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RibFix Blu™

Thoracic Fixation System

THORACIC

Surgical Technique

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Surgical Technique - Anterior, Lateral and Posterior Fractures

Surgical Technique - MIS and Sub-Scapular

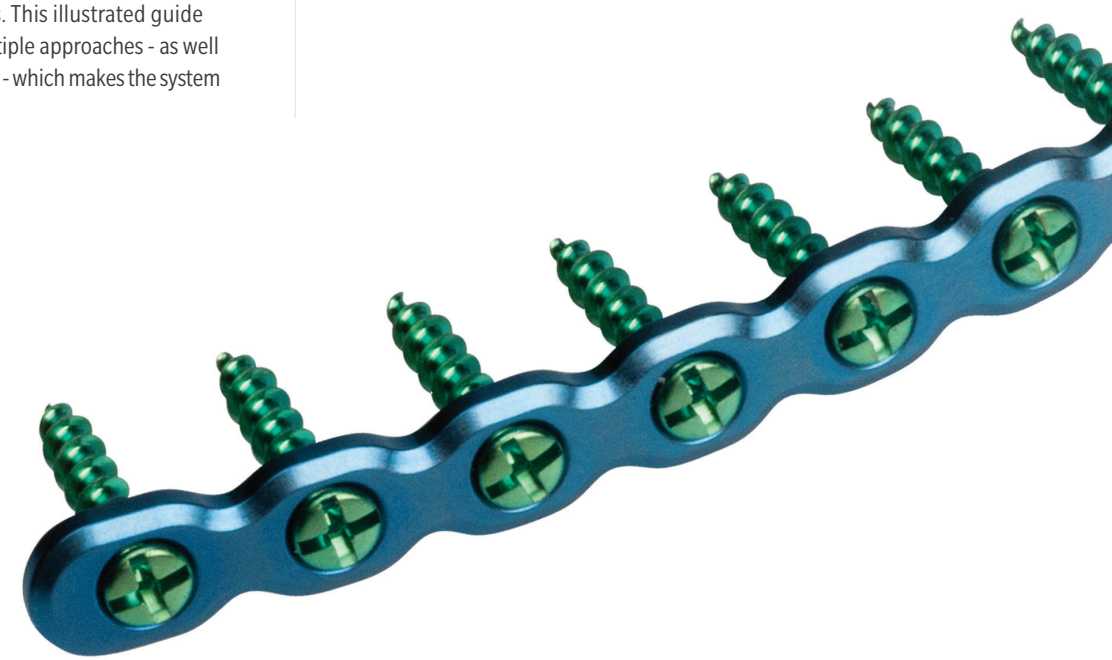
This material represents the surgical technique used by Benjamin Taylor, M.D.

The New Era of Rib Fixation Begins Now

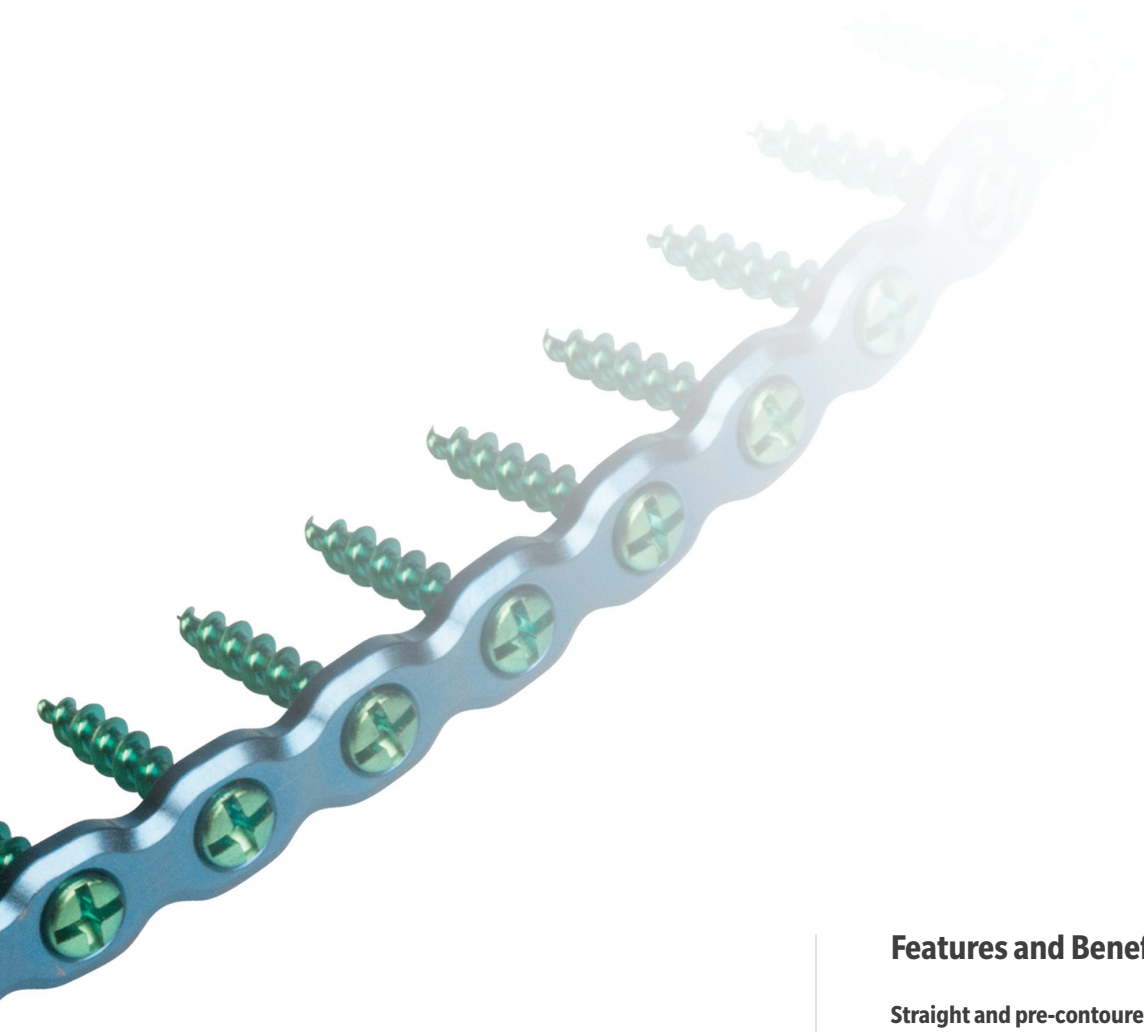
Your work matters and so do your patients. We're continually engineering new tools and techniques to help improve your efficiency in the operating room. The RibFix Blu Thoracic Fixation System is designed with this in mind. The system's innovative plate-to-bone approximation tools allow for the precise placement of plates along the rib, and unique plate-contouring instrumentation eliminates the need to remove the implant from the surgical field - saving you precious time when minutes matter.

Designed by Trauma Surgeons for Trauma Surgeons

There are several compelling studies that support the surgical treatment of rib fractures. These studies show some of the potential benefits of surgical stabilization vs. conventional treatment alone include reduced pain and reduced duration of disability[1]. The comprehensive, customizable RibFix Blu Thoracic Fixation System includes a selection of straight and pre-contoured plates and self-drilling as well as self-tapping screws. This illustrated guide provides a step-by-step technique for multiple approaches - as well as plate and screw selection and application - which makes the system easy to master in any surgical setting.



[1]Khandelwal, G., et al. A prospective single center study to assess the impact of surgical stabilization in patients with rib fracture. International Journal of Surgery, 9(6):475-81.



Features and Benefits

Straight and pre-contoured plates

- Anatomically designed plates for ease-of-use in the OR

Self-drilling screws

- Eliminate need for pre-drilling
- Improve OR efficiency

Innovative plate-to-bone approximation tools

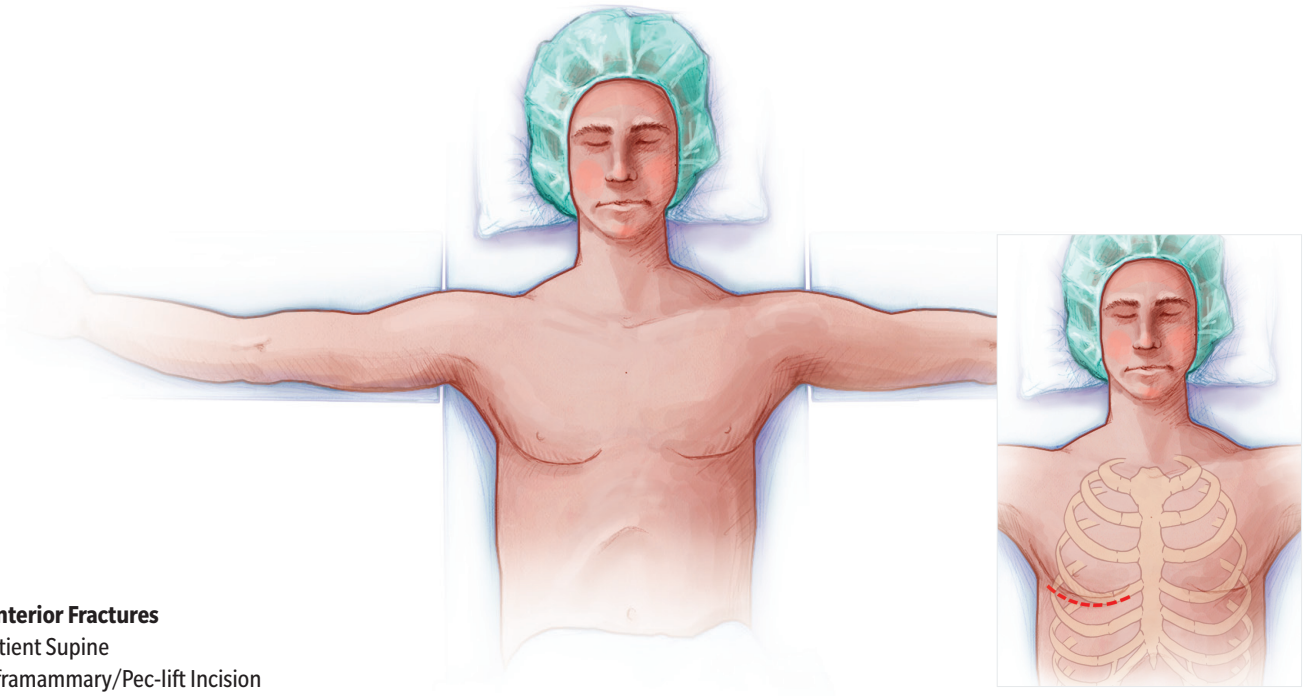
- Reduce plates flush to bone
- Allow for precise placement of plates along the rib

Unique plate contouring tools

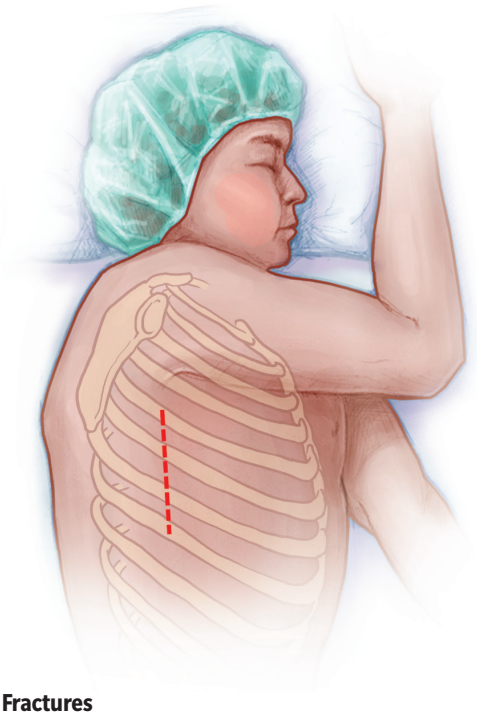
- Make adjustments to the plate in all planes, including torsional bends
- Eliminate the need to remove implant from surgical field for final adjustments

MIS sub-scapular instrumentation

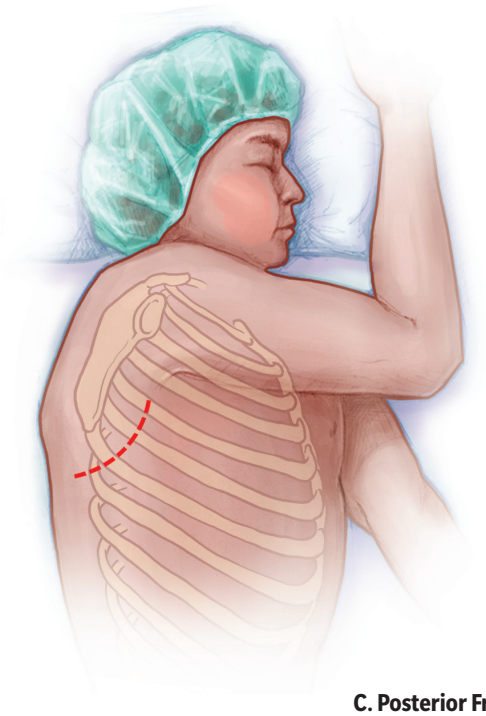
- Standard options for percutaneous, small incision, sub or trans-scapular access to hard-to-reach fractures



A. Anterior Fractures
- Patient Supine
- Inframammary/Pec-lift Incision

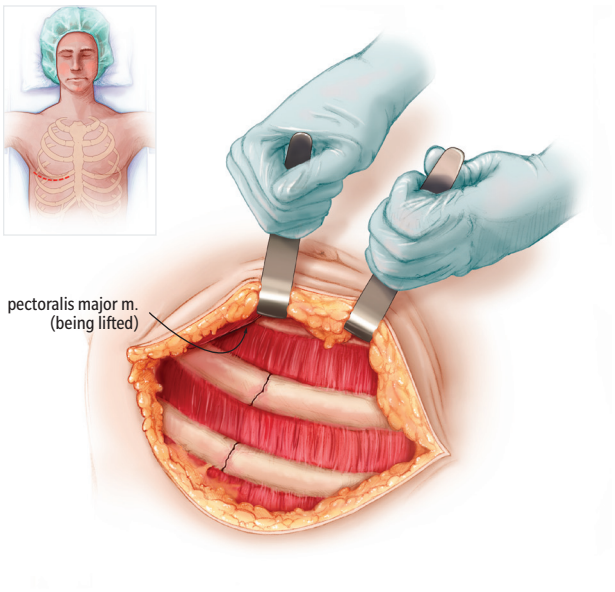


B. Lateral Fractures
- Patient Lateral
- Axillary or Thoracotomy Incision

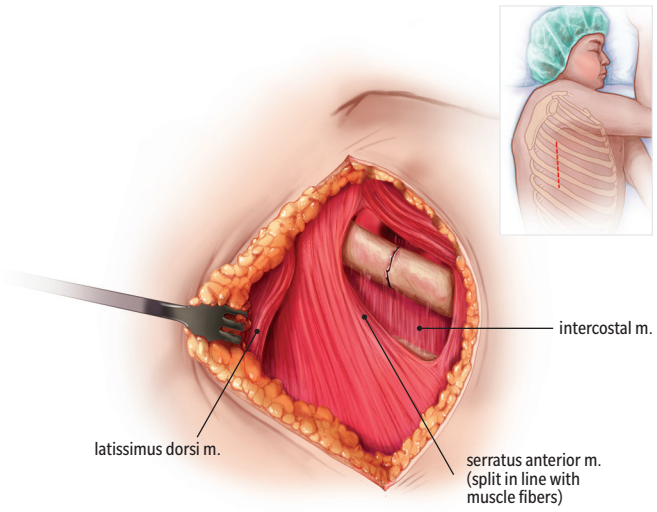


C. Posterior Fractures
- Patient Lateral
- Thoracotomy Incision

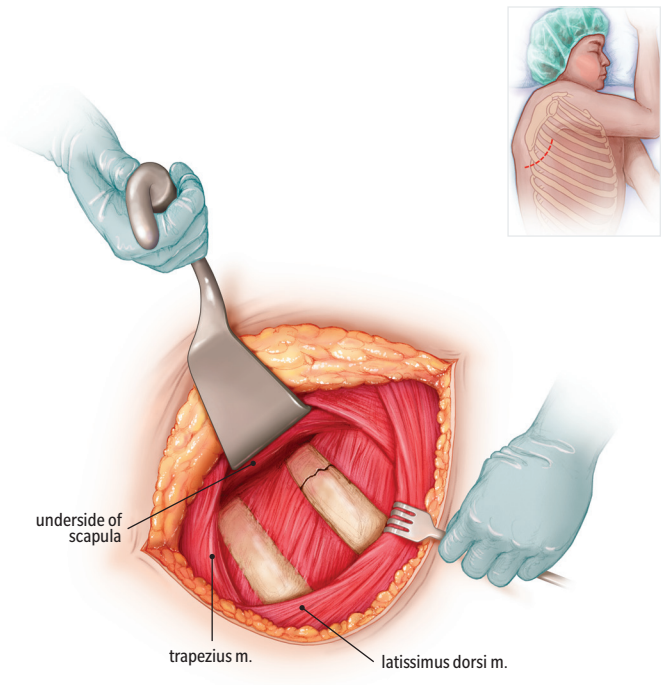
Step 1. Expose Fractured Ribs



1a. Anterior Fractures

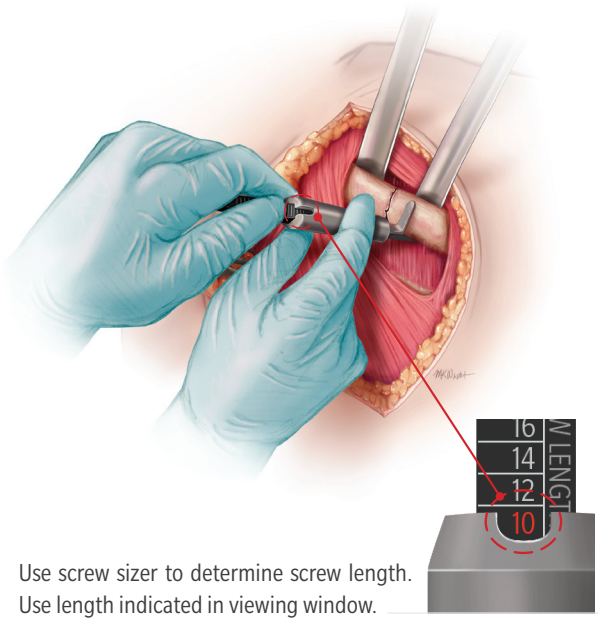


1b. Lateral Fractures



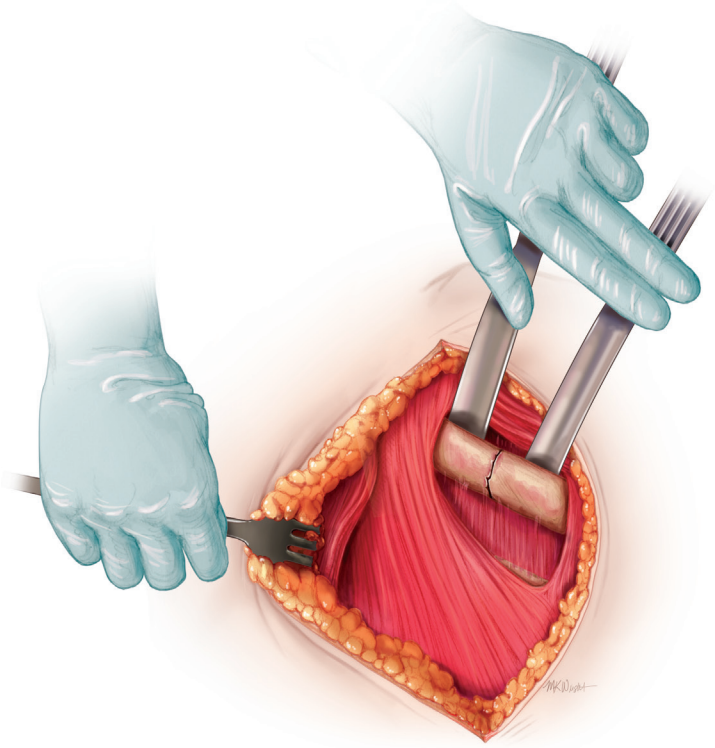
1c. Posterior Fractures

Step 2. Determine Screw Length

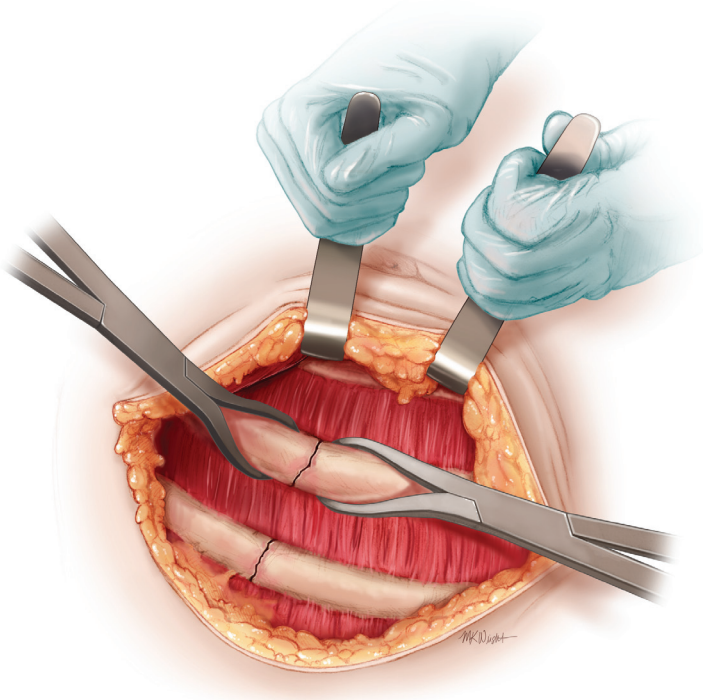


Use screw sizer to determine screw length.
Use length indicated in viewing window.

Step 3. Reduce Fracture



3a. Reduce Fracture - Utilizing Rib Elevators



3b. Reduce Fracture - Utilizing Bone Reduction Forceps

Step 4. Select Plate

Select plate (cut to length and deburr sharp edges if needed).

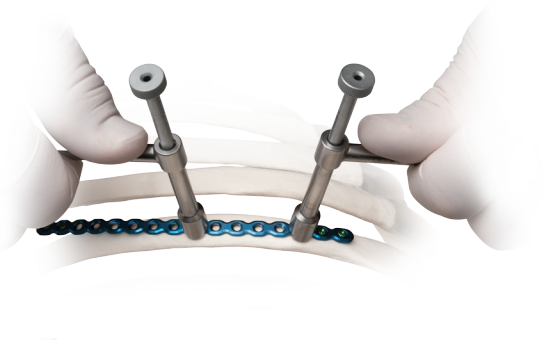
Select plate template to determine plate length and contour of rib. Cut template to allow a minimum of three screws on each side of the fracture (optional).

Step 5. Contour Plate to Match Template/Rib Anatomy

5a. Use large plate bender for **in-plane** plate contouring.

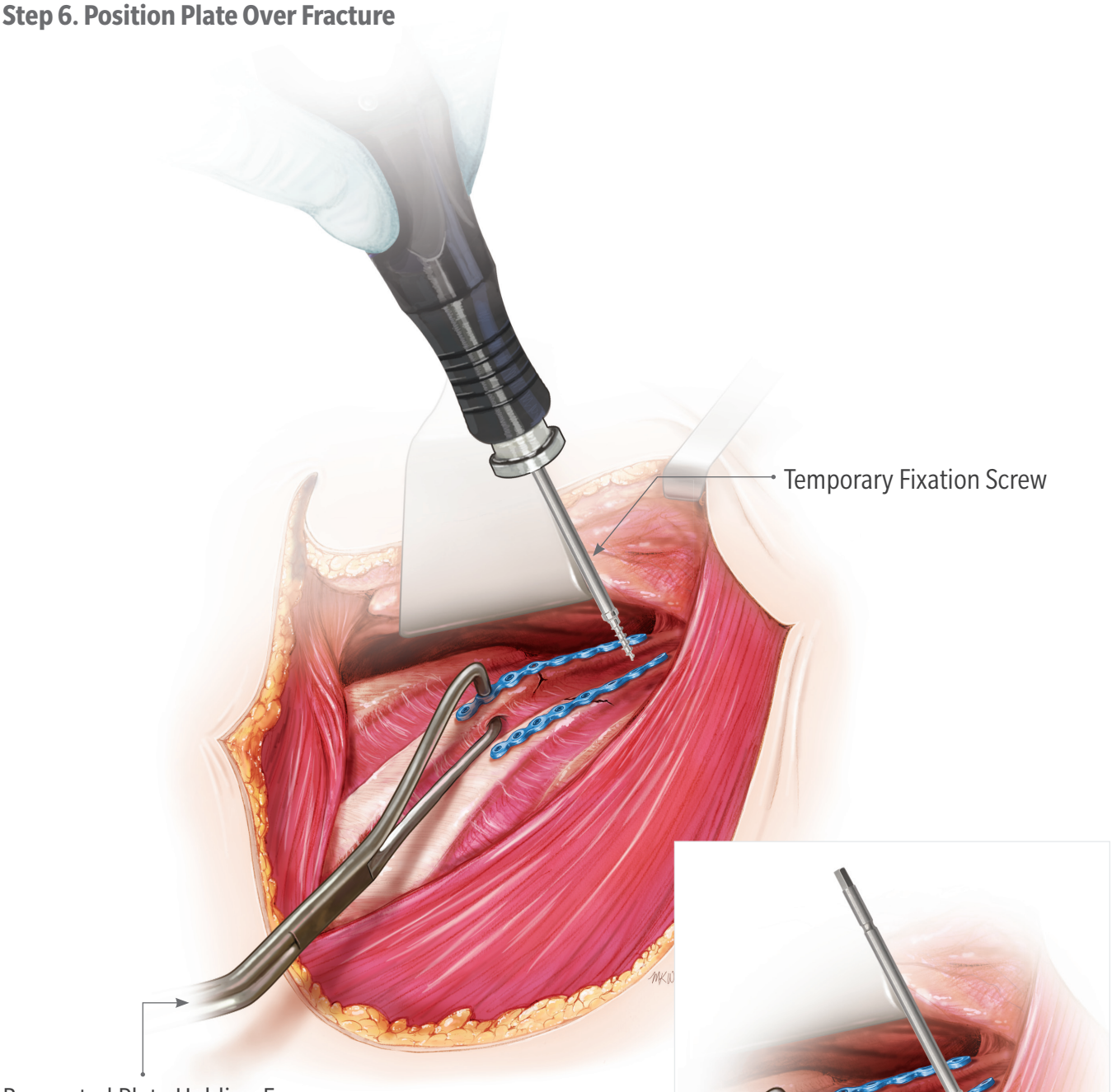
5b. Use large plate bender for **out-of-plane** plate contouring.

5c. Use **threaded plate benders** for minor and torsional bends.



5d. Use **in-situ benders** for adjustments to the plate either in-situ or outside the surgical field.

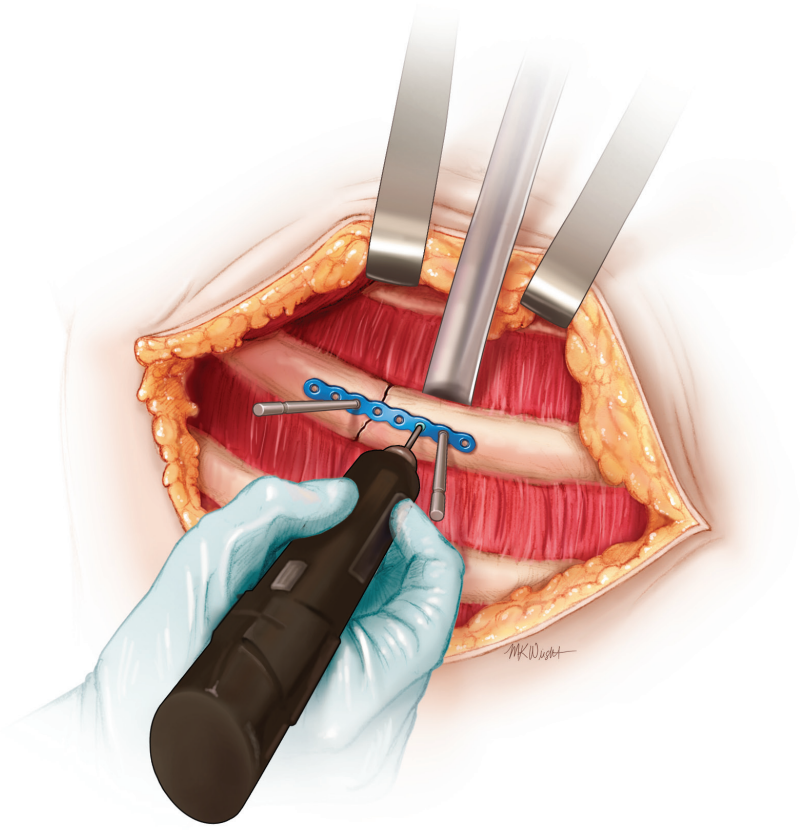
Step 6. Position Plate Over Fracture



6a. Reduce plate to bone utilizing bayoneted plate-holding forceps or temporary fixation screws.

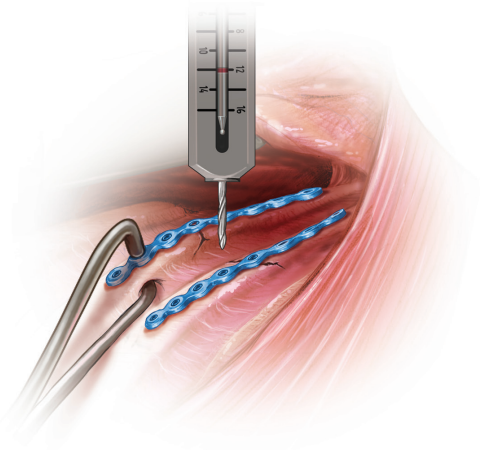
6b. Temporary fixation screw in place without driver.

Step 7. Select Screw and Fixate



7a. Self-Drilling Screw

Select and insert appropriate length, making sure to fully lock the screw into place. Place a minimum of three screws on either side of the fracture.



7b. Self-Tapping Screw Option

Select adjustable drill bit and set working length to the appropriate depth (use drill guide with long drill bit). Drill pilot hole (7b), select and insert appropriate length screw, making sure to fully lock the screw into the plate. Place a minimum of three screws on either side of the fracture.

MIS and Sub-Scapular Surgical Techniques

1. Access fracture
- Create thoracotomy incision to access fractures

2. Use screw sizer to determine screw length

3. Reduce fracture segments

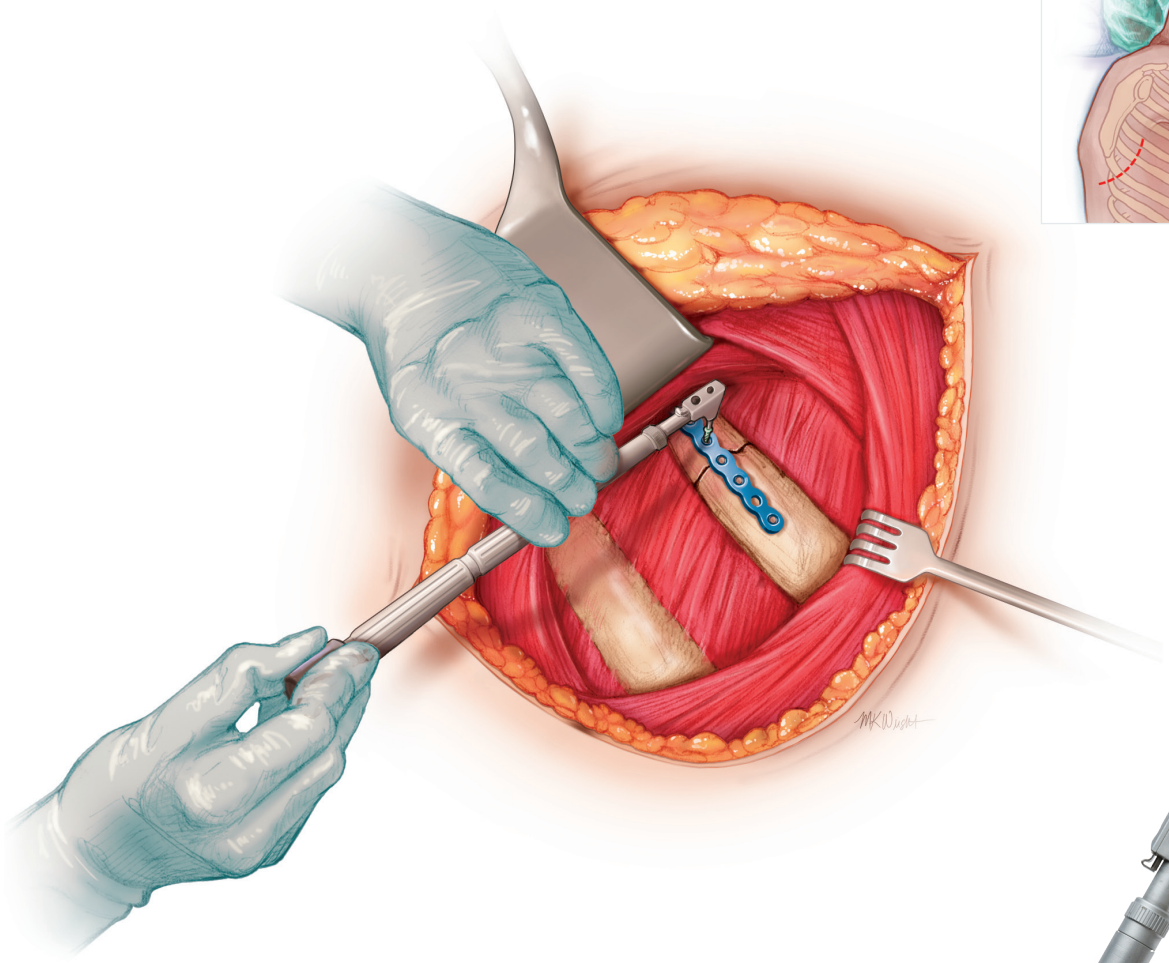
4. Select plate
- Cut to length and deburr sharp edges if needed

5. Select plate template to determine plate length and contour of rib (optional)
- Cut template to allow a minimum of three screws on each side of the fracture

6. Contour plate to match template/rib anatomy

7. Position plate over fracture

8. Select self-drilling screws
- Select, measure and insert appropriate length screws utilizing the contra-angle screwdriver
- Ensure screws are fully locked into the plate
- Place a minimum of three screws on either side of the fracture



Contra-angle Screwdriver

1. Access fracture
- Create thoracotomy incision to access fractures

2. Trans-scapular access
1. Make stab incision over scapula above fracture site
2. Insert scapula drill guide through stab incision and achieve bony contact with scapula
3. Insert scapula drill through scapula drill guide and drill until achieving access through scapula
4. Remove scapula drill and drill guide
5. Attach cannula to trocar handle
6. Insert sharp-tipped trocar into cannula
7. Insert trocar through hole created in scapula, using sharp tip to pass through any soft tissue
8. Remove sharp-tipped trocar
9. Attach soft-tissue retractor to trocar handle (light source optional)

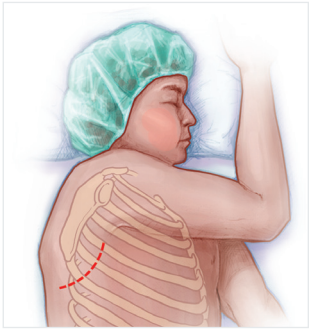
3. Reduce fracture segments

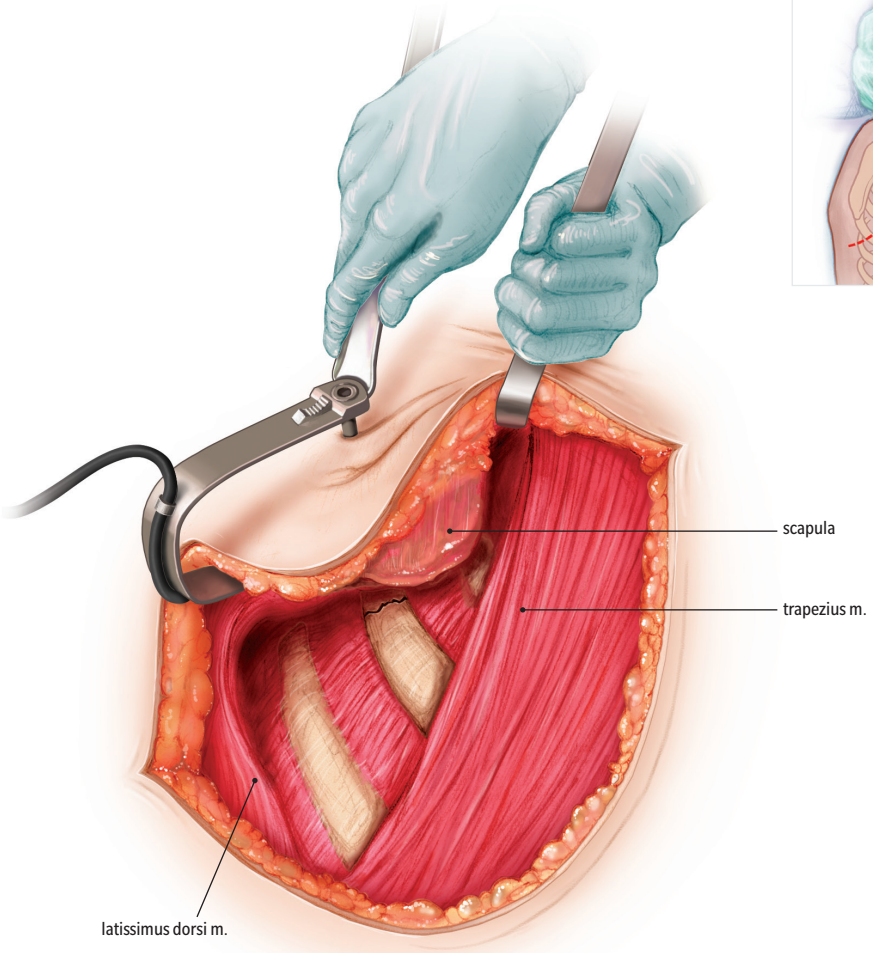
4. Select plate
- Cut to length and deburr sharp edges if needed

5. Select plate template to determine plate length and contour of rib (optional)
- Cut template to allow a minimum of three screws on each side of the fracture

6. Contour plate to match template/rib anatomy

7. Position plate over fracture



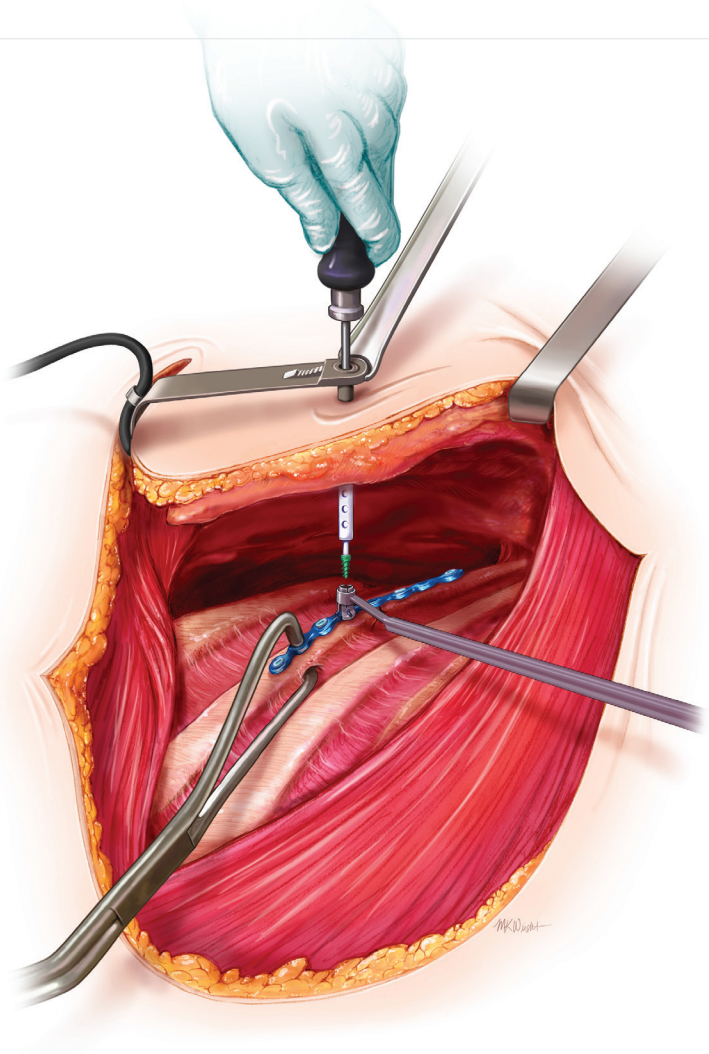


8a. Select screw type - self-drilling screws

1. Insert trocar cannula into the aperture of the plate holding wand
2. Select the appropriate length self-drilling screw
3. Using manual screwdriver or Power Driver™ and long screw driver blade, pass blade through trocar cannula and insert appropriate length screw
4. Remove trocar cannula from plate holding wand
5. Detach 90-degree plate holding wand and reattach over the screw hole that will receive the next screw (optional)
6. Repeat steps 1-5 for remaining screw holes
7. Ensure screws are fully locked and that a minimum of three screws are on either side of the fracture

8b. Select screw type - self-tapping screws

1. Insert trocar cannula into the aperture of the plate holding wand
2. Place either threaded or non-threaded drill guide through cannula and engage screw hole
3. Select long adjustable drill bit and adjust to appropriate working length
4. Insert drill through drill guide and drill, achieving bi-cortical access
5. Select the appropriate length self-tapping screw
6. Using manual screwdriver or Power Driver and long screwdriver blade, pass blade through trocar cannula and insert appropriate length screw
7. Detach plate holding wand and reattach over screw hole that will receive next screw
8. Repeat steps 1-7 for remaining screw holes
9. Ensure screws are fully locked and that a minimum of three screws are on either side of the fracture



For more information on RibFix Blu and other thoracic fixation solutions, please contact us at:

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