

A&U MED[®]



LOCKING SCAPULA PLATE SYSTEM

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Since 1988 Acumed has been designing solutions to the demanding situations facing orthopaedic surgeons, hospitals and their patients. Our strategy has been to know the indication, design a solution to fit and deliver quality products and instruments.

The scapula plays an important functional role by linking the upper extremity and the axial skeleton through its articulation of the sternoclavicular joint, the acromioclavicular joint and the glenoid.

Acumed's Locking Scapula Plates are designed to provide excellent fixation for acute fractures, malunions and non-unions of the scapula.

While often treated conservatively, a portion of these displaced fractures can benefit from a low-profile, congruent locking plate. Minimized soft tissue irritation aids with patient rehabilitation and an earlier return to function.

Indications

- Scapular Body Fractures
- Glenoid Neck Fractures
- Intra-articular Glenoid Fractures
- Scapula Spine Fractures
- Acromial Fractures
- Os Acromiale



Back support with locking technology.

Fractures of the scapula are rare. The relative rarity of the more severely displaced injuries makes internal fixation of scapula fractures technically challenging. Anatomic constraints, particularly the scapula's limited osseous anatomy, curved posterior surface and unique dimensions have contributed to the complexity of traditional operative treatment methods.

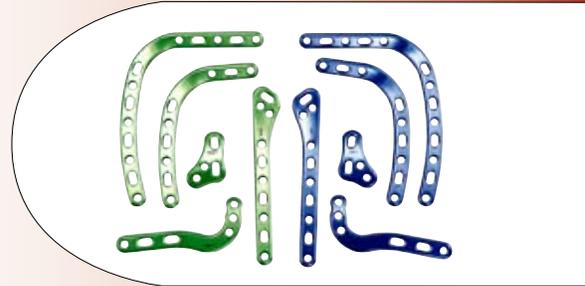
With the introduction of the Locking Scapula Plate System, Acumed has taken locking technology one step further. The development of these innovative implants improves the ability to restore functional normalcy to patients who have sustained displaced scapular fractures.

Designed in conjunction with William B. Geissler M.D., Acumed's indication-specific plates allow surgeons to choose a construct based on their patients' needs. The pre-contoured design eliminates the need to bend the plates to match the patient's anatomy and better restores the functional angle of the shoulder joint. This design not only reduces OR time spent contouring a plate, but also minimizes soft tissue irritation for the patient. The pre-contoured plates also help the surgeon reduce the fracture by acting as templates.

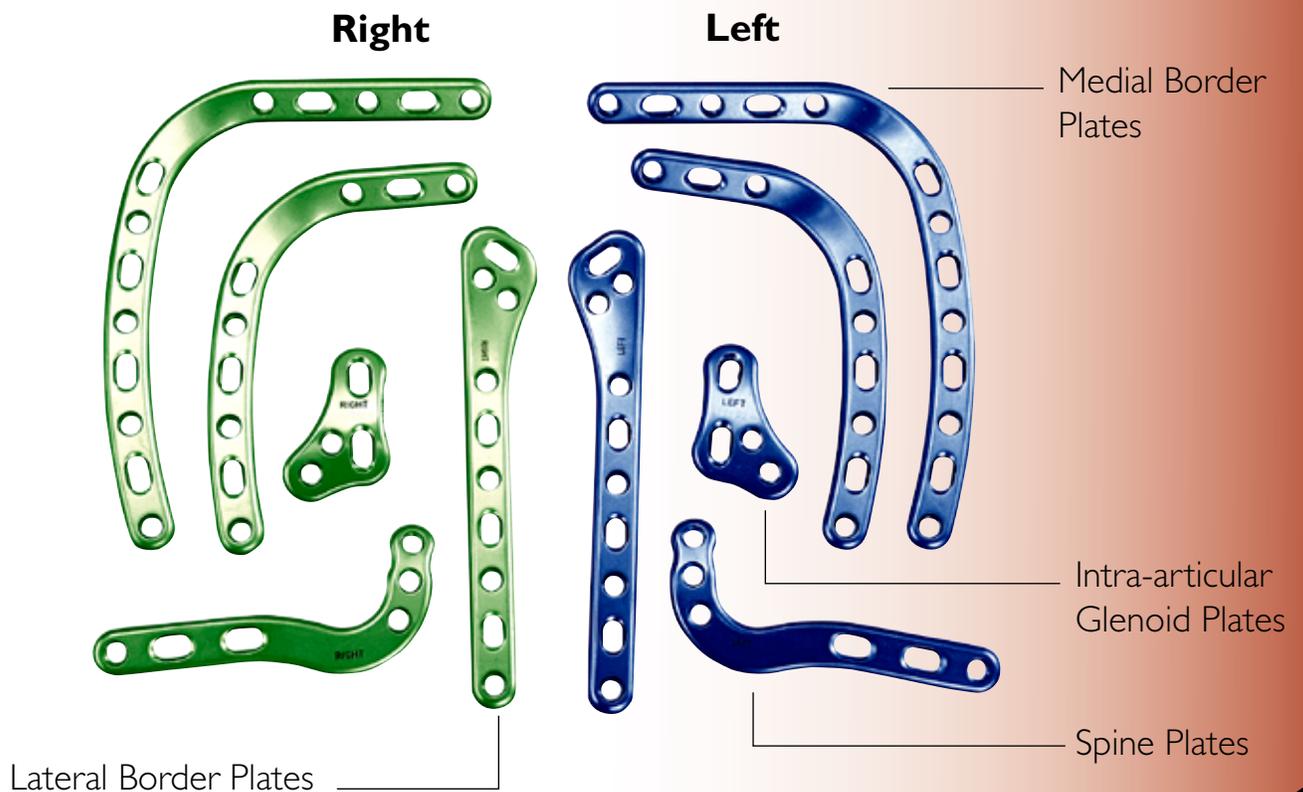
Pre-contoured Plate Geometry matches the anatomy of the patient with little or no bending. The Locking Scapula Plates may also act as a guide or template for restoring the patient's original anatomy when reconstructing a severely displaced fracture, unlike traditional straight plates.



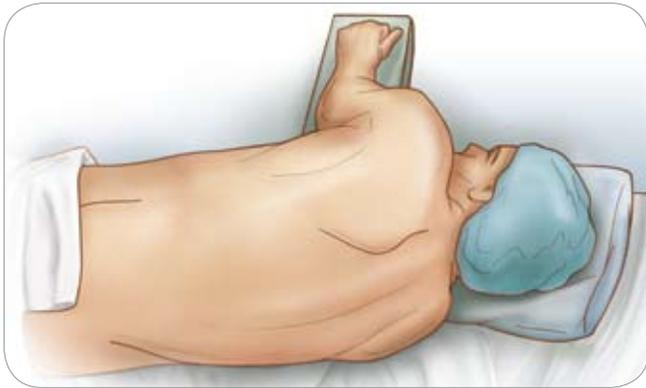
Multiple Plate Options are available to fit a wide variety of scapula curvatures. The Medial and Lateral Border Plate(s) are frequently used for displaced scapula body and glenoid neck fractures. The Glenoid Plate may be selected for displaced intra-articular glenoid fractures. The Spine Plate is utilized for fractures along the spine as well as fractures of the acromion.



System Design Rationale was based on an improved understanding of the osseous regions that provide optimal implant placement and screw fixation for internal fixation of scapula fractures. Regions of superior scapula thickness suitable for internal fixation are located near the glenoid fossa, the medial and lateral border and the scapula spine, including the acromion.

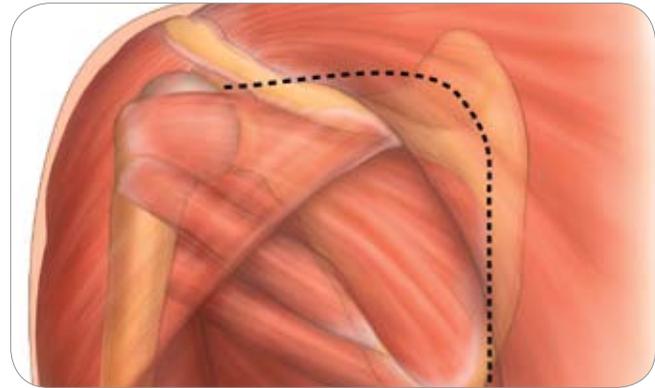


This section offers Acumed's suggested method for implanting the Medial and Lateral Border Scapula Plates. For specific questions not addressed here, please contact your local Acumed representative or Acumed by phone at (888) 627.9957 or on the web at www.acumed.net.



Step 1: Patient Positioning

The patient may be positioned in either the lateral decubitus position or prone with the upper extremity draped free in the operative field. This allows for manipulation of the upper extremity to aid with fracture reduction.



Step 2: Incision

The skin incision is made from the base of the acromion along the inferior margin of the scapula spine to the medial scapula border; then curved inferiorly to the inferior angle of the scapula. The dorsal fascia is then released along the lower edge of the scapula spine and the base of the acromion to improve visualization of the lateral scapula margin and neck of the scapula.



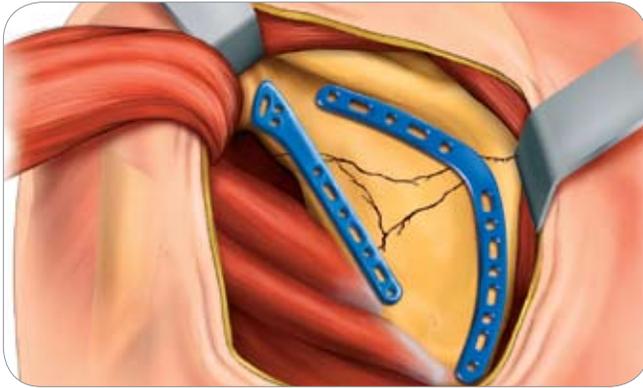
STEP 3: Dissection

Starting medially, elevate the rotator cuff musculature from the posterior aspect of the scapula, dissecting from medial to lateral with a periosteal elevator (MS-46212). The lateral border and neck of the scapula is then seen by reflecting the entire muscle flap laterally on its neurovascular pedicle.



Step 4: Exposure

The inferior face of the scapula spine and body are then easily visualized. By careful subperiosteal dissection, the infrascapular nerve and artery and the circumflex scapula artery are protected. The medial and lateral scapula margins are approximately 10-14 mm thick, but are very dense cortical bone which allows for good purchase with internal fixation.

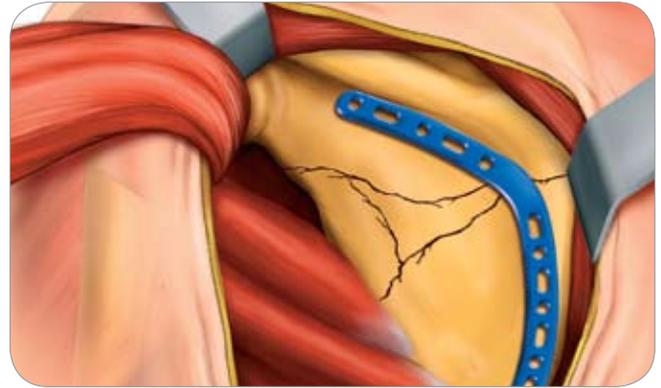


Step 5: Plate Selection

For fractures of the scapula body, both the Medial and Lateral Border Plates are used to stabilize the fracture. These plates may be used in conjunction with one another or independently.

The Medial Border Plate fits along the medial border of the scapula and under the surface of the spine. The plate can be utilized to help reduce the fracture back to the plate in cases where the scapular body fracture is displaced. The appropriate sized left or right plate(s) are selected from the two different lengths provided. Usually the larger 13-hole plates are ideal for most males and the 9-hole plates are best for smaller patients.

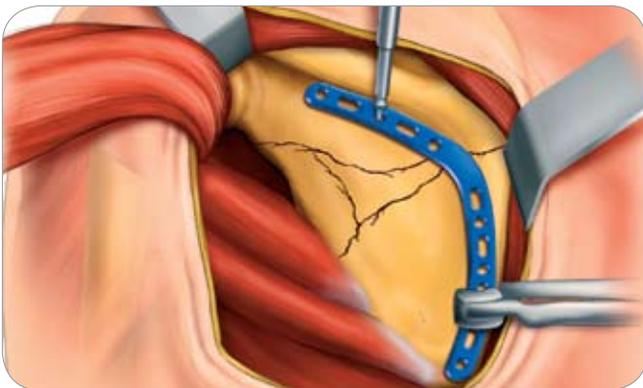
The Lateral Border Plate is useful for fractures involving the lateral border and glenoid neck. The plate is placed along the lateral border and extends proximally over the glenoid neck.



Step 6: Plate Placement: Medial Border

First place the Medial Border Plate. The most lateral portion of the plate extends laterally to help stabilize glenoid neck fractures.

Once the plate's ideal position has been selected, it is provisionally fixed to the scapula with bone clamps (PL-CL04). The fracture fragments may be manipulated directly by manipulation of the upper extremity which has been draped free, or by removing small fracture fragments in the center of the scapula and dissection anterior to the scapula.



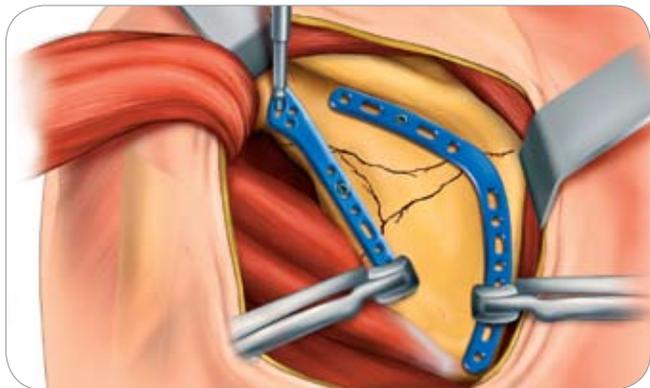
Step 7: Non-Locking Screw Insertion-Medial Border

The non-locking screws may be placed unicortical or bicortical. If bicortical screws are used, it is important to not over-penetrate the far cortex and potentially risk injury. Although 3.5mm screws (CO-3XX0) are recommended, optional 2.7mm (CO-27XX) and 4.0mm (CA-4XX0) screws are available in the system. Using the appropriate drill size (MS-DC28 or MS-DC5020) and the drill guide (PL-2095), drill, measure for depth (MS-9022) and place the screws into the slots with the assembled driver. One screw should be placed along the base of the scapula spine and another along the medial border. Once the two screws are installed, the bone clamps may be removed.



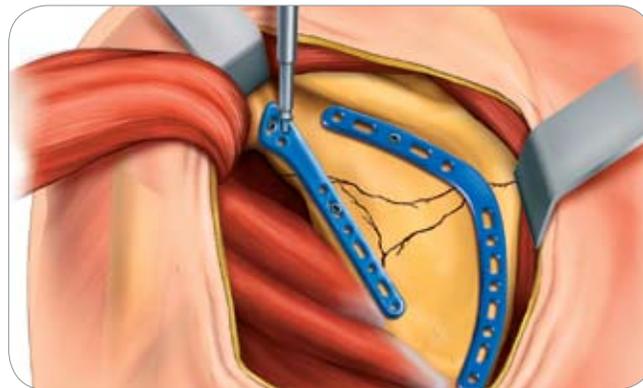
Step 8: Plate Placement: Lateral Border

With the Medial Border Plate provisionally in place, the Lateral Border Plate is now selected. Once the plate's ideal position has been selected, it is provisionally fixed to the scapula with bone clamps (PL-CL04). The fracture fragments may be manipulated directly by manipulation of the upper extremity which has been draped free, or by removing small fracture fragments in the center of the scapula and dissection anterior to the scapula.



Step 9: Non-Locking Screw Insertion:Lateral Border

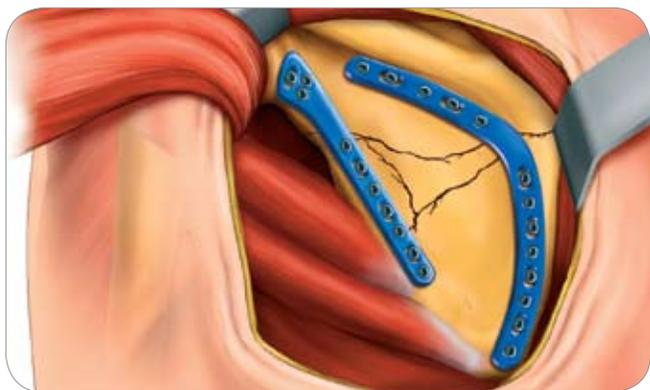
The non-locking screws may be placed unicortical or bicortical. If bicortical screws are used, it is important to not over-penetrate the distal cortex and potentially risk injury. Although 3.5mm screws (CO-3XX0) are recommended, optional 2.7mm (CO-27XX) and 4.0mm (CA-4XX0) screws are available in the system. One screw should be placed in a slot along the lateral border, while another is placed in the slot located over the glenoid. Once the two screws are installed, the bone clamps may be removed.



Step 10: Locking Screw Insertion

Using the locking drill guide (MS-LDG35) and the 2.8mm drill (MS-DC28), place the 3.5mm locking screws (COL-3XX0) into the threaded holes so that there are at least three screws total (if possible) on each side of the fracture.

Note: When placing the locking screws in the glenoid portion of the Lateral Border Plate, tapping (MS-LTT35) is recommended for patients with dense bone. The drill guide (MS-LDG35) must be removed prior to tapping.



Step 11: Final Assessment

An intraoperative radiograph is recommended to check the position of the screws and the final reduction of the fracture. The musculature is then re-approximated directly over the plate. The skin is then closed in layers with a subcuticular stitch for the remaining skin layer.



Post-op Protocol

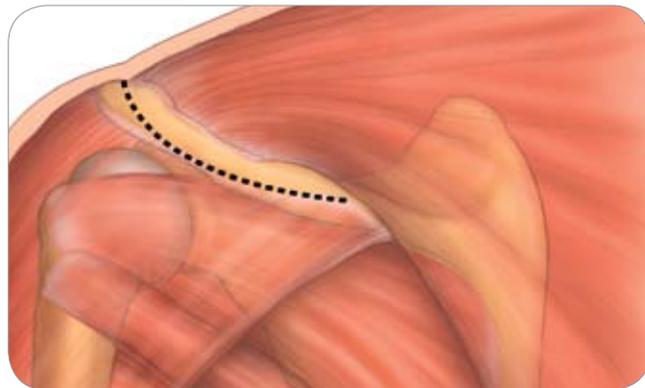
The patient is placed in an arm sling and starts pendulum range of motion exercises. Passive motion exercises are initiated from the first four weeks, active assisted from four to six weeks, and active strengthening is initiated at six weeks post operatively once healing is seen radiographically.

This section offers Acumed's suggested method for implanting the Scapula Spine (Acromion) Plate. For specific questions not addressed here, please contact your local Acumed representative or Acumed at (888) 627.9957 or on the web at www.acumed.net.



Step 1: Patient Positioning

The patient may be placed either in a beach chair position with a bump under the scapula or the lateral decubitus position to expose fractures of the scapula, spine and acromion. The involved upper extremity is prepped and draped free to help manipulate the fracture fragments for reduction.



Step 2: Exposure

A horizontal incision is made directly over the palpable spine and then curved anteriorly over the acromion. Dissection is sharply carried down to the fascia where the skin flaps are elevated. The origin of the trapezium and deltoid may then be subperiosteally dissected to expose the fracture of the base of the spine and/or acromion.



Step 3: Plate Selection

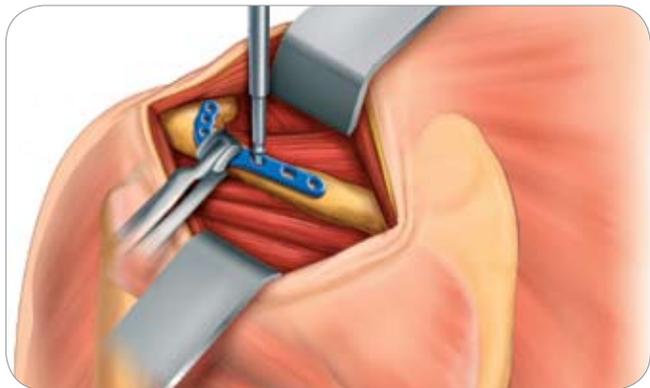
The appropriate left or right Scapula Spine Plate is selected from the system. The plate is placed on the superior surface to stabilize fractures of the spine and/or acromion. In cases of non-union or malunion, the curve of the plate can assist in anatomic reduction of the acromion.



Step 4: Plate Placement

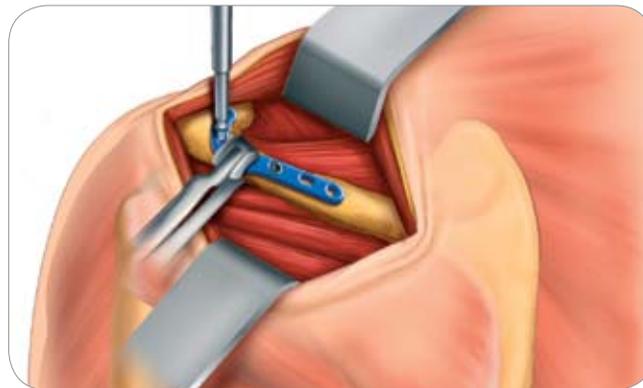
Once the plate's ideal positioning has been selected, it is provisionally stabilized to the spine and/or acromion with bone clamps (PL-CL04).

Note: The plate may be filled with locking or non-locking screws depending on the surgeon's preference.



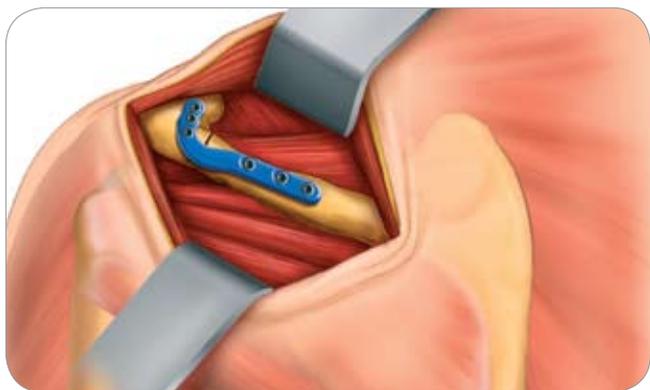
Step 5: Non-Locking Screw Insertion

The non-locking screws may be placed unicortical or bicortical. If bicortical screws are used, it is important to not over-penetrate the distal cortex and potentially risk injury to the rotator cuff. Although 3.5mm screws (CO-3XX0) are recommended, optional 2.7mm (CO-27XX) and 4.0mm (CA-4XX0) screws are available in the system. Using the appropriate drill size (MS-DC28 or MS-DC5020) and the drill guide (PL-2095), drill, measure for depth (MS-9022) and place the screws into the slots with the assembled driver. Once the two screws are installed, the bone clamp(s) may be removed.



Step 6: Locking Screw Insertion

Using the locking drill guide (MS-LDG35) and the 2.8mm drill (MS-DC28), place the 3.5mm locking screws (COL-3XX0) into the threaded holes so that there are at least three screws total (if possible) on each side of the fracture.



Step 7: Final Assessment

An intraoperative radiograph is recommended to check the position of the screws and the final reduction of the fracture. The musculature is then re-approximated directly over the plate. The skin is then closed in layers with a subcuticular stitch for the remaining skin layer.



Post-op Protocol

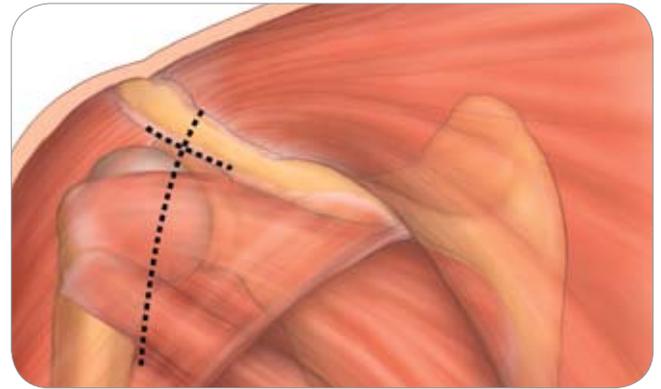
The patient is placed in an arm sling and starts pendulum range of motion exercises. Passive motion exercises are initiated from the first four weeks, active assisted from four to six weeks and active strengthening is initiated at six weeks post operatively once healing is seen radiographically.

This section offers Acumed's suggested method for implanting the Intra-articular Glenoid Plate. For specific questions not addressed here, please contact your local Acumed representative or Acumed at (888) 627.9957 or at www.acumed.net



Step 1: Patient Positioning

The patient is placed in the lateral decubitus position and the involved upper extremity is draped out to help facilitate reduction of the fracture fragments.



Step 2: Incision

A vertical incision is made from the scapula spine over the glenohumeral joint. The deltoid origin is then teed off the scapula spine and split. Be careful not to extend the incision too distal and affect the axillary nerve. Alternatively, a horizontal incision is made over the spine and the deltoid is released.



Step 3: Dissection

Blunt dissection is then continued between the infraspinatus and teres minor muscles. This plane may be difficult to define initially. The infraspinatus muscle is retracted superiorly and the teres minor muscle is retracted inferiorly to expose the posterior regions of the glenoid cavity in the neck of the scapula.



Step 4: Exposure

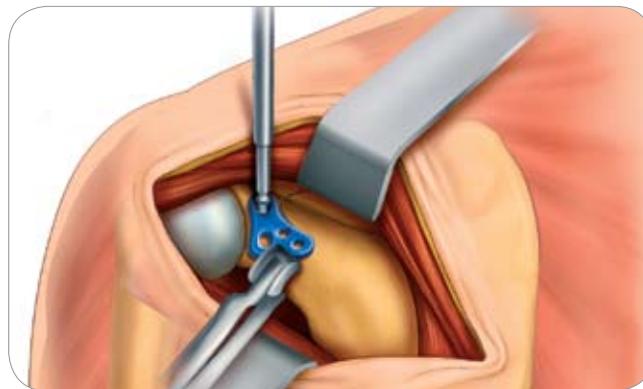
The posterior capsule is then opened in a "T" fashion. An incision is made vertically from the humeral head to the glenoid, and then the incision is carried proximally and distally along the glenoid neck to expose the intra-articular fracture.



Step 5: Plate Selection and Placement

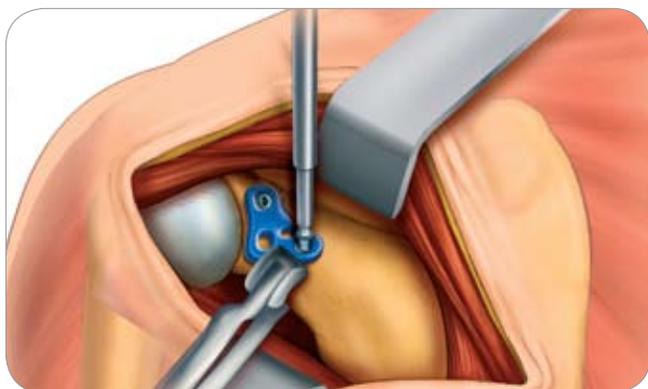
The appropriate left or right Glenoid Plate is selected from the system. The plate is placed on the superior surface to stabilize fractures of the posterior margin of the glenoid and any intra-articular fragments.

Once the plate's ideal positioning has been selected, it is provisionally stabilized to the glenoid with bone clamps (PL-CL04). The plate may be filled with locking or non-locking screws depending on the surgeon's preference.



Step 6: Non-Locking Screw Insertion

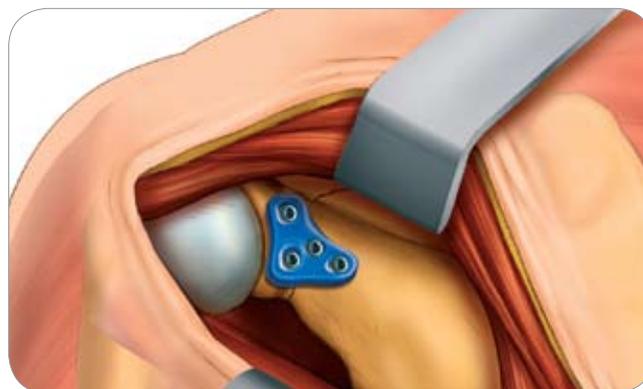
The non-locking screws may be placed unicortical or bicortical. Although 3.5mm screws (CO-3XX0) are recommended, optional 2.7mm (CO-27XX) and 4.0mm (CA-4XX0) screws are available in the system. Using the appropriate drill size (MS-DC28 or MS-DC5020) and the drill guide (PL-2095), drill, measure for depth (MS-9022) and place the screws into the slots with the assembled driver. Once the two screws are installed, the bone clamp(s) may be removed.



Step 7: Locking Screw Insertion

Using the locking drill guide (MS-LDG35) and the 2.8mm drill (MS-DC28), place the 3.5mm locking screws (COL-3XX0) into the threaded holes.

Note: Tapping (MS-LTT35) is recommended for patients with dense bone. The drill guide (MS-LDG35) must be removed prior to tapping.



Step 8: Final Assessment

An intraoperative radiograph is recommended to check the position of the screws and the final reduction of the fracture. The musculature is then re-approximated directly over the plate. The skin is then closed in layers with a subcuticular stitch for the remaining skin layer.

Post-op Protocol

The patient is placed in an arm sling and starts pendulum range of motion exercises. Passive motion exercises are initiated from the first four weeks, active assisted from four to six weeks, and active strengthening is initiated at six weeks post operatively, once healing is seen radiographically.

Locking Scapula Plates

4-hole Glenoid Plate, Left	PL-SG04L
4-hole Glenoid Plate, Right	PL-SG04R
6-hole Scapula Spine Plate, Left	PL-SA06L
6-hole Scapula Spine Plate, Right	PL-SA06R
10-hole Scapula Lateral Border Plate, Left	PL-SLB10L
10-hole Scapula Lateral Border Plate, Right	PL-SLB10R
9-hole Scapula Medial Border Plate, Left	PL-SMB09L
9-hole Scapula Medial Border Plate, Right	PL-SMB09R
13-hole Scapula Medial Border Plate, Left	PL-SMB13L
13-hole Scapula Medial Border Plate, Right	PL-SMB13R

Instruments

.045" Guide Wire SS 6"	WS-1106ST
.059" Guide Wire SS 6"	WS-1505ST
Plate Bender	PL-2040
Large Plate Bender	PL-2045
2.0/2.8 Narrow Drill Guide	PL-2118
2.8/3.5 Narrow Drill Guide	PL-2196
Offset Drill Guide	PL-2095
2.7mm Long Tap Tip	MS-LTT27
3.5mm Long Tap Tip	MS-LTT35
2.0mm Quick Release Drill	MS-DC5020
2.8mm Quick Release Drill	MS-DC28
3.5mm Quick Release Drill	MS-DC35
Depth Gauge	MS-9022
Large Cannulated Quick Release Driver Handle	MS-3200
2.5mm Quick Release Driver Tip	HPC-0025
Screw Sleeve	MS-SS35
2.7mm Locking Drill Guide	MS-LDG27
3.5mm Locking Drill Guide	MS-LDG35
Plate Tack	PL-PTACK
Quick Release Driver Handle	MS-1210
Freer Elevator	MS-57614
Reduction Forceps w. Serrated Jaw	PL-CL04
Small Pointed Reduction Forceps	OW-1200
Hohman Retractor	MS-46827
Periosteal Elevator	MS-46212

Scapula Plate Insert Assembly

Universal Tray Scapula Plate Insert Base	80-0136
Universal Tray Scapula Plate Insert Lid	80-0137
Universal Tray Scapula Plate Tray Insert Assembly	80-0135

3.5mm Locking Screws

3.5mm x 8mm Locking Cortical Screw	COL-3080
3.5mm x 10mm Locking Cortical Screw	COL-3100
3.5mm x 12mm Locking Cortical Screw	COL-3120
3.5mm x 14mm Locking Cortical Screw	COL-3140
3.5mm x 16mm Locking Cortical Screw	COL-3160
3.5mm x 18mm Locking Cortical Screw	COL-3180
3.5mm x 20mm Locking Cortical Screw	COL-3200
3.5mm x 22mm Locking Cortical Screw	COL-3220
3.5mm x 24mm Locking Cortical Screw	COL-3240
3.5mm x 26mm Locking Cortical Screw	COL-3260
3.5mm x 28mm Locking Cortical Screw	COL-3280
3.5mm x 30mm Locking Cortical Screw	COL-3300
3.5mm x 32mm Locking Cortical Screw	COL-3320
3.5mm x 34mm Locking Cortical Screw	COL-3340
3.5mm x 36mm Locking Cortical Screw	COL-3360
3.5mm x 38mm Locking Cortical Screw	COL-3380
3.5mm x 40mm Locking Cortical Screw	COL-3400
3.5mm x 45mm Locking Cortical Screw	COL-3450
3.5mm x 50mm Locking Cortical Screw	COL-3500
3.5mm x 55mm Locking Cortical Screw	COL-3550
3.5mm x 60mm Locking Cortical Screw	COL-3600
3.5mm x 65mm Locking Cortical Screw	COL-3650

2.7mm Locking Screws

2.7mm x 8mm Locking Cortical Screw	COL-2080
2.7mm x 10mm Locking Cortical Screw	COL-2100
2.7mm x 12mm Locking Cortical Screw	COL-2120
2.7mm x 14mm Locking Cortical Screw	COL-2140
2.7mm x 16mm Locking Cortical Screw	COL-2160
2.7mm x 18mm Locking Cortical Screw	COL-2180
2.7mm x 20mm Locking Cortical Screw	COL-2200
2.7mm x 22mm Locking Cortical Screw	COL-2220

2.7mm Non-Locking Screws

2.7mm x 8mm Cortical Screw	CO-2708
2.7mm x 10mm Cortical Screw	CO-2710
2.7mm x 12mm Cortical Screw	CO-2712
2.7mm x 14mm Cortical Screw	CO-2714
2.7mm x 16mm Cortical Screw	CO-2716
2.7mm x 18mm Cortical Screw	CO-2718
2.7mm x 20mm Cortical Screw	CO-2720
2.7mm x 22mm Cortical Screw	CO-2722
2.7mm x 24mm Cortical Screw	CO-2724
2.7mm x 26mm Cortical Screw	CO-2726
2.7mm x 28mm Cortical Screw	CO-2728
2.7mm x 30mm Cortical Screw	CO-2730
2.7mm x 34mm Cortical Screw	CO-2734
2.7mm x 40mm Cortical Screw	CO-2740

3.5mm Non-Locking Screws

3.5mm x 8mm Cortical Screw	CO-3080
3.5mm x 10mm Cortical Screw	CO-3100
3.5mm x 12mm Cortical Screw	CO-3120
3.5mm x 14mm Cortical Screw	CO-3140
3.5mm x 16mm Cortical Screw	CO-3160
3.5mm x 18mm Cortical Screw	CO-3180
3.5mm x 20mm Cortical Screw	CO-3200
3.5mm x 22mm Cortical Screw	CO-3220
3.5mm x 24mm Cortical Screw	CO-3240
3.5mm x 26mm Cortical Screw	CO-3260
3.5mm x 28mm Cortical Screw	CO-3280
3.5mm x 30mm Cortical Screw	CO-3300
3.5mm x 32mm Cortical Screw	CO-3320
3.5mm x 34mm Cortical Screw	CO-3340
3.5mm x 36mm Cortical Screw	CO-3360
3.5mm x 38mm Cortical Screw	CO-3380
3.5mm x 40mm Cortical Screw	CO-3400
3.5mm x 45mm Cortical Screw	CO-3450
3.5mm x 50mm Cortical Screw	CO-3500
3.5mm x 55mm Cortical Screw	CO-3550
3.5mm x 60mm Cortical Screw	CO-3600
3.5mm x 65mm Cortical Screw	CO-3650

4.0mm Cancellous Screws

4.0mm x 12mm Cancellous Screw	CA-4120
4.0mm x 14mm Cancellous Screw	CA-4140
4.0mm x 16mm Cancellous Screw	CA-4160
4.0mm x 18mm Cancellous Screw	CA-4180
4.0mm x 20mm Cancellous Screw	CA-4200
4.0mm x 22mm Cancellous Screw	CA-4220
4.0mm x 24mm Cancellous Screw	CA-4240
4.0mm x 28mm Cancellous Screw	CA-4280
4.0mm x 30mm Cancellous Screw	CA-4300
4.0mm x 35mm Cancellous Screw	CA-4350
4.0mm x 40mm Cancellous Screw	CA-4400
4.0mm x 45mm Cancellous Screw	CA-4450
4.0mm x 50mm Cancellous Screw	CA-4500
4.0mm x 55mm Cancellous Screw	CA-4550
4.0mm x 60mm Cancellous Screw	CA-4600



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