SURGICAL TECHNIQUE GUIDE

TRITON[®] Sacroiliac Joint Fixation System

Posterior Oblique Approach





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TRITON[®] Sacroiliac Joint Fixation System **Posterior Oblique**



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Introduction

The ChoiceSpine TRITON[®] Sacroiliac Joint Fixation System is intended for sacroiliac joint fixation for conditions including degenerative sacroiliits and sacroiliac joint disruption. TRITON[®] is a titanium 3D manufactured cannulated screw with open and porous graft windows. TRITON[®] offers various lengths and diameters to accommodate different patient anatomies.



Description	tion Screw Major Diameter Screw Minor Diameter		Length	
Secondary	Ø8mm	Ø6mm	30,35,40,45,50,55,60mm	
Primary	Ø12mm	Ø9mm	30,35,40,45,50,55,60,65mm	
Revision	Ø14mm	Ø11mm	35,40,45,50,55,60,65mm	



Posterior Oblique

Patient Setup and Operative Imaging

For adequate fixation, it is recommended that three Triton Screws are implanted. Two to four implants may be used due to variations in anatomy.

The patient is placed in the prone position and secured to the table. Prior to iodine prep, single C- Arm Fluoroscopy imaging is used to identify key anatomical landmarks and to mark the incision point on the skin.

The fluoroscopic pelvis views utilized in this procedure are are the inlet, outlet, lateral and teardrop view.





Inlet View Allows Pelvic Brim view.



Outlet View Allows Sacral Foramen view.



Lateral View Allows Alar Lines, Posterior/ Anterior Sacral Walls and the S1 Endplate view.



Teardrop View Allows pelvis view.

- The lateral view should be adjusted until the alar lines are superimposed to form 1 line on the image.
- The location of the C-arm and position of the C-arm should be noted or marked to allow the radiology technician to easily return to each of the 4 views.
- The position of the C-arm for the teardrop view is approximately 20 degrees towards the patient's head and 20 degrees contralateral to the side of the surgery.
- To determine location of the first screw, first feel the posterior superior iliac spine (PSIS) located lateral and inferior to the L5-S1 facet Joints.
- Then using the teardrop view, identify the top and bottom of the SI Joint and the lateral edge of PSIS, mark each on the skin with a marker.
- Move to the outlet view, identify the S1 foramen, and mark a line on the skin lateral to the foramen over the PSIS.
- For the incision, mark a 2cm longitudinal line parallel and 2cm lateral to the line marking on the lateral edge of PSIS.



Jamshidi Postioning

Dock the Jamshidi on the lateral aspect of the ilium at the S1 foramen and 2cm anterolateral to the posterior PSIS, introducing the Jamshidi 1cm into place, angling the Jamishi 10 degrees cephalad to the top of the S1 foramen. Before advancing the Jamshidi confirm trajectory on the lateral image, then advance an additonal 1cm.

Move the C-arm back to the teardrop view and advance the needle across the joint. The trajectory of the needle should be perpendicular to the visible sacroiliac joint. Continue to advance the needle tip until it is 5-10mm past the contralateral side of the sacroiliac joint. Be careful not to advance the needle too far past the joint, as some advancement of the K-Wire (M070-KN124) may occur during drilling or screw placement.



Lateral Image



Sacroliliac Joint Fixation System **Posterior Oblique**

Move the c-arm to the teardrop view and advance the K-Wire (M070-KN124) and Jamshidi through the ilium across the SI Joint and into the sacrum.

Once in the SI Joint confirm trajectory using the inlet and outlet views.

Tissue Dilation

Return to the teardrop view and Insert a blunt K-Wire or Exchange Pin (KI-094-20) through the Jamshidi. The Jamshidi should then be removed, and place Dilator 1 (Q070-0001) over the K-Wire.



Place **Dilator 1 (Q070-0001**) over the **K-Wire** until flush against the iliac cortex.



NOTE: The depth gauge provided in the set, for **Screw** length measurement, is for use with the sharp **Steinmann Pins** (gS 78.5824) which are not recommended for use with the posterior oblique approach technique. **Screw** length will be measured during the **Screw** preparation step.

With the C-arm in the teardrop view, guide the instrument over the K-Wire and through the Dilator. Advance the instrument 5 to 10mm beyond the contralateral side of the SI joint.



Slide Dilator 2 with Handle (Q070-0002) over Dilator 1 if implanting a Ø8mm or Ø12mm Screw.



Slide **Dilator 2 without Handle (Q070-0003)** and **Dilator 3 with Handle (Q070-0004)** over **Dilator 1** if implanting a Ø14mm Screw.



Remove internal **Dilator(s)** leaving the final **Dilator** and **K-Wire (M070-KN124)** in place.





Screw Hole Preparation

Multiple instruments are available for screw hole preparation which can be utilized based on surgeon preference.

The **Drills** and **Taps** are undersized to the corresponding Screw diameters and have depth markings indicating prepared depth relative to the proximal end of the final **Dilator**.

The screw prep instruments are labeled with depth markings in 5mm increments. The drill depth marking that is flush or slightly above the proximal end of the dilator is the suggested screw length. Screw length selection can be adjusted 5mm above or below this suggestion based on desired depth of screw tip. The screw tip should extend at least 5mm beyond the SI joint to ensure the tapered tip of the screw if fully beyond the contralateral side of the joint.

Connect the **Ratcheting T-Handle (E070-0045)** to the selected screw preparation instrument and guide the instrument over the placed **K-Wire (M070-KN124)** and through the final **Dilator**.



NOTE: Take caution not to prepare the hole to the tip of the wire so that it will remain secure in the bone.

Collars are present on all screw preparation instrumentation for alignment through **Dilator 2**. The **Dilator 3 Adaptor (Q070-0014)** can be attached between the collars on the screw preparation instrument (**Tap** or **Drill**) for proper alignment through **Dilator 3**.





Screw Insertion

Aseptically remove the desired Screw from the sterile packaging. Unscrew the top of the plastic storage tube while holding the bottom containing the Screw. Attach the **Ratcheting T-Handle (E070-0045)** onto the proximal end of the **Screwdriver (Q070-0007)**. Load the **Screwdriver** onto the Screw by mating the hexalobe features and rotating the **Screwdriver** knob clockwise to engage the internal threads of the screw. Rotate the knob until finger tight. Remove Screw from the plastic storage tube.



CAUTION: Screw threads are sharp. Avoid glove and tissue contact with Screw.

Guide the Screw and Screwdriver through the final Dilator and over the K-Wire (M070-KN124).

Place the screw over the **K-Wire** and through the **Dilator**. (Note: Be sure to use the dilator during screw placement to prevent soft tissue and muscle trauma from the threads of the screw.) With the C-arm in the teardrop position, advance the screw through the bone. Use intermittent fluoroscopic imaging to ensure the trajectory of the screw matches the **K-Wire (M070-KN124)** to limit/prevent **K-Wire** advancement. Advance the screw to the desired depth. As the laser mark on the screwdriver becomes flush with the **Dilator**, this indicates that the screw is reaching a fully seated position. Fluoroscopic imaging and tactile feel should be utilized to determine the desired final position of the screw head.



CAUTION: Ensure Screw insertion through final Dilators to protect soft tissue from damage.

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Under fluoroscopic guidance, advance the Screw into the ilium towards the sacrum by rotating the **Screwdriver** clockwise. Use caution to avoid **K-wire** advancement during Screw insertion. As the laser mark band on the **Screwdriver** approaches the proximal end of the final **Dilator**, confirm the Screw is seated to the desired depth and/or tightness.

Rotate the knob counterclockwise to disengage the **Screwdriver** from the Screw. Remove the **Screwdriver** out of the final **Dilator** over the **K-wire**. Use an **Exchange Pin**, if necessary, to keep **K-wire** in position.

Placement of the Second Jamshidi

Move the X-ray machine into the lateral image position. Place the Jamshidi needle tip cephalad to the first screw, ensuring enough space is between the needle and first screw to allow the second screw to advance without interference between the 2 screws. The trajectory of the needle should be parallel to the first screw. Advance the needle into the PSIS just enough to hold that position. Move the C-arm to the teardrop position. In this view, the needle trajectory should be parallel to slightly divergent compared to the trajectory of the first screw.

Once the desired trajectory is established, advance the needle through the bone to the contralateral side of the SI joint. The needle should extend 5 to 10mm beyond the joint. Remove the needle and place the **K-Wire** through the Jamshidi. Repeat the steps used for preparing the first screw hole and inserting the screw.

NOTE: For adequate fixation, it is recommended that three Triton Screws are implanted. Two to four implants may be used due to variations in anatomy.



Lateral View



Teardrop View



Bone Graft Delivery

Screw post-packing can be achieved using the **Bone Funnel (Q070-0016)** and **Bone Plunger (Q070-0018)**. Prepack the **Bone Funnel** with the desired graft material. Remove the K-Wire (M070-KN124) from the Screw and seat the hexalobe end of the Funnel into the hexalobe of the Screw head, which can be confirmed utilizing an inlet/outlet view. Push the **Bone Plunger** through the filled cannula of the **Bone Funnel** to advance the graft material. The **Bone Plunger** has 0mm and 20mm depth markings to indicate plunger positioning past the distal tip of the **Bone Funnel**.



NOTE: STRATOFUSE® HA/TP PUTTY or 100 DBM is recommended for this application.



Screw Removal

Primary Removal Method:

Reattachment of the **Screwdriver** should be the primary method of Screw removal. Clear any tissue to access the Screw head. If necessary, introduce the **K-Wire** (M070-KN124) into the cannulation of the Screw and guide subsequent **Dilators** to retract and protect soft tissue. Remove the internal **Dilators** leaving the final **Dilator** and **K-Wire**. Attach the **Ratcheting T-Handle** to the **Screwdriver**. Guide the **Screwdriver** over the **K-Wire** and seat the hexalobe of the **Screwdriver** into the hexalobe of the Screw. Rotate the **Screwdriver** knob clockwise to engage internal threads in the screws. Rotate the **Screwdriver** counterclockwise to remove the Screw from the surgical site.



Secondary Removal Method:

If the primary removal method is not successful due to fusion, **Trephine Removal Tools (Q070-0019 and Q070-0020)** and a **Reverse Removal Tool (Q070-0021)** are alternative methods for Screw extraction. Align the **Trephine Removal Tool** over the Screw head. Rotate the t-bar handle clockwise to the desired depth. If necessary, insert the **Reverse Removal Tool** into the Screw head, and rotate counterclockwise to engage the Screw. Maintain counterclockwise rotation to remove the Screw from the sacroiliac joint.



CAUTION: THE THREADS ON THE SCREW ARE SHARP. UTILIZE THE TISSUE RETRACTION INSTRUMENTS TO PROTECT SOFT TISSUE DURING SCREW REMOVAL.



Instrument List

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Part Number	Description	Qty	
Q070-0016	Bone Funnel	2	
Q070-0018	Bone Plunger	1	
Q070-0022	Mallet	1	
Q070-D008	Ø8mm Drill	1	
Q070-D012	Ø12mm Drill	1	
Q070-D014	Ø14mm Drill	1	
Q070-T008	Ø8mm Tap	1	
Q070-T012	Ø12mm Tap	1	
Q070-T014	Ø14mm Tap	1	
E070-0045	Ratcheting T-Handle 1/4" Square	2	
gS 78.5824	Steinmann Pin 12" Trocar-Blunt	6	
Q090-1100	Steinmann Pin Caddy	1	
Q070-SA120	Exchange Pin 20", Blunt-	Blunt	3
Q090-1200	Exchange Pin Caddy	1	
E070-0055	Jacobs Chuck Adaptor		

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Optional Instruments

Q070-0019	Removal Instrument Ø12
Q070-0020	Removal Instrument Ø14
Q070-0021	Reverse Removal Tool

Implant List

Part Number

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S-QT10-0830	Triton [®] , Screw, Ø8x30mm Sterile
S-QT10-0835	Triton [®] , Screw, Ø8x35mm Sterile
S-QT10-0840	Triton [®] , Screw, Ø8x40mm Sterile
S-QT10-0845	Triton [®] , Screw, Ø8x45mm Sterile
S-QT10-0850	Triton [®] , Screw, Ø8x50mm Sterile
S-QT10-0855	Triton [®] , Screw, Ø8x55mm Sterile
S-QT10-0860	Triton [®] , Screw, Ø8x60mm Sterile

S-QT10-1230	Triton [®] , Screw, Ø12x30mm Sterile
S-QT10-1235	Triton [®] , Screw, Ø12x35mm Sterile
S-QT10-1240	Triton®, Screw, Ø12x40mm Sterile
S-QT10-1245	Triton®, Screw, Ø12x45mm Sterile
S-QT10-1250	Triton®, Screw, Ø12x50mm Sterile
S-QT10-1255	Triton®, Screw, Ø12x55mm Sterile
S-QT10-1260	Triton®, Screw, Ø12x60mm Sterile
S-QT10-1265	Triton [®] , Screw, Ø12x65mm Sterile

S-QT10-1435	Triton [®] , Screw, Ø14x35mm Sterile
S-QT10-1440	Triton®, Screw, Ø14x40mm Sterile
S-QT10-1445	Triton [®] , Screw, Ø14x45mm Sterile
S-QT10-1450	Triton [®] , Screw, Ø14x50mm Sterile
S-QT10-1455	Triton®, Screw, Ø14x55mm Sterile
S-QT10-1460	Triton®, Screw, Ø14x60mm Sterile
S-QT10-1465	Triton [®] , Screw, Ø14x65mm Sterile

¹⁶ T R I T O N°



Instrument Tray Top



- A Mallet Q070-0022
- **B** Dilator 1 Depth Gauge Q070-0005 (x2)
- © Dilator 1 Q070-0001
- D Dilator 2 w/Handle Q070-0002
- **(E)** Pin Puller Q070-0012
- Pin Holder Q070-0006
- () Dilator 2 w/o Handle Q070-0003

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- **(J)** Dilator 3 w/ Handle Q070-0004
- G Steinmann Pin Caddy Q090-1100 🛞 Exchange Pin Caddy Q090-1200
- (H) Parallel Pin Guide Q070-0008



Instrument Tray Middle



- A Dilator 3 Adaptor Q070-0014 (x2)
- **B** T50 Screwdrivers Q070-0007 (x2)
- © Ø8mm Drill Q070-D008 and Tap Q070-T008 (lower)
- **Ø12mm Drill Q070-D012 and Tap Q070-T012 (lower)**
- **(E)** Ø14mm Drill Q070-D014 and Tap Q070-T014
- **(F)** Bone Plunger Q070-0018
- **(G) Bone Funnel Q070-0016 (x2)**
- (H) Ratcheting T-Handle 1/4" Square E070-0045 (x2)

Instrument Tray Lower

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Sacroliliac Joint Fixation System **Posterior Oblique**

Notes:		

For Instructions for Use please visit https://choicespine-eifu.com/



TRITON[®] Sacroiliac Joint Fixation System Posterior Oblique

Spine the Right Way.



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