

Case Studies

RibLoc® RIB FRACTURE PLATING SYSTEM



Flail Chest | Acute Pain | Chest Wall Deformity | Fracture Non-union



Tractor Roll Over Victim

Product Used: RibLoc® Rib Fracture Plating System

Surgeon's Name: John Mayberry, MD

Facility Name/ Location: Oregon Health and Science University, Portland, OR

Case Date: September 18, 2006

Indication Used for Repair: Multiple displaced rib fractures with retained hemothorax

Patient History -

A 62 year old male injured in a rollover tractor incident on a farm on September 12th 2006 sustained multiple left-sided rib fractures. During his recovery he developed a significant retained hemothorax and his rib fractures became severely displaced.

Treatment -

The patient underwent a mini-thoracotomy with thoroscopic-assisted evacuation of the retained hemothorax and repair of posterior rib fractures of rib 6-8 and anterior rib fractures on the 5th and 6th ribs with appropriately sized RibLoc Rib Fracture Plates on September 18th, 2006. The 6th rib had an additional area anteriorly which was comminuted and was repaired with an absorbable polylactide plate cerclaged with absorbable suture. A thoracic epidural catheter was used to manage post-operative pain.

Follow Up -

The patient required 48 hours post-operative mechanical ventilation, but made an uneventful recovery thereafter.



Pre-Op



Post-Op

Pedestrian Hit By Car

Product Used: RibLoc® Rib Fracture Plating System

Surgeon's Name: Stephen Smith, MD

Facility Name/ Location: The Carilion Clinic, Roanoke, VA

Indication Used for Repair: Multiple right sided rib fractures, pulmonary contusion with pneumothorax

Patient History -

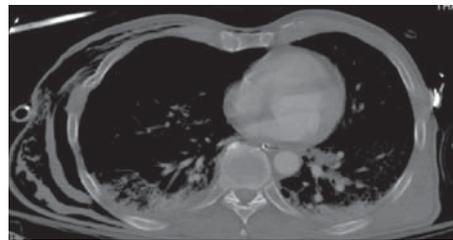
A 70 year old supermarket security guard with history of COPD and cigarette smoking was hit by a car in an attempt to stop a carjacking.

Treatment -

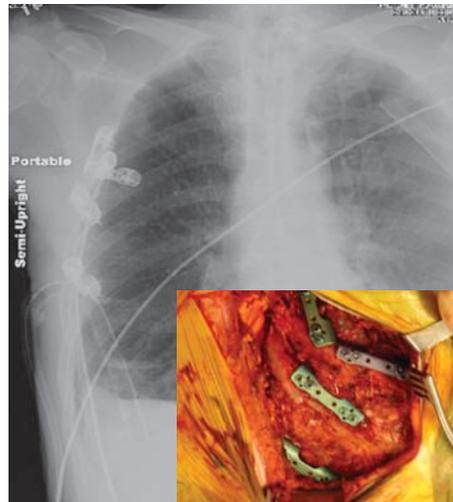
The patient initially underwent a right tube thoracostomy with a thoracic epidural for pain management. On day 4, the patient was unable to wean off the ventilator despite good ABG's. After 7 days the patient was still unable to wean off the ventilator, TV, and unable to wean pressure support. The patient's flail chest was surgically stabilized using the RibLoc Rib Fracture Plating System.

Follow Up -

Patient was able to be weaned off the ventilator 72 hours after rib stabilization.



Pre-Op



Post-Op

Man Falls From Bridge

Product Used: RibLoc® Rib Fracture Plating System

Surgeon's Name: Mark Tasset, MD

Facility Name/ Location: Banner Good Samaritan, Phoenix, AZ

Case Date: June 13, 2011

Indication Used for Repair: Multiple displaced rib fractures

Patient History -

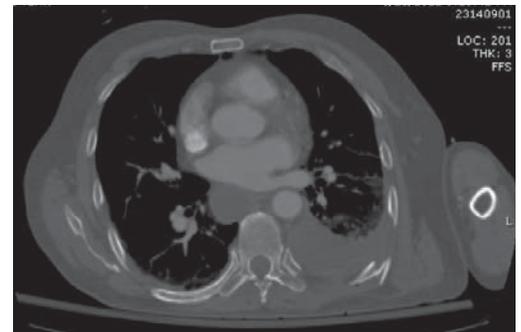
On June 13th, 2011, a 72 year old male with no reported medical history except for bilateral lens implants fell 8-10 feet off a bridge and landed on his left side fracturing ribs 2-12. He was also noted to have SDH and a lumbar spine fracture. He was transferred to BGSMC for further work up and evaluation then put on bed rest in the ICU. The patient was in pain with impending respiratory failure.

Treatment -

Two days later, on June 15th the patient underwent a left thoracotomy with open reduction and internal fixation of ribs 5-10 with the RibLoc Rib Fracture Plating System. The product was easy to apply and some plates were bent to assume adequate geometry of the ribs. The patient was discharged from the hospital on June 23rd.

Follow Up -

The patient was seen as an outpatient approximately 2 months following the surgery. He had no complaints of chest discomfort, his lungs were clear to auscultations bilaterally, and he did not require supplemental oxygen.



Pre-Op: 6.13.11

The aortic arch shows no evidence of a dissection or aneurysm. The descending thoracic aorta shows no evidence of an aneurysm or dissection. Left clavicle fracture is present. Fracture of the left 2nd rib through the left 12th. Ribs 5-10 are displaced. Associated surrounding chest wall swelling, associated moderate left pleural effusion, left lower lung field compressive atelectasis.



Post-Op: 7.6.11

There is a small amount of left pleural fluid inferiorly within intrapulmonary fissure. There is evidence of left rib hardware on ribs 5-10, with reduction of fractures present.

Pedestrian Hit By Taxi

Product Used: RibLoc® Rib Fracture Plating System

Surgeon's Name: Mark Tasset, MD

Facility Name/ Location: Banner Good Samaritan, Phoenix, AZ

Case Date: June 29, 2011

Indication Used for Repair: Stabilization of multiple rib fractures

Patient History -

A 45 year old male was run over by a taxi several times on June 26th, 2011. He sustained a left clavicle fracture, fractured ribs 3-11 on the right side, had subarachnoid hemorrhage, multiple facial fractures, right radial and scapular fractures. He was sedated and incubated in the ICU.

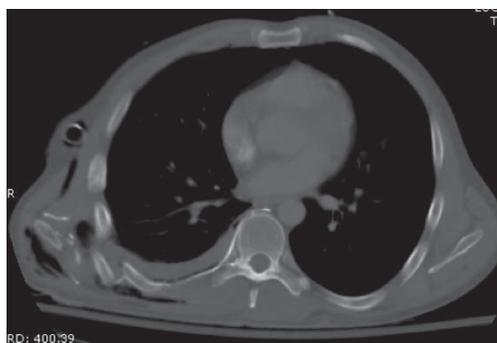
Treatment -

Three days later, on June 29th, the patient underwent a right posterolateral thoracotomy. He received open reduction and internal fixation of the right 3-8 ribs using the RibLoc Rib Fracture Plating System.

The patient was extubated 2 days later on July 1st and was discharged from the hospital on July 22nd.

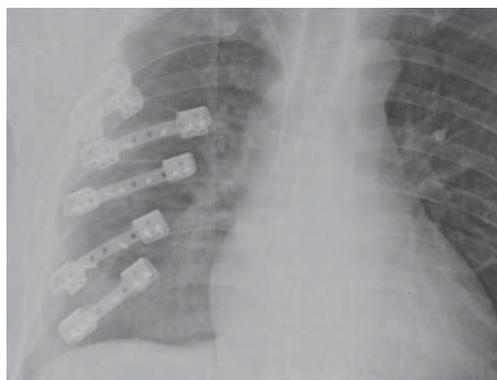
Follow Up -

A chest x-ray that was obtained during readmission for an unrelated diagnosis, showed good lung expansion/collapse of the chest wall. The patient's lungs were clear for auscultation bilaterally and the patient's pain was minimal.



Pre-Op: 6.26.11

Right side ribs 3-11 are displaced. Some of the ribs are fractured both anteriorly and posteriorly, placing the patient at risk for flail chest.



Post-Op: 8.11.11

The lungs show bilateral rib fractures with internal stabilization of the fractured posterolateral right 4-9 ribs. There is a minimal pleural fluid or thickening near the right costophrenic angle. There are no new infiltrates or atelectasis with no pneumothorax. Lung volumes were near equal.

Rider Bucked Off Bull

Product Used: RibLoc® Rib Fracture Plating System

Surgeon's Name: Mark Tasset, MD

Facility Name/ Location: Banner Good Samaritan, Phoenix, AZ

Case Date: July 13, 2011

Indication Used for Repair: Multiple comminuted rib fractures and a hemothorax

Patient History -

A 77 year old male was admitted on July 13th, 2011 after being bucked off a bull. The patient landed on his left shoulder and elbow. He was transferred to Banner Gateway Medical Center where an x-ray showed several rib fractures on his left side. The patient was subsequently transferred to Banner Good Samaritan Medical Center for further evaluation and treatment. The CT scan did not show any aortic injury. The patient had fluid in the left chest and consolidation of the left lower lobe. The scan showed fractures in ribs 3-7, with ribs 3-5 being complicated displaced fractures.

Treatment -

The patient was admitted to the OR for stabilization the same day. The patient underwent a left thoracotomy with open internal fixation of ribs 3-6 and evacuation of hemothorax. The patient was discharged from the hospital on July 22nd.

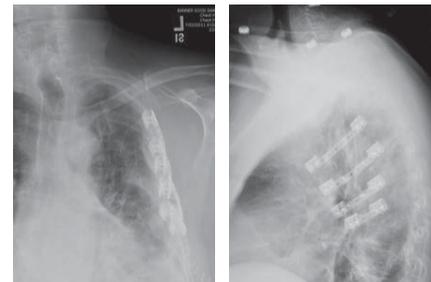
Follow Up -

The patient was seen as outpatient 4 weeks post-operatively. At the time of visit, the patient no longer required narcotic analgesics and the chest x-ray showed excellent lung expansion.



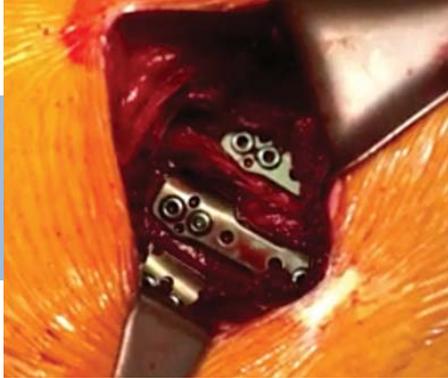
Pre-Op: 7.13.11

There is a bilateral dependent atelectasis, left greater than right. A trace left pneumothorax is present and there is small left pleural fluid collection. The ribs are osteoperatic. There are comminuted fractures of the left lateral 3rd and 4th ribs, as well as, fractures of the left posterolateral ribs 5-8. There are fractures of the left posterior medial ribs 4-8. There is a non-displaced fracture of the left scapular body, and a mild spondylosis in the thoracic spine. There is atherosclerosis of the coronary arteries and thoracic aorta and supraaortic great vessels and a nomediastinal, hilar or axillary adenopathy.



Post-Op: 7.22.11

When compared to the admission x-ray, the rib fractures appear reduced with the plates. The patient has slightly decreased lung volume when compared the right lung.



LESS INVASIVE

The plates in the system range from 46mm to 76mm in length. The 46mm plate requires only four screws for fixation. A 7-10cm incision allows multiple levels of fractures to be reached. 61mm & 76mm plates requiring slightly larger incisions, can address oblique or complicated fracture patterns. The system provides for preservation of the neurovascular bundle.

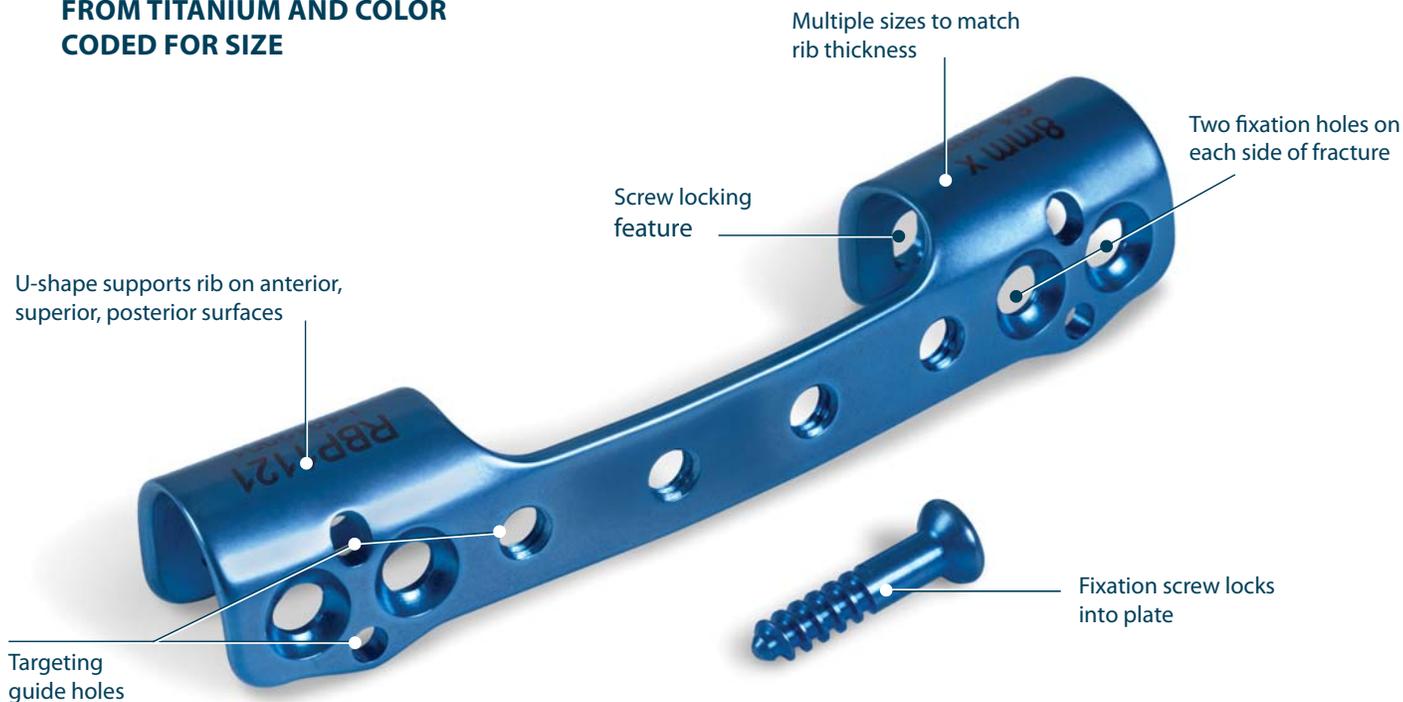
STRAIGHTFORWARD TECHNIQUE

The plates are available in four sizes to match the anterior/posterior thickness of the rib. Color coding of the plates, screws and instrumentation ensures that the correct length of screw is used for the rib. The innovative targeting guides aid the surgeon installing the plates in a straightforward, precise and repeatable manner. All of these features were carefully developed to save OR time.

STABLE FIXATION

The plate's innovative U-shape and locking screws allows fixation to be independent of bone quality and/or screw purchase in the bone. The plate supports the fracture on three surfaces and avoids the neurovascular bundle on the inferior margin. This shorter U-shape construct has been shown to be biomechanically more stable compared to a longer anterior plate¹.

PLATES AND SCREWS ARE MADE FROM TITANIUM AND COLOR CODED FOR SIZE



(1) J. Rafe Sales, MD1, Thomas J. Ellis, MD1, Joel Gillard, BS, Qi Liu, MS, Joyce Chen, MD, Bruce Ham, MD, FACS, & John C. Mayberry, MD, FACS. Biomechanical Testing of a Novel, Minimally Invasive Rib Fracture Plating System. Journal of Trauma 2008: 64(5) 1270-1274.



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