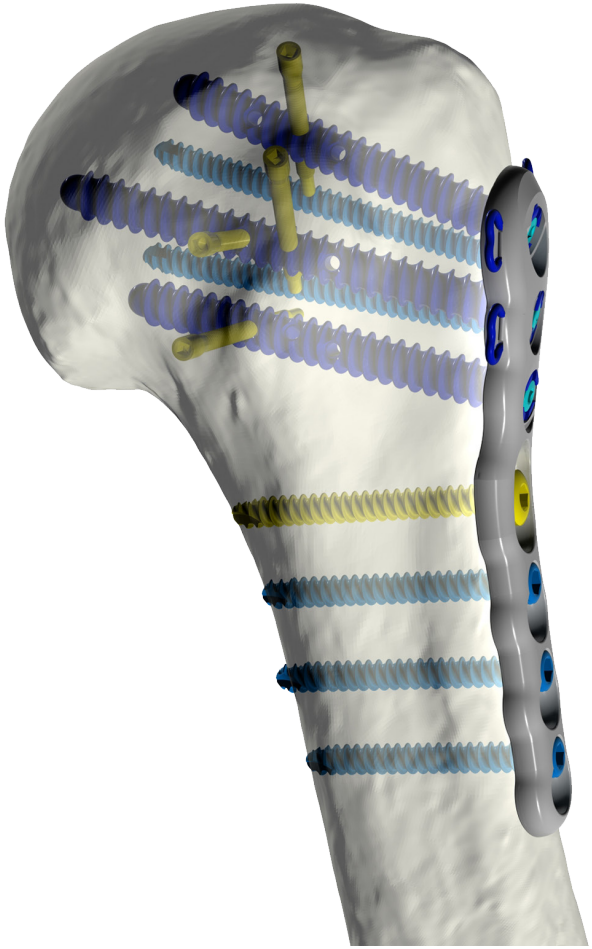
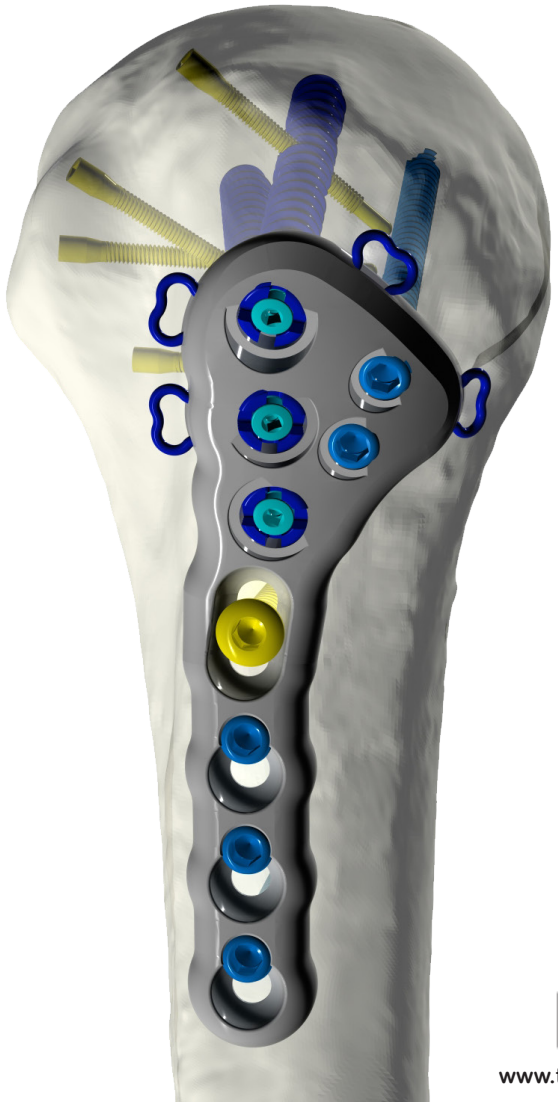
PANTERA® PROXIMAL HUMERUS FRACTURE FIXATION PLATE SYSTEM SURGICAL TECH GUIDE





TOBY ORTHOPAEDICS

www.tobyortho.com

PANTERA® Fracture Fixation Plate System consists of shoulder plates, Posts, Cross Elements, Locking and Non-Locking screws, Post Cap Screws, Suture Clips, K-wires, and Surgical Instrumentation contained in a Sterilization tray. **PANTERA®** Represents the next generation of fixed angle modular fixation.

Stability

Cross Element fixation minimizes loss of reduction and protrusion through the articular surface of the humeral head.

TOBY 3D® Technology

Inspired by the high incidence of joint penetration, particularly in elderly patients with osteopenic bone, TOBY 3D® technology now makes it possible to apply a screw through a locking post, thus accomplishing an internal scaffold within the trabecular bone.

Soft Tissue Clips

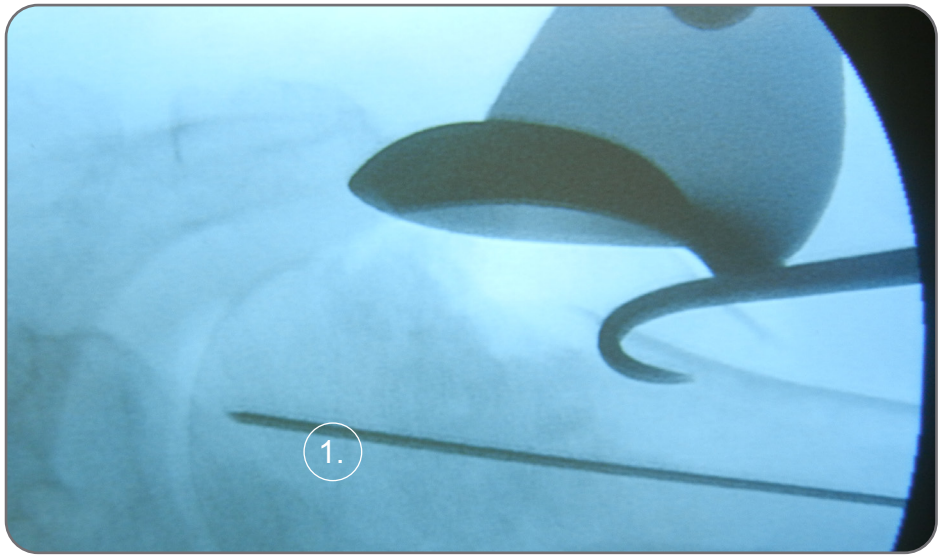
Innovative suture clips offer endless possibilities for soft tissue reconstruction. This is especially useful when repairing ruptures of the rotator cuff associated with some humerus fractures or when repairing soft comminuted tuberosities. The suture clips also act as extremely low-profile extensions of the plate to buttress the thin comminuted cortical bone of the tuberosities.

Thoughtful, Anatomic Design

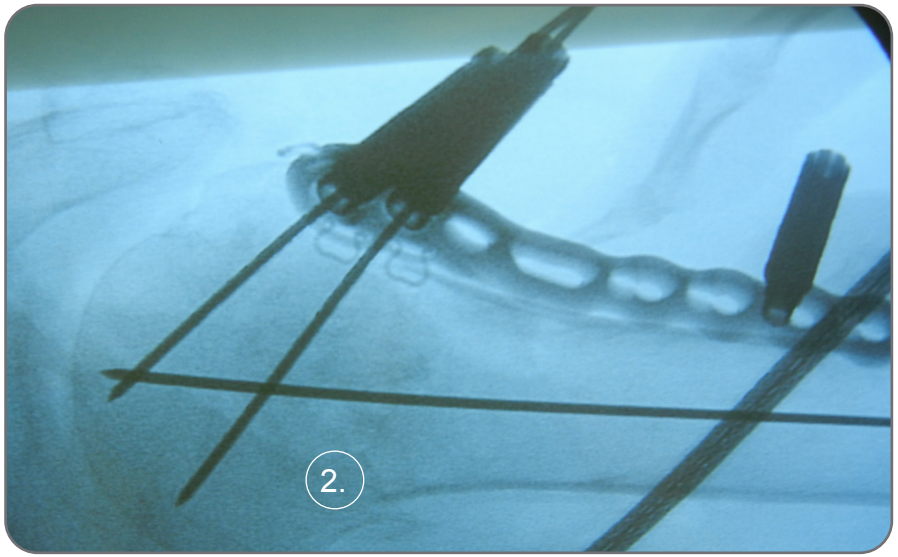
The low-profile PANTERA® plate is available in both right and left configurations. Its true anatomic design is aimed at minimizing the potential for impingement. PANTERA®'s proximal posterior profile is designed to address displacement of the humeral head posteriorly.

Installing the PANTERA® is a 4-Step Process:

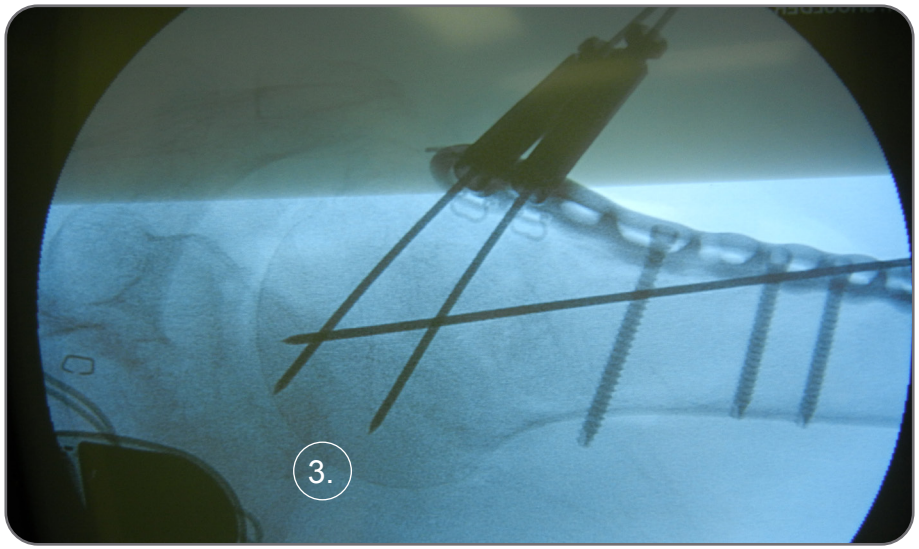
Step 1
Preliminary fracture reduction.



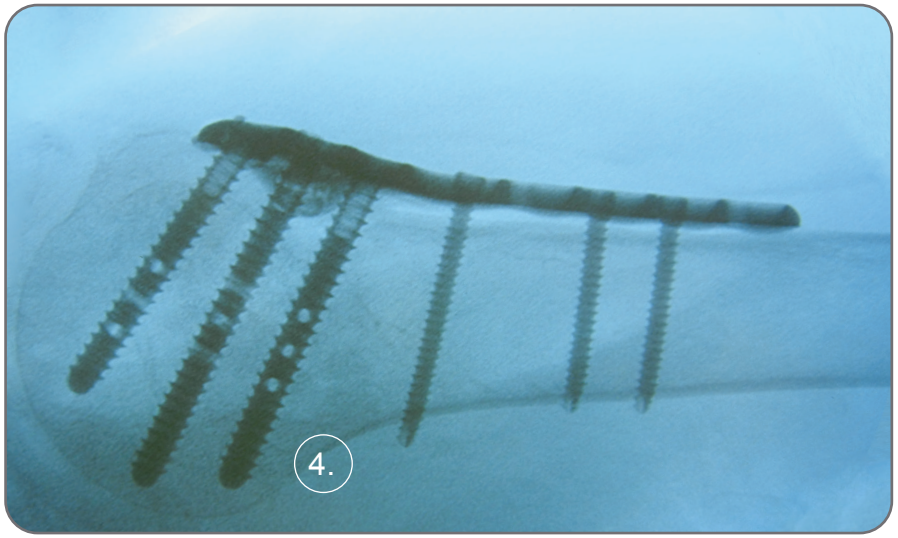
Step 2
Plate positioning and pinning to the humeral head.



Step 3
Diaphyseal fixation.



Step 4
Humeral head fixation. Use of Cross Elements is discretionary depending on fracture pattern.



Patient Positioning

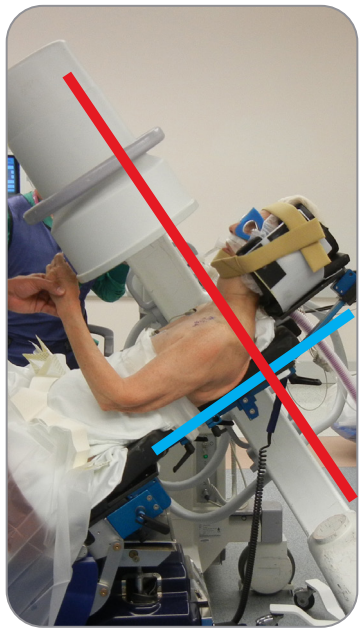
The beach chair position is recommended. For optimal space management in the operating room, the imaging equipment may be brought into the field from the opposite side.

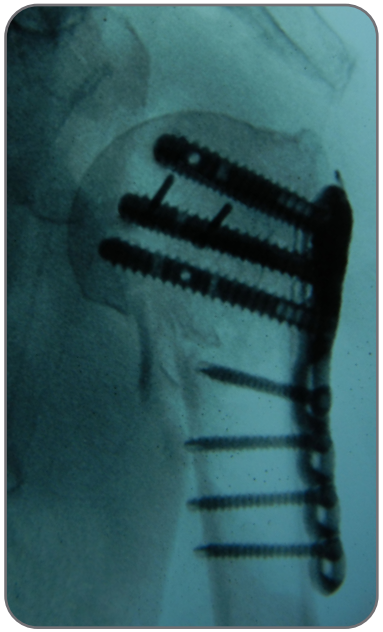
Orthogonal views are necessary for fracture reduction and fixation.

AP view is readily obtained with the axis of the C-arm perpendicular to the coronal plane of the proximal humerus.

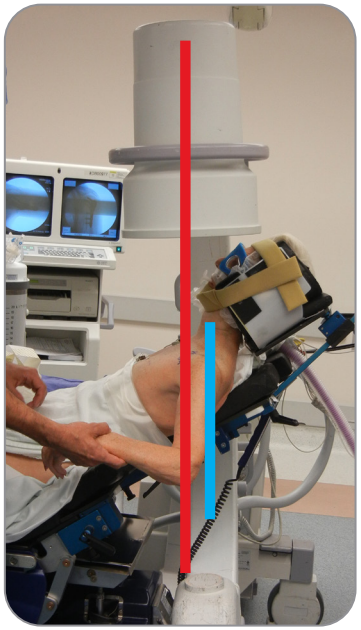
Axillary view of the proximal humerus is obtained by rotating the C-arm 45 degrees into a more vertical position and extending the shoulder 45 degrees in the opposite direction. As such, there is minimal maneuvering of the equipment or the arm.

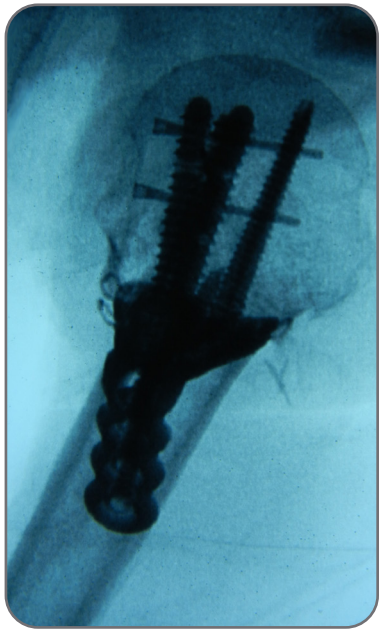
The forearm may be rested on a Mayo stand for ease of manipulation. The shoulder may be abducted to reduce the tension on the deltoid. A delto-pectoral approach is suggested.





AP view





Axillary view

Become Familiar With the Plate

Become familiar with the alignment of the three Post holes on the plate by installing the Post Drill Guides in each of the three corresponding positions.
Note that the middle Post aims slightly more anterior on the humeral head than the proximal and distal Posts.

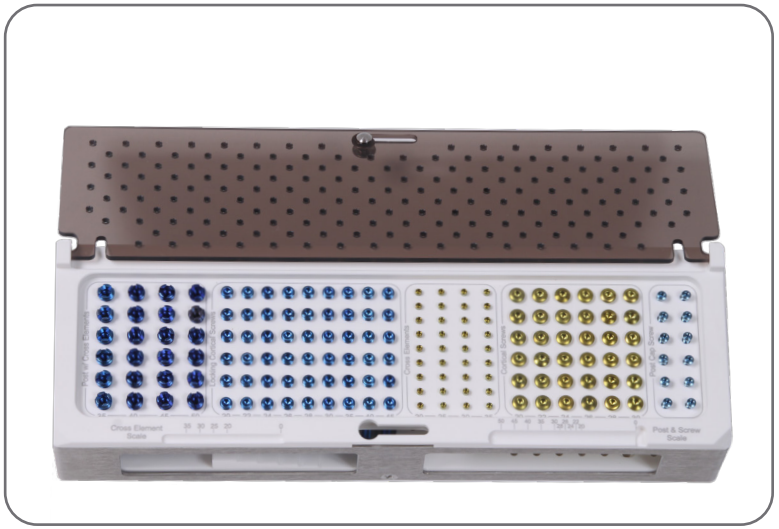
Knowing the proper orientation of the Posts is very important to avoid forcing the Post into the humeral head in a position other than into its corresponding pre-drilled hole.

Humeral head fixation in PANTERA® was designed with the regional variations in bone density in mind. The best bone and most purchase is achieved in the center of the humeral head in the posterior hemisphere.

Become Familiar With the PANTERA® Screw Caddy

Notice that the screws are color-coordinated by varying lengths. The Caddy is stepped to facilitate screw selection and placement.

The Post and Screw scale is located on the right hand side of the Caddy. The Cross Element scale is located on the left hand side of the Caddy.



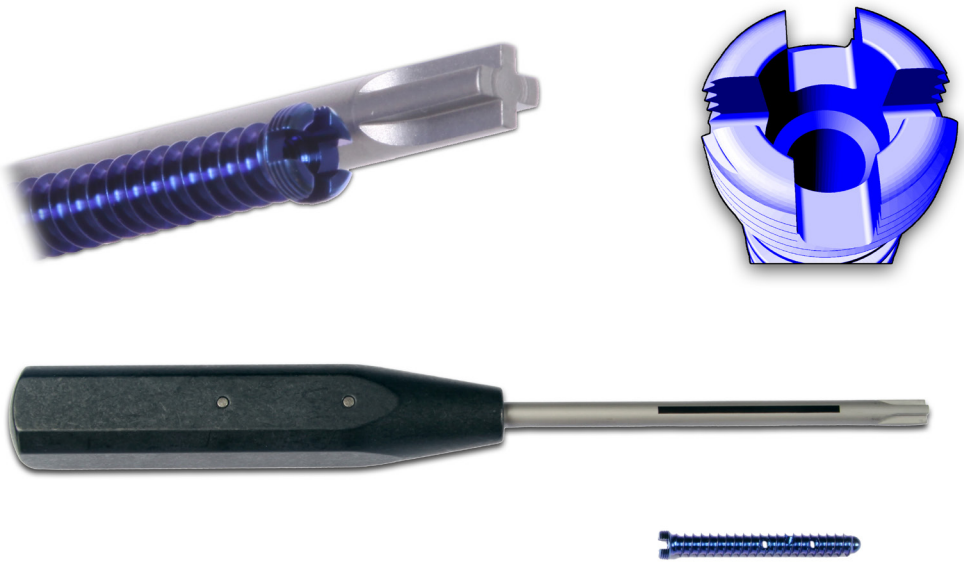
Become Familiar With the Post Screw

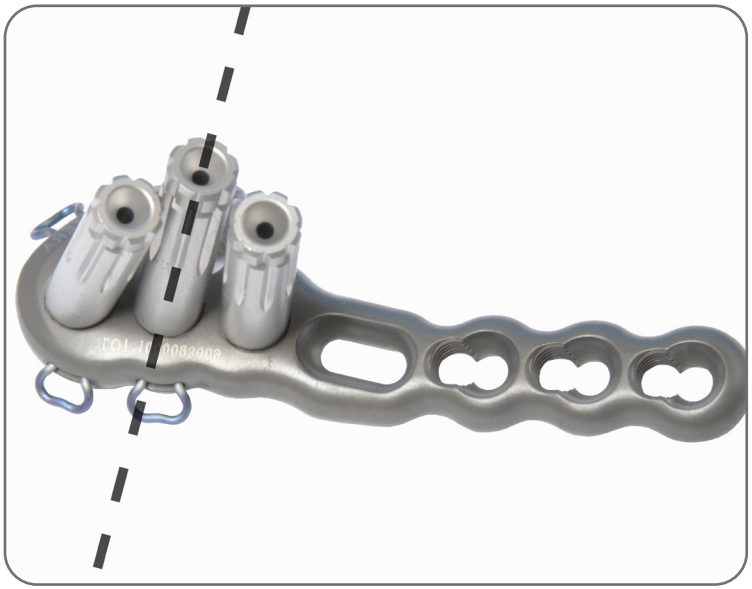
Each PANTERA® Plate accepts three Posts that are specifically designed to accept Cross Elements.

The head of the Post screw and the tip of the Cruciform Driver are asymmetric crosses.

The Cruciform Driver is marked with two pins in the handle and a thick laser etched line that corresponds with two holes in the Post. This assists in visualization of desired Cross Element positioning.

A Cannulated Cruciform Driver is available for use with Cannulated Posts.





The central Post should be aligned with the center of the Humeral Head. The central post is the only one oriented towards the center of the head and slightly anterior.

Become Familiar with Cross Element Application

When indicated, Cross Elements provide additional stability and minimize loss of reduction and protrusion into the articular surface of the humeral head.

The Cross Element Guide is threaded onto the Post with a retainer screw.

Note: The Cross Element Guide should be fully seated prior to fastening the retainer screw.

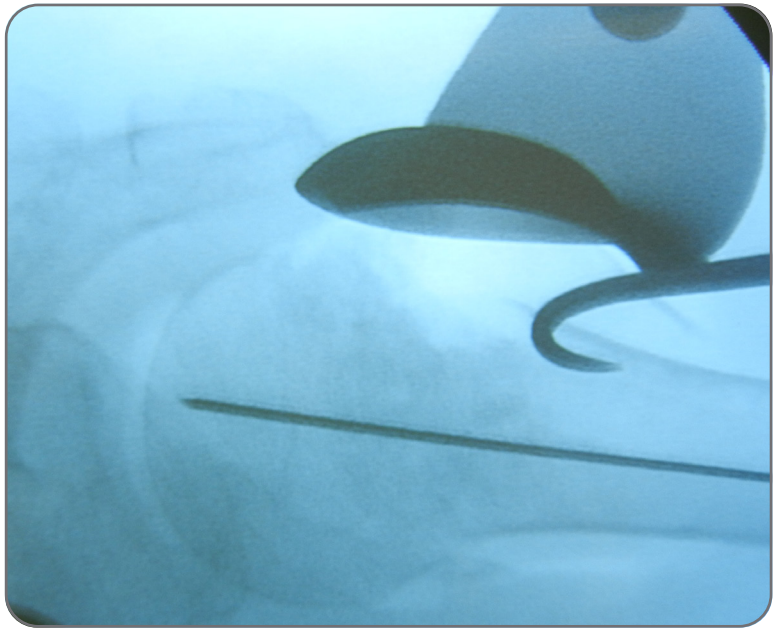
The Cross Element Guide has three threaded sleeves for drilling the Cross Element pilot holes with K-wire.

With the sleeve removed the Cross Element can be guided into the bone using the 2.5mm/3.5mm Drill Guide inserted into the Cross Element Guide (as shown below).

30mm 35mm - 50mm

Note: Each 35mm, 40mm, 45mm, & 50mm Post can accept up to three Cross Elements. The 30mm Post can accept only two cross Elements.

Step 1 - Preliminary Fracture Reduction



Expose and debride the fracture. Make every effort to avoid stripping the soft tissue from the fracture fragments. The hematoma from the fracture site may be removed using suction. Use traction and direct manipulation to reduce the fracture.
Re-establish the anatomical relationship between the articular surface and the humeral shaft by restoring both its angular alignment and retroversion.

Assure the tuberosities can be reduced to their proper locations. Suture may be applied to the comminuted bone of the tuberosities for the purposes of fracture reduction and fixation.

The metaphyseal void that becomes obvious after reduction of the fracture fragments may be filled with allograft or a suitable bone substitute.
Preliminary reduction may be maintained with K-wires placed where they do not interfere with the application of the plate.

Caution: Exercise care to avoid damaging the vasculature to the bone fragments.

Step 2 - Plate Positioning and Pinning

Assemble two Post Drill Guides with their respective K-wire Sleeves to the plate, preferably along the two proximal holes. In this manner, one can drill and apply a compression screw into the oblong portion of the plate with minimal interference from the Post Drill Guides.

Assemble a Locking Screw Drill Guide to the most distal position of the plate. Such assembly allows for ease of manipulation of the plate early in its implantation.

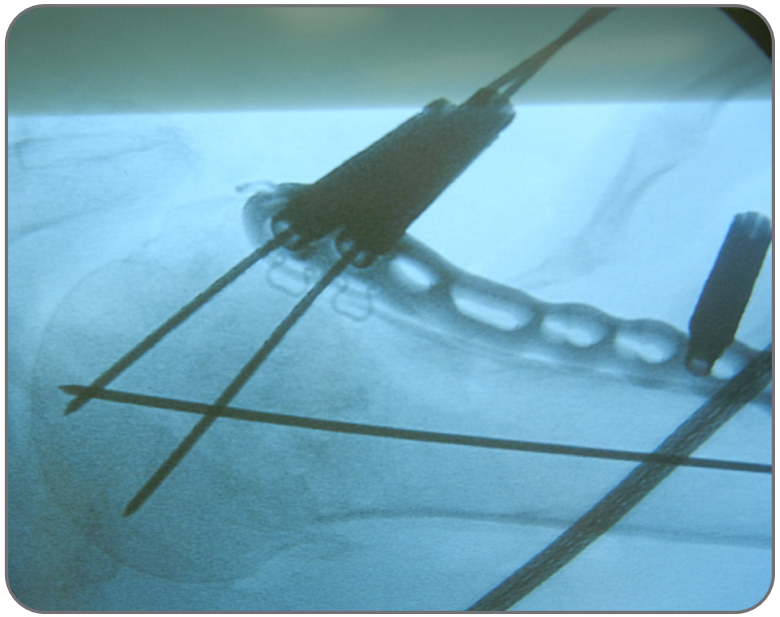
Identify the position of the plate. It should be placed immediately posterior to the intertubercular groove and approximately 1.5 to 2.0 cm distal to the insertion of the supraspinatus to avoid impingement with the acromion.

With the plate in place, drive K-wires into each of the two Post Drill Guide Sleeves and confirm preliminary positioning.

Note: When using the extended length plates, 120mm - 220mm, take full advantage of the K-wire hole design features in the plates to assist with the preliminary positioning process.

The K-wire inserted into the guide for the middle Post should coincide with the center line of the humeral head.

Anterior-posterior and lateral views should confirm proper positioning of the plate.

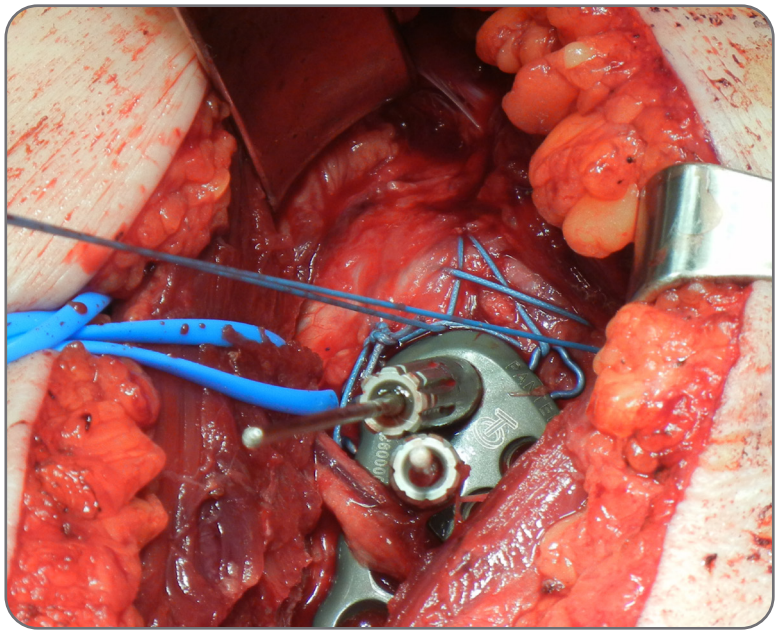


Take full advantage of the Suture Clips to assist in the reduction and fixation of the comminuted bone of the tuberosities. The comminuted greater tuberosity is brought under the proximal and posterior buttress of the plate.

Application of screws into the humeral head is discouraged until (proximal) reduction of the head and the tuberosities is achieved. Avoid having a prematurely placed screw interfere with fracture reduction.

Fixation of the plate to the shaft as in Step 3 can help complete reduction of the humeral head (with the tuberosities) to the shaft. The manner of reduction has been termed "buttress reduction" or "buttress plating."

Caution: Exercise care to avoid damage to the suture clips. Use of excessive force or bending on the suture clip(s), with instruments or suture wire, may result in degraded performance of the clip(s). It is advisable to use no larger than #2 braided surgical suture to avoid damage to the clips.



Step 3 - Diaphysial Fixation

Using the 2.5mm Drill Bit, drill a hole in the humeral neck through the center of the oblong hole in the plate.

Caution: Avoid over manipulating the drill bit or using excessive force, as this may result in damage to the device or harm to the patient.
Use the 2.5/3.5mm Drill Guide to avoid injury to the surrounding soft tissue.

Caution: Ensure that the 2.5/3.5mm Drill Guide (i.e. tissue protector) is inserted fully into the plate and not lifted while in use. Failure to keep the tissue protector properly positioned can result in damage to the device or instrumentation, and could result in harm to the patient.

Use the Depth Gauge to aid in the selection of the proper length Cortical Screw.

Note: The Depth Gauge measuring instrument has a +/- 1mm accuracy.

With the T10 Driver, affix the plate to the humeral shaft fragment using a 3.5mm diameter Cortical Screw through the oblong hole of the plate. Frequently, this will contribute to fracture reduction (buttress reduction).

If the plate is not properly positioned, remove the K-wires and loosen the Cortical Screw. Make the necessary adjustments, re-apply the K-wires and tighten the Cortical Screw.

Note: If the medial calcar is fractured, use a more distal screw hole for the purposes of initial diaphyseal fixation (and to achieve the desired buttress reduction). The calcar may then be lagged to the construct through the oblong screw hole (calcar reduction hole).

At least one Cortical Locking Screw must be placed into one of the distal holes on the plate.

Thread the Locking Screw Drill Guide into the desired location on the plate.

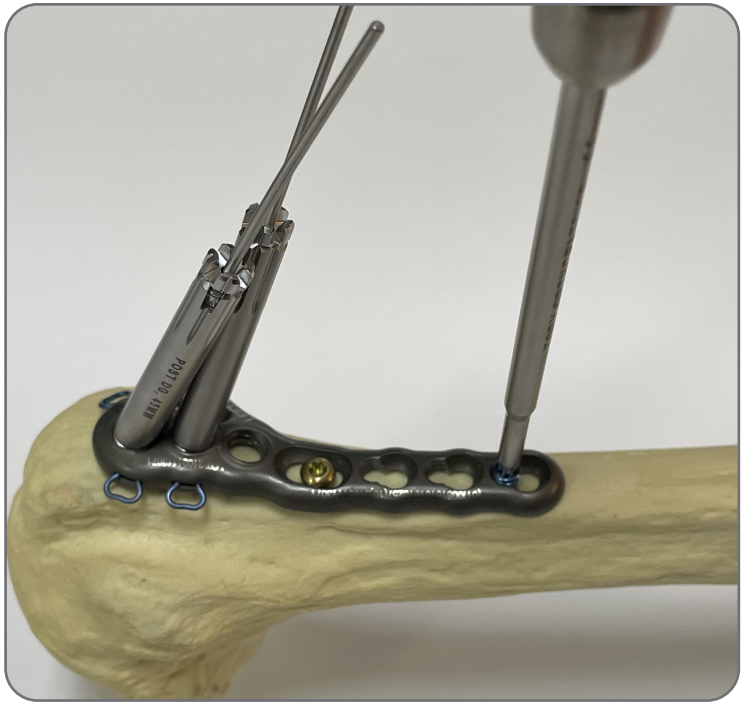
Using the 2.5mm Drill Bit, drill a hole through the Locking Screw Drill Guide into the bone.

Use the Depth Gauge to determine the proper screw length.

Install the Cortical Locking Screw into the threaded hole of the plate using the Tau Driver.

This procedure may be repeated as needed for the remaining holes on the distal segment of the plate.

Note: Alternatively, non-locking Cortical Screws may be used for this application. If so, be certain to use the non-threaded hole of the plate.



Step 4 - Humeral Head Fixation

Once the optimal fracture reduction and proper position of the plate and distal fixation have been accomplished, one may proceed with the definitive proximal fracture fixation. Starting with the middle Post Drill Guide, remove the Post Drill Guide Sleeve only. Using the 4.0mm Cannulated Drill Bit, drill the hole for the post as shown.

Caution: Avoid penetrating into the joint. It is advisable to drill only up to 5mm to 10mm away from the subchondral bone of the joint surface to minimize the risk of joint penetration.

The Cannulated 4.0mm Drill Bit has a scale designed to work with the 45mm Post Drill Guide. Measure the size of the corresponding screw, always choosing the smallest size on the scale. When removing the Cannulated 4.0mm Drill Bit, leave the K-wire in place to guide the screw.

When using a non cannulated system or if desired a direct measurement for screw, it can be made by removing the Post Drill Guide and the K-wire.

Use the Depth Gauge to select a properly sized Post.

Caution: It is advisable to select a Post that falls 5mm to 10mm short of the subchondral bone of the joint surface to minimize the risk of joint penetration.

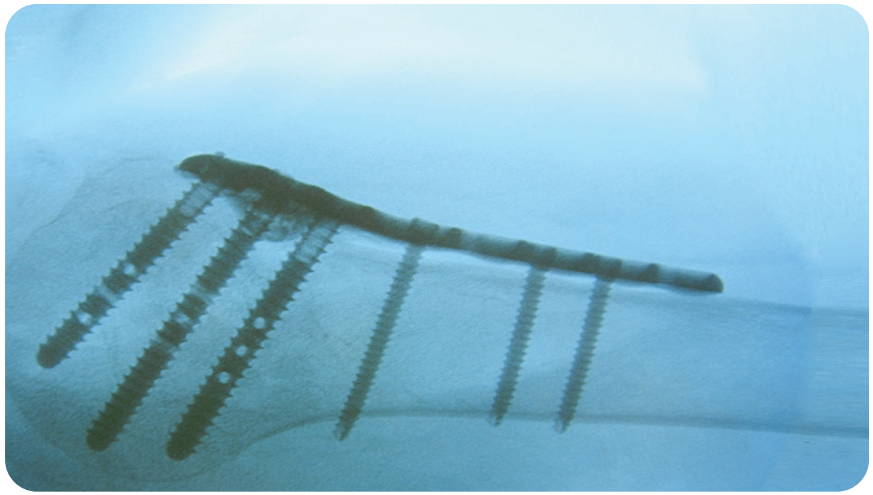
Use the Cannulated Cruciate Driver to remove the Post Drill Guide. Leave the guiding K-wire in place. Use the Cannulated Cruciate Driver to install the cannulated post over the K-wire, through the plate, and into the humerus head.

Caution: Do not overtighten the Post to the plate. It is sufficient for it to be flush to the plate and make adjustments.

The Cruciate Screwdriver has asymmetric limbs that match the corresponding features in the head of the post. These features are necessary for proper installation of Cross Elements, when indicated.

Caution: Place the Posts in the same orientation as the pre-drilled holes, by installing the Cannulated Post over the corresponding guiding K-wire. When using a non-cannulated system, make sure to orient the post along the corresponding pre-drilled hole.

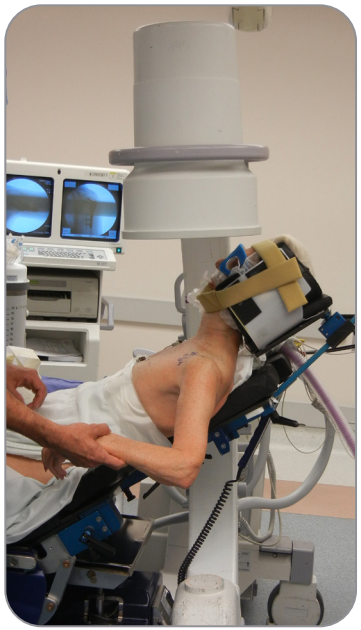
Confirm proper implantation with intra-operative fluoroscopy.
Repeat to fill all three Post holes for optimal fracture fixation.

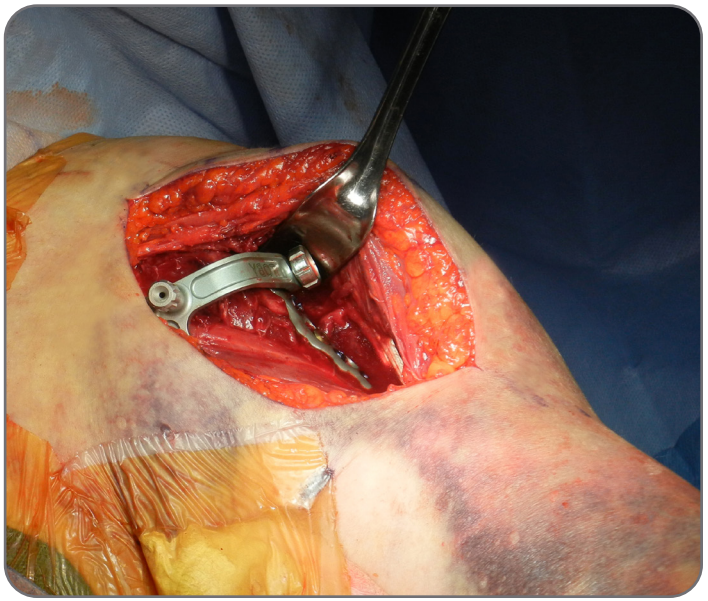


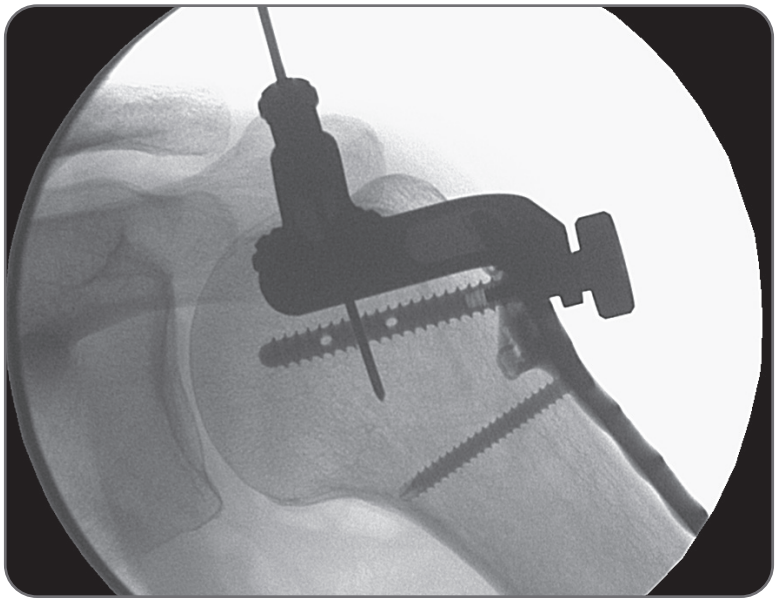
Application of Cross Elements

At surgeon discretion, Cross Elements may be applied at this point. If Cross Elements are not used, please proceed to application of the Post Cap Screws.

Position the patient so that the Cross Element Guide may be installed. Application of the Cross Element Guide and Cross Elements is simplified with the shoulder in slight extension abduction and slight external rotation.







Align the Cross Element Guide with one of the Posts as shown.

Caution: Ensure that the notches on the Cross Element Guide are properly aligned with the reciprocal notches in the Post. Failure to do so will result in improper placement of the Cross Elements.

Lock the Cross Element Guide by threading the Cross Element Guide Retainer, as shown, tightening with the screw driver into the corresponding feature on the reatiner.

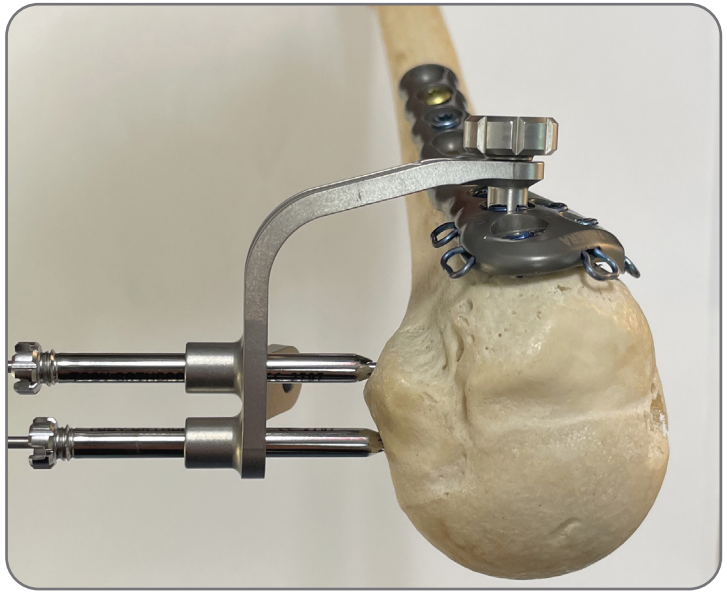
Use two Post Drill Guide Sleeves into selected positions on the Cross Element Guide and use the serrated tip on the Post Drill Guide Sleeves (use the Cruciate Driver) to remove soft tissue and reach cortical bone. This excercise insures ease and accuracy of Cross Element implantation.

Caution: Do not push the Post Drill Guide Sleeves throught the cortical bone.

Apply two K-wires through the Post Drill Guide Sleeves, into the bone, and through the Post to prevent inadvertent rotation of the guide while placing a Cross Element.

Evaluate placement using fluoroscopy and re-adjust as necessary. Use both anterior-posterior and lateral or axillary views for this purpose.

Note: The Cross Element enters the bone through the lesser tuberosity and their trajectory is extra-capsular and extra-articular. The mechanical support afforded by the Cross Elements is optimal to resist collapse of the humeral head. The plate provides excellent low-profile buttress to the greater tuberosity proximally and posteriorly.



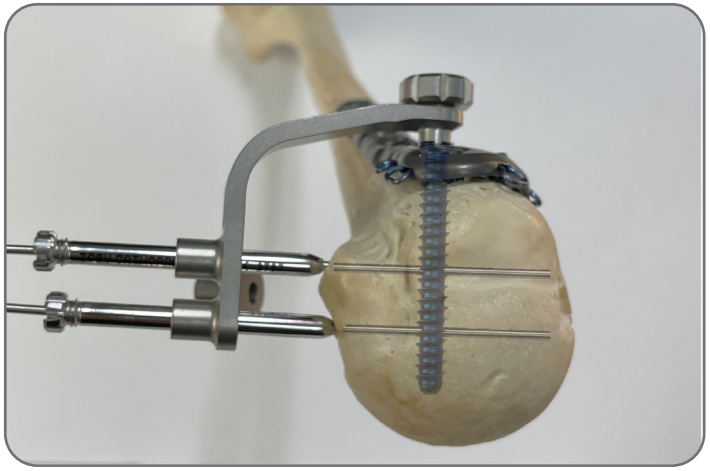
Drill back and forth three to four times with the K-wire to ensure the pilot hole intended for the Cross Element is well-established.

Caution: Avoid joint penetration by remaining 5mm to 10mm away from the far cortex when drilling the pilot hole.

Remove one of the K-wires and Post Drill Guide Sleeves.

Note: Leave the other K-wire (through the other Post Drill Guide Sleeve) inserted into the humeral head to help stabilize the construct prior to installation of the first Cross Element.

The image shows a see through representation.



Insert the Depth Gauge into the Cross Element Guide hole vacated by the Sleeve.

Caution: Do not advance the tip of the Depth Gauge into the bone. Only advance the Depth Gauge until it touches the humeral head cortex.

Select the proper length Cross Element by viewing the corresponding scale labeled “Cross Element Scale” on the cylindrical surface of the Depth Gauge. The scale includes four corresponding sizes of the Cross Elements: 20mm, 25mm, 30mm, and 35mm.

Note: If the scale points in between two such sizes, always choose the smaller size. The Depth Gauge CE scale has a +/- 2mm accuracy.

Install the Cross Elements, as shown. Ensure that the head of the Cross Element is below the surface of the humeral head.

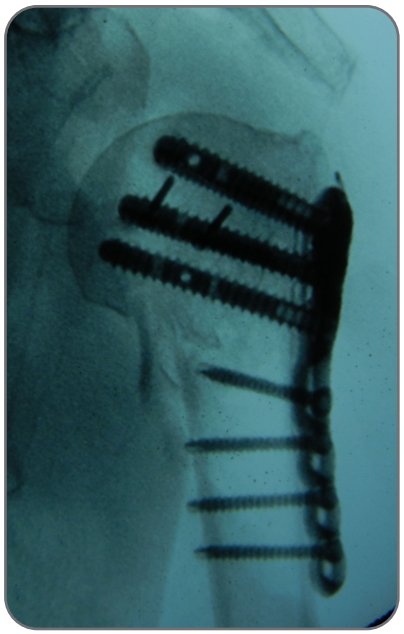
Repeat up to three times per Post to fill the three holes available for articulation with Cross Elements.

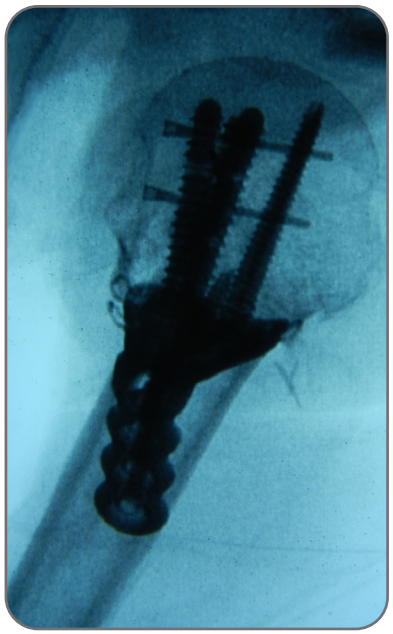
Caution: The 30mm Post can accept a maximum of two Cross Elements due to its shorter length.

Note: The actual number of Cross Elements used is left to the discretion of the surgeon.

Note: An important benefit of using the Cross Elements is the fixation of the lesser tuberosity. A well-fixed lesser tuberosity provides additional mechanical buttress and biologic support to the humeral head. In addition, stabilization of the lesser tuberosity may play a role in the restoration of functional internal rotation.

Evaluate final reduction and placement using fluoroscopy and re-adjust as necessary.
Use both anterior-posterior and lateral or axillary views for this purpose.





Application of Post Cap Screws

Complete the Post installation by threading a Post Cap Screw into the center of the Post head with the Precision Square Driver. Repeat for each Post installed. This completes the installation of the Post(s).

Caution: Only minimal torque is required to tighten the Post Cap Screw.

Final Fixation of the Humeral Head

Assemble the Locking Screw Drill Guide to one of the corresponding holes on the proximal end of the plate.

Using the 2.5mm Drill Bit, drill the hole for the Cortical Locking Screw, as shown.

Caution: Avoid drilling through the joint. Drill up to 5mm to 10mm short of the articular surface

Use the Depth Gauge to determine the proper screw length.

Caution: Choose a screw length that is 5mm to 10mm away from the subchondral bone of the joint surface to avoid joint penetration.

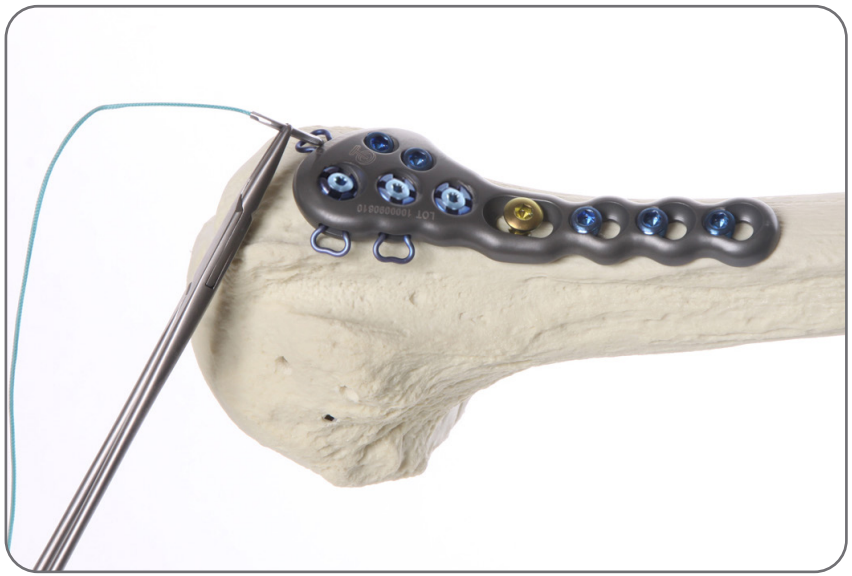
Install the Cortical Locking Screw in the threaded hole of the plate and confirm proper placement with intra-operative fluoroscopy. Repeat until both proximal holes are filled.

Suture Clips

Suture Clips may be used to manage the comminuted bone of the tuberosities and to repair associated soft tissue lesions, such as rotator cuff tears. The Clips provide necessary additional fixation of the tuberosities. Stable tuberosity fixation provides additional mechanical buttress and biologic support to the humeral head.

Repair of an associated rotator cuff tear may be undertaken at the end of the procedure after fracture fixation has been accomplished. Multiple sutures can be made to pass through the Clips with great ease, demonstrating the versatility of the design. Close the wound using appropriate surgical technique and use drains, as necessary.

Caution: Exercise care to avoid damage to the suture clips. Use of excessive force or bending on the suture clip(s), with instruments or suture wire, may result in degraded performance of the clip(s). It is advisable to use no larger than #2 braided surgical suture to avoid damage to the clips.



Intended Use:

The TOBY PANTERA® Proximal Humerus Fracture Fixation plate system is intended for the internal fixation of bone fragments about the proximal humerus and includes unique features for enhanced fixation of soft bone

Indications:

PANTERA® is indicated for fractures and fracture dislocation, ostetomies, and non-unions of the proximal humerus.

Contraindications:

- Proximal humerus fractures with significant fragmentation of the head where reconstruction is not possible.
- Proximal humerus fractures for which there is a likelihood of development of clinically relevant avascular necrosis of the fracture fragments.

Adverse Effects:

Potential complications/adverse events associated with the use of implantable shoulder plates include, but are not limited to, the following:

- Postoperative pain (shoulder)
- Screw perforation into glenohumeral joint
- Postoperative discomfort
- Numbness
- Inflamation
- Humeral head collapse/fracture due to aseptic necrosis after the fracture healed
- General infection
- Avascular necrosis

Cautions:

- When not in use, store the clean and disinfected, PANTERA® Plate System within the Sterilization Tray, in a cool, dry place, away from direct sunlight. Prior to use, inspect the product packaging for any signs of damage, tampering, or contamination. Use the oldest products first. Instruments should be disassembled for cleaning and inspection where appropiate (Refer to PANTERA® Cleaning and Sterilization Doc. 50000057).
- PANTERA® Instrumentation does not have an ifinite functional life. Because the instrumentaion is subjected to repeated stresses related to impaction, bone contact, routine cleaning, and sterilization porcesses, all re-useable instrumentation should be carefully inspected before each use to ensure that they are fully functional. Scratches and/or dents may result in breakage during use. Dullness of cutting edges can result in poor functionality.
- All damaged instrumentation and those suspect to not perform as required should be replaced to prevent any potential patient injury such as metal fragments falling into the surgical site. Care should be taken to remove any debris, tissue or bone fragments that may collect on the instruments. It is important that the surgeon and the operating team be fully conversant with the appropiate surgical technique for the PANTERA® system.
- Dispose of contaminated implants and instruments per established Helathcare facility precautions for the handling of contanminated / biohazrdous materials.
- Safe disposal of Reuseable devices that have been inspected and have reached the end of their lifetime, should be disposed of according to the institutional procedures.
- Safety precautions Personal Protective Equipment (PPE) should be worn when handling or working with contaminated devices. Universal precautions are standards of infection control practices designed to reduce the risk of transmission of bloodborne infections. Universal precautions should be observed by all Healthcare Facility Personnel that work with contaminated or potentially contaminated devices.
- Excersise caution when handling devices with sharp points and cutting edges.
- All implantables must never be reused. Previous stresses from prior use may cause imperfections that can be potentially lead to device failure.
- All implantables devices should be protected from scratches, nicking, or dents that may lead to stress concentrations that would potentially result in failure.
- Exercise caution to avoid damaging the vasculature of the bone fragments.

Cautions continued:

- Avoid penetrating into the joint anytime when drilling. It is advisable to drill only up to 5mm or 10mm away from the subchondral bone of the joint surface to minimize risk of penetration
- The patient shall be cautioned, preferably in writing, about the use, limitations, and possible adverse effects of the device.
- It is advisable to elect Post Screws and Locking Cortical Screws that are 5mm to 10mm away from the subcondral bone of the joint surface to minimize risk of penetration. **Note:** The Depth Gauge and screw caddy measuring instruments have +/- accuracies and the CE scale has a +/- 2mm accuracy.
- Ensure that the notches on the Cross Elements Guide are properly aligend with the reciprocal notches on the Post screws. Failure to do so will result in improper pla-cement of the Cross Elements.
- Excercise care to avoid damage to the suture clips. Use of excessive force or bending on the suture clip(s), with instruments or suture wire, may result in degraded performance of the clip(s). It is adviseable to use no larger than #2 braided surgical suture to avoid clip damage.
- When deciding the size of a POST, avoid measurement errors by making a direct measurement witha depth gauge instead of using sccale on the Drill Bit.
- Reduce the possibility of Cross Element migration by remaining 5mm to 10mm away from the far cortex when drilling the pilot hole.
- Use caution when choosing implantable components for patients with sever osteoporosis, as risk of plate and screw migration is increased.
- For additional Cautions, please refer to PANTERA® Instructions For Use (Doc. 60000010).
- For additional Cleaning and Sterilization instructions refer to PANTERA® Cleaning and Sterilization Instructions (Doc. 50000057)
- The PANTERA® system Implants have been evaluated for MR safety. Non-Clinincal testing of the worst case scenario has demonstrated that the implants of the system are MR Conditional. A patient with a Toby Orthopaedics PANTERA® Humerus Bone Plate implant may be safely scanned under the following conditions, failure to follow these condtions may result in injury to the patient.

Name / Identification of device	Toby Orthopaedics PANTERA® Proximal Humerus Fraction Fixation Plate System
Nominal value (s) of Statid Magnetic Field [T]	1.5 T or 3 T
Maximum Spatial Field Gradient [T/m and gauss/cm]	30 T/m (300 gauss/cm)
RF Excitation	Circularly Polarized (CP)
RF Transmit Coil Type	Whole body transmit coil, Head RF transmit-receive coil
Maximum Whole Body SAR [W/kg.]	2.0 W/kg (Normal Operating Mode)
Limits os Scan Duration	2.0 W/kg. whole body average SAR for 30 minutes of continous RF (a sequence or back-to-back series/scan without breaks), followed by an additional 15-minute scan.
MRI Image Artifact	The presence of this implant may produce an image artifact of 19 min.

If information about a specific parameter is not included, there are no conditions associated with that parameter.

SYSTEM COMPONENTS- IMPLANTABLES

CATALOGUE	DESCRIPTION
TO-PHP-R73	PANTERA® Plate, Right, 73mm
TO-PHP-L73	PANTERA® Plate, Left, 73mm
TO-PHP-R83	PANTERA® Plate, Right, 83mm
TO-PHP-L83	PANTERA® Plate,Left, 83mm
TO-PHP-R120	PANTERA® Plate, Right, 120mm
TO-PHP-L120	PANTERA® Plate, Left, 120mm
TO-PHP-R160	PANTERA® Plate, Right, 160mm
TO-PHP-L160	PANTERA® Plate, Left, 160mm
TO-PHP-R160	PANTERA® Plate, Right, 160mm
TO-PHP-L180	PANTERA® Plate, Left, 180mm
TO-PHP-R180	PANTERA® Plate, Right, 180mm
TO-PHP-L220	PANTERA® Plate, Left, 220mm
TO-PHP-R220	PANTERA® Plate, Right, 220mm

CATALOGUE	DESCRIPTION
TO-35-T10-CLS-20	3.5mm T10 Cortical Locking Screw, 20mm
TO-35-T10-CLS-22	3.5mm T10 Cortical Locking Screw, 22mm
TO-35-T10-CLS-24	3.5mm T10 Cortical Locking Screw, 24mm
TO-35-T10-CLS-26	3.5mm T10 Cortical Locking Screw, 26mm
TO-35-T10-CLS-28	3.5mm T10 Cortical Locking Screw, 28mm
TO-35-T10-CLS-30	3.5mm T10 Cortical Locking Screw, 30mm
TO-35-T10-CLS-35	3.5mm T10 Cortical Locking Screw, 35mm
TO-35-T10-CLS-40	3.5mm T10 Cortical Locking Screw, 40mm
TO-35-T10-CLS-45	3.5mm T10 Cortical Locking Screw, 45mm
TO-35-T10-CS-20	3.5mm T10 Cortical Screw, 20mm
TO-35-T10-CS-22	3.5mm T10 Cortical Screw, 22mm
TO-35-T10-CS-24	3.5mm T10 Cortical Screw, 24mm
TO-35-T10-CS-26	3.5mm T10 Cortical Screw, 26mm

CATALOGUE	DESCRIPTION
TO-35-T10-CS-28	3.5mm T10 Cortical Screw, 28mm
TO-35-T10-CS-30	3.5mm T10 Cortical Screw, 30mm
TO-35-T10-CS-32	3.5mm T10 Cortical Screw, 32mm
TO-35-T10-CS-34	3.5mm T10 Cortical Screw, 34mm
TO-52-P-30	5.2mm Post, 30mm
TO-52-P-35	5.2mm Post, 35mm
TO-52-P-40	5.2mm Post, 40mm
TO-52-P-45	5.2mm Post, 45mm
TO-52-P-50	5.2mm Post, 50mm

CATALOGUE	DESCRIPTION
TO-52-CP-30	5.2mm Cannulated Post, 30mm
TO-52-CP-35	5.2mm Cannulated Post, 35mm
TO-52-CP-40	5.2mm Cannulated Post, 40mm
TO-52-CP-45	5.2mm Cannulated Post, 45mm
TO-52-CP-50	5.2mm Cannulated Post, 50mm
TO-20-CE-20	2.0mm Cross Element, 20mm
TO-20-CE-25	2.0mm Cross Element, 25mm
TO-20-CE-30	2.0mm Cross Element, 30mm
TO-20-CE-35	2.0mm Cross Element, 35mm

INSTRUMENT COMPONENTS:

CATALOGUE	DESCRIPTION
TO-DRI-PSQ	Precision Square Driver
TO-DRI-CQCCR	Cannulated Cruciform Driver with Quick Connect
TO-PH-DG-50	Depth Gauge, 50mm
TO-FIX-CEG	Cross Element Guide
TO-FIX-CEGR	Cross Element Guide Retainer
TO-FIX-CEGS	Cross Element Guide Sleeve
TO-PH-PDG-45	Post Drill Guide, 45mm
TO-PH-PDGS-45	Post Drill Guide Sleeve, 45mm
TO-25-LSDG-45	2.5mm Locking Screw Drill Guide, 45mm
TO-DG-2535	2.5mm/3.5mm Drill Guide
TO-DB25-110	2.5mm Drill Bit x 110mm
TO-CDB40-130	4.0mm Cannulated Drill Bit x 130mm
TO-KW-16-130	1.6mm K-wire x 130mm
TO-DRI-S-CQCH	Cannulated Quick Connect handle, AO
TO-DRI-10P	T-10 driver with Quick Connect
TO-PANTERA- ST	PANTERA Sterilizaton tray and lid
TO-PANTERA-SC	PANTERA Screw Caddy

For more information, questions, or to report a complaint and/or an adverse event please contact Toby Orthopaedics, Inc. by:

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Federal law restricis this device to sale by or on the order of a Physician.

This surgical technique is intended as an educational tool to assist a properly licensed medical professional in the usage of Toby Orthopaedics products, and is not meant to replace professional judgment as to product usage and technique.
Prior to use, medical professionals should consult the product's Instructions for Use and rely on their own training and experience.

MD

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