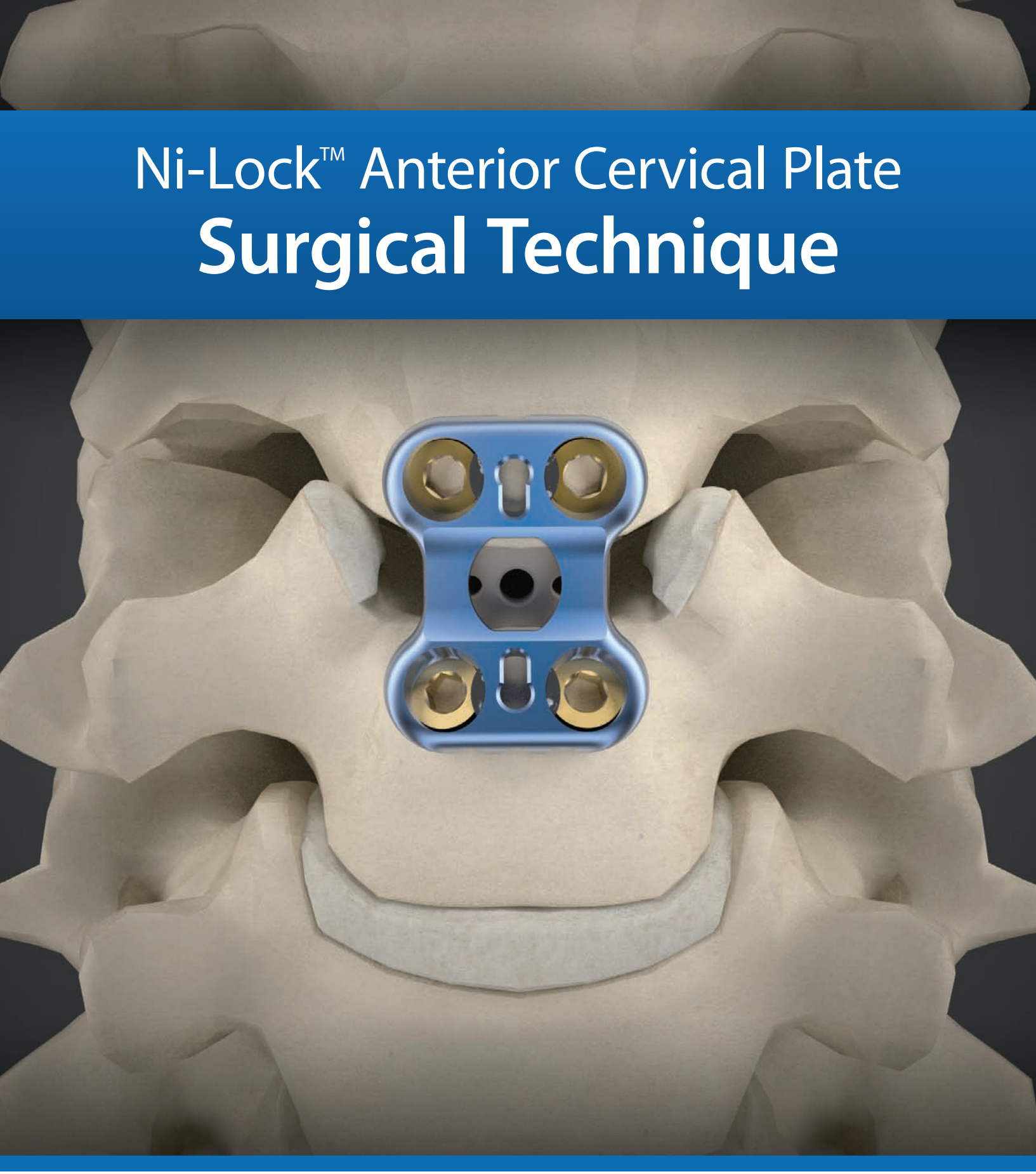
# Ni-Lock™ Anterior Cervical Plate
# Surgical Technique



Ni-LOCK™
Anterior Cervical Plate System

SpineWave

# Ni-LOCK™

## Anterior Cervical Plate System

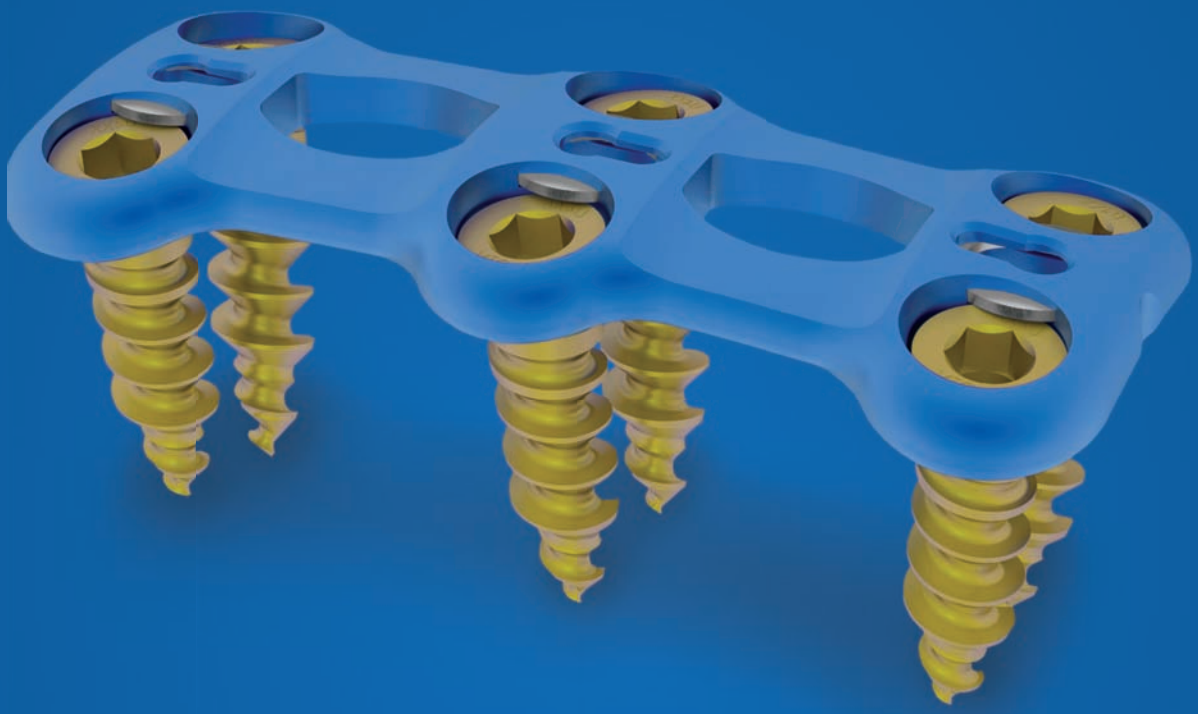


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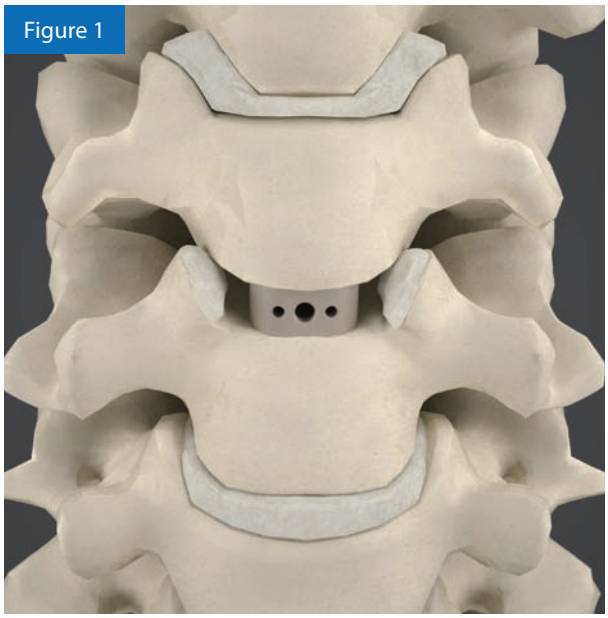
Figure 1

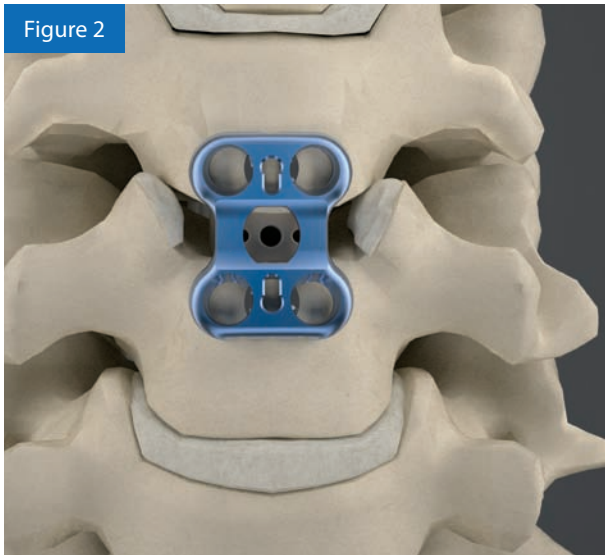


**STEP 1:**

## *Approach*

The surgical approach and decompression is performed and the fusion device is inserted into the disc space (Fig. 1).

Figure 2

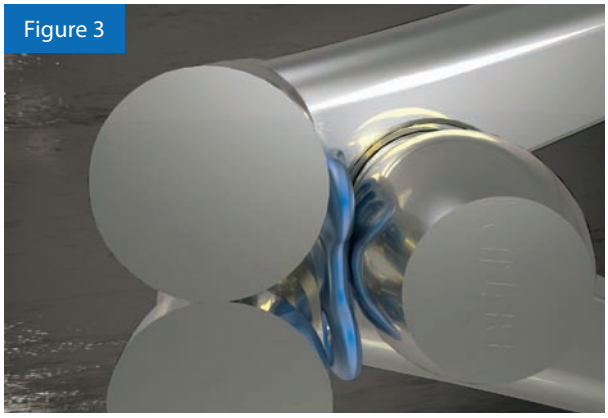


**STEP 2:**

## *Templating*

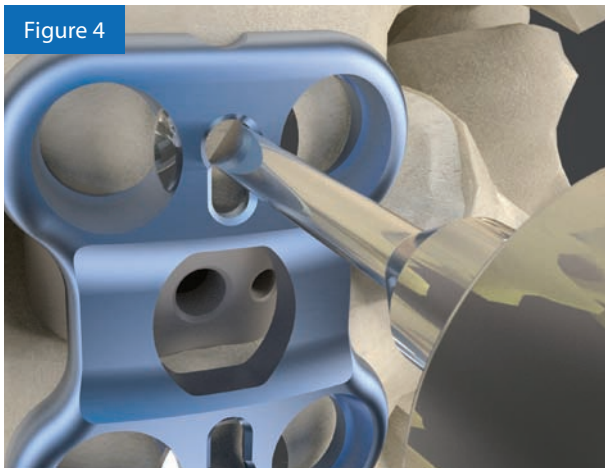
Select the appropriate size cervical plate and place it on the vertebral bodies ensuring that the plate fits the anatomy (Fig. 2). To use the Plate Holder, insert the distal tip of the instrument into the center hole of the plate and turn 90°, creating a friction fit.

Figure 3



The plate can be contoured using the Plate Bender (Optional). Use caution when bending and straightening the plate. Too much repeated bending can weaken the plate. Only bend the plate in the bend zone and not across the Nitinol Retention Clip (Fig. 3).

Figure 4

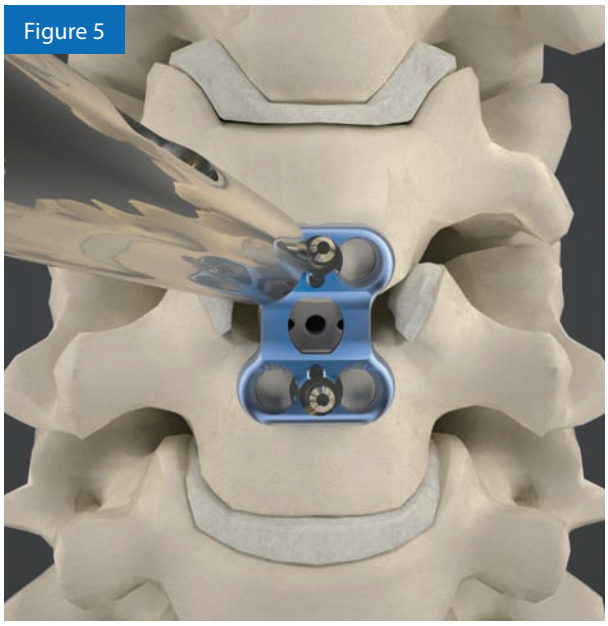


**STEP 3:**

## *Temporary Fixation*

With the appropriate size plate placed on the spine, insert a Temporary Fixation Pin into a central pin hole in the plate using the Fixation Pin Driver (Fig. 4). If desired, additional Temporary Fixation Pins can be placed in the other pin holes.

Figure 5



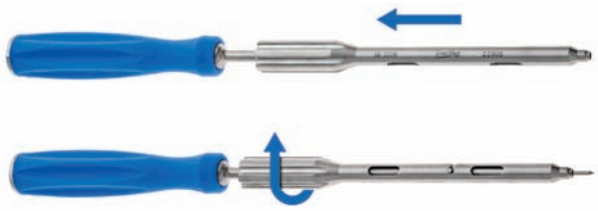
**STEP 4:**

## *Screw Hole Preparation – Awl*

Place the awl in the desired screw hole. For proper angulation, ensure the distal tip of the sleeve is fully seated in the screw pocket of the plate. Gently push down on the instrument to penetrate the cortex of the vertebral body to create a pilot hole for the screw (Fig. 5).

**NOTE:** The distal tip of the Awl is designed to provide you with the appropriate trajectory for a variable angled screw. This allows for up to 22° of cranial-caudal angulation as well as up to 15° of medial-lateral angulation.

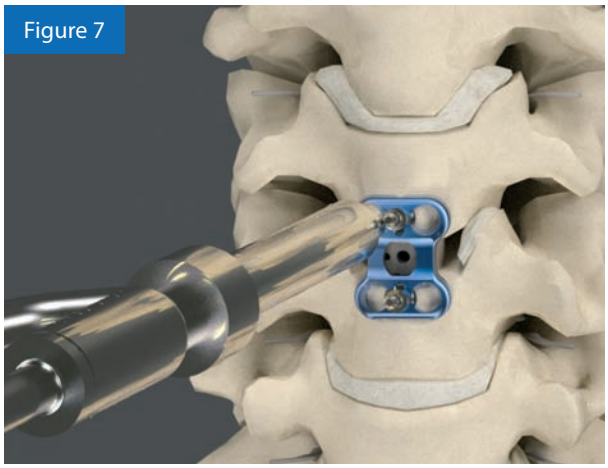
Figure 6



**NOTE:** In the unlocked position, the Awl is designed with a safety sleeve that covers the distal tip until it penetrates the bone. To remove the safety sleeve, slide the sleeve proximally and rotate it 90° to maintain that position (Fig. 6).

***Tip:*** *If the distal tip of the Awl is not positioned beyond the Nitinol Retention Clip, striking the proximal end of the Awl with a mallet may result in damage to the Clip.*

Figure 7

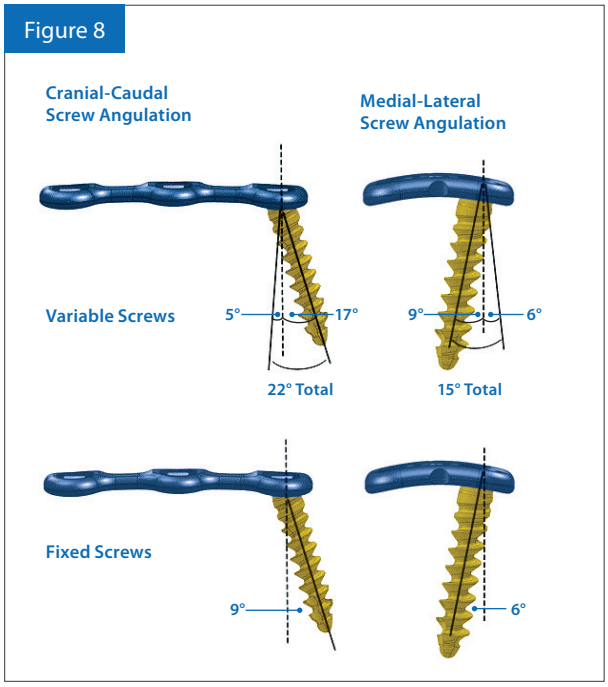


**STEP 5:**

## *Screw Hole Preparation – Drill*

Determine if a fixed or variable screw is to be used and then select the appropriate drill length and Drill Guide to create a channel for the screw. Place the selected Drill Guide in the desired screw hole. Then, attach the Drill to the Quick Connect Handle and rotate clockwise to drill the desired length (Fig. 7).

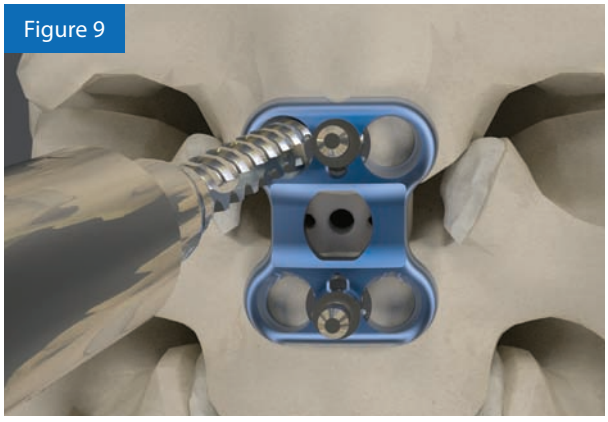
Figure 8




**NOTE:** The Variable Drill Guide is designed to allow 22° of cranial-caudal angulation and up to 15° medial-lateral angulation. The Fixed Drill Guide is designed to allow 9° of cranial angulation and 6° medial angulation (Fig. 8).

***Tip:*** *The Drill Guide is designed to prevent over angulation and ensure proper positioning of the Nitinol Retention Clip.*

Figure 9

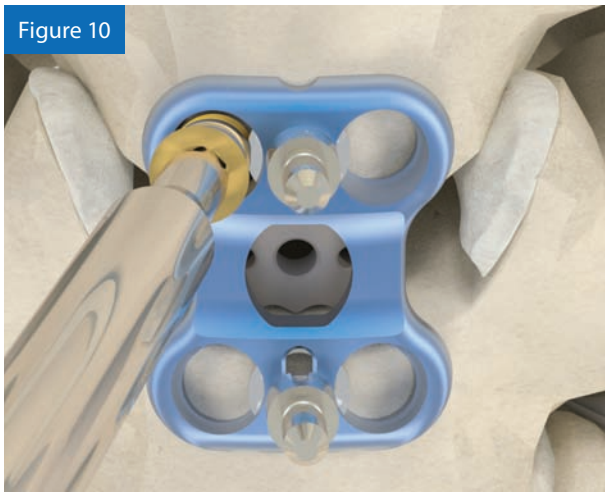


**STEP 6:**

## *Screw Hole Preparation – Tap (Optional)*

If necessary, the Tap is attached to the Quick Connect Handle and used to prepare a threaded channel for the screw (Fig 9).

Figure 10

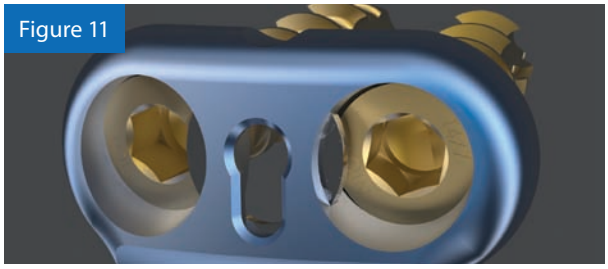


**STEP 7:**

## *Screw Placement*

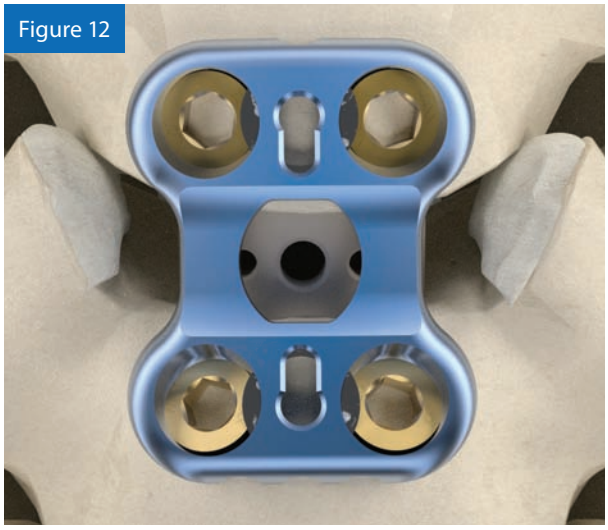
Load the appropriate size screw onto the Screwdriver, attached to the Quick Connect Handle, by firmly pressing the tip of the driver into the screw. Tactile feedback will confirm the secure connection between the screw and the ball detent of the driver. Then advance the screw until it is fully seated in the plate and secured by the Nitinol Retention Clip (Fig. 10).

Figure 11



When the screw is fully seated, the Nitinol Retention Clip will cover the medial aspect of the screw head (Fig. 11).

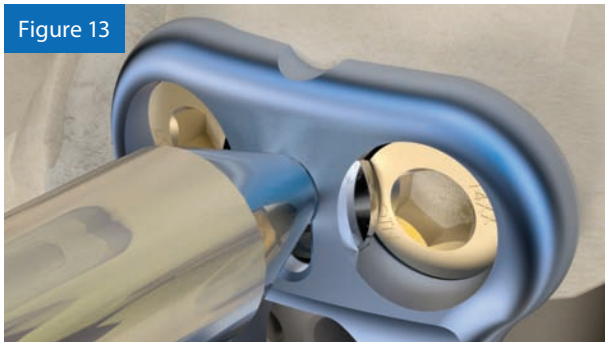
Figure 12



Insert the remaining screws to ensure secure placement of the plate (Fig. 12). Observe that all screws are fully seated and the Nitinol Retention Clip covers a portion of each screw. Lateral and AP radiographs can be used to ensure proper screw placement and alignment.

Close the surgical site.

Figure 13



***Tip:*** *If the Nitinol Retention Clip does not spring back into its original position once the head of the screw is fully seated, insert the Clip Expansion Tool into the center hole of the plate next to the Clip in question. Once inserted, sweep 90° towards the partially exposed clip while keeping an upward pressure so the foot of the tool is contacting the underside of the plate (Fig. 13).*

Figure 14

## *Screw Removal*

To remove a screw after the Nitinol Retention Clip has been deployed, dock the Screw Removal Driver onto the screw head. Align the flat section of the distal tip of the driver (Fig. 14) with the Nitinol Retention Clip.

Figure 15

Once fully seated, insert the Inner Stylet down through the proximal hole of the driver and turn clockwise until there is a firm connection between the screw and driver (Fig. 15).

Figure 16

Turn counter clockwise to displace the Nitinol Retention Clip and remove the screw (Fig. 16).

***Tip:*** *Keep a slight downward pressure when removing the screw to prevent the driver from disengaging from the screw head.*

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