



EAST Master Class Series Live Webinar #4: Rib Fracture Plating

Thomas W. White, MD, FACS, CNSC

Fredric M. Pieracci, MD, MPH, FACS

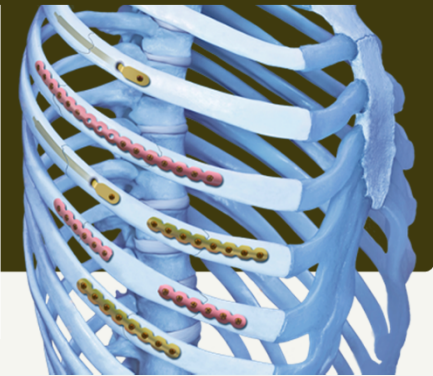


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DePuy Synthes

COMPANIES OF *Johnson & Johnson*





Speakers

Tom White
Intermountain Medical Center
Murray, UT



Fred Pieracci
Denver Health Medical Center
Denver, CO



Objectives

- ▶ Dr. White:
 - ▶ Patient selection
 - ▶ Technique

- ▶ Dr. Pieracci:
 - ▶ Fractures at the margins: difficult anatomy, fracture patterns
 - ▶ Post op management

Rib Fracture Stabilization:

Patient Selection and Technique

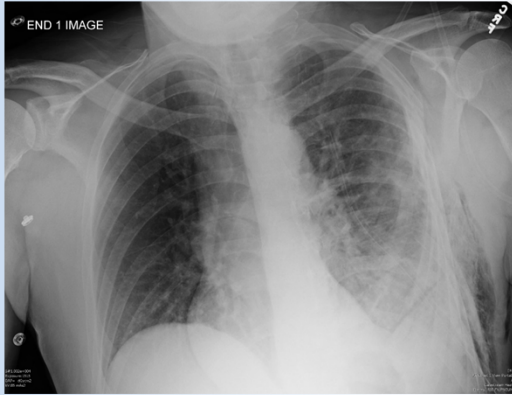
TOM WHITE, MD, FACS



Disclosures

- Paid speaker/consultant:
 - DePuy Synthes
 - KLS Martin
 - Applied Medical Technologies





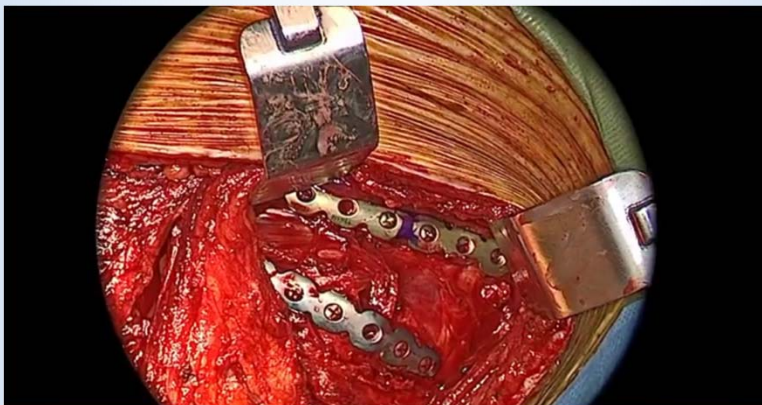
Indications

- Flail chest
- 3 or more displaced fractures
- Medical management “failure”
- Organ impalement
- “Drive-By” thoracotomy

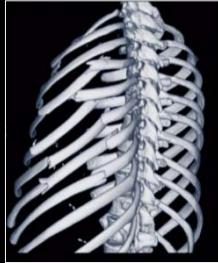
Contraindications

- Severe TBI
- Unstable spine

Video



EAST Rib Fixation Webinar: Special Situations and Post Operative Management



Fredric M. Pieracci, MD, MPH, FACS
Trauma Medical Director
Denver Health Medical Center
Associate Professor of Surgery
University of Colorado SOM



Disclosures

- Paid speaker, consultant, and research funding for DePuy Synthes
- Paid speaker and consultant for Zimmer Biomet

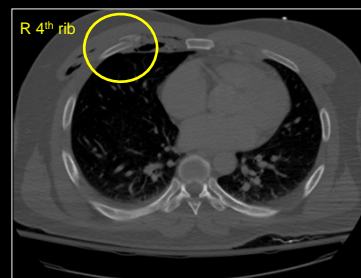
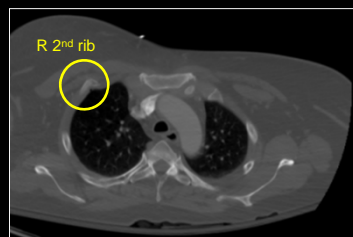
Outline

- Rib Repair at the Margins
 - Anterior/posterior fractures
- Post Operative Management
 - Pleural space
 - Loco-regional analgesia



Anterior Fractures Challenges

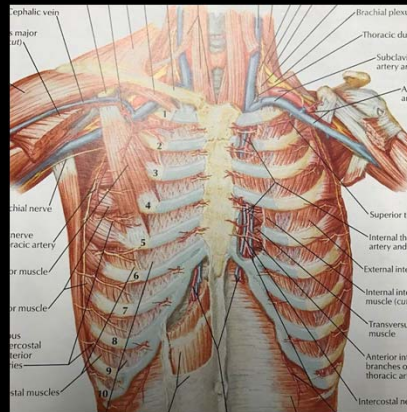
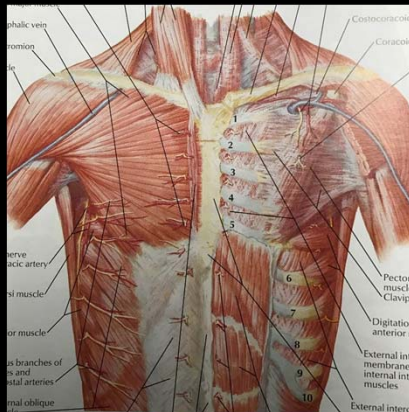
- Exposure
- Proximity to costal cartilage
- Indications for repair



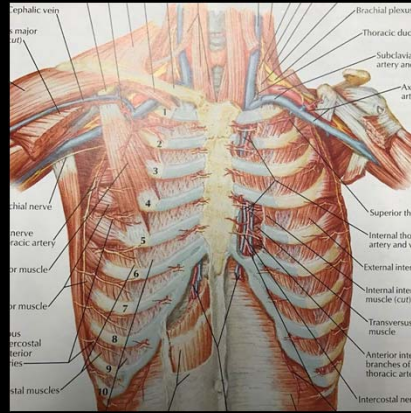
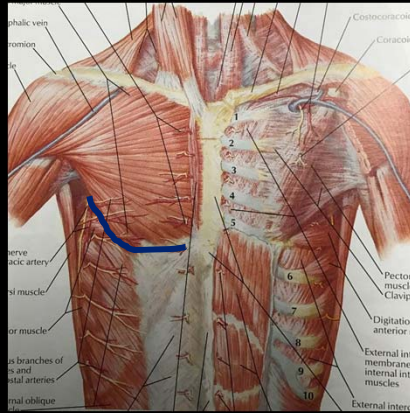
Positioning/Incision(s) Anterior Fractures



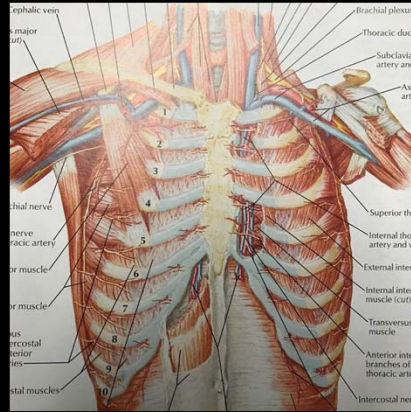
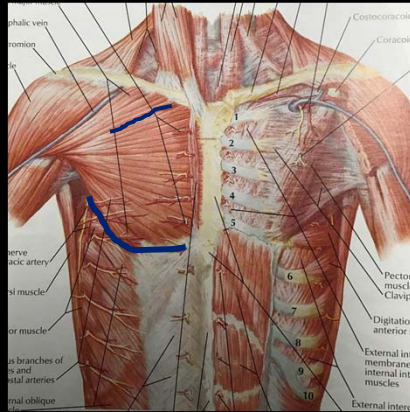
Positioning/Incision(s) Anterior Fractures



Positioning/Incision(s) Anterior Fractures



Positioning/Incision(s) Anterior Fractures





Working underneath the pectoralis flap



Incisions post op day #2

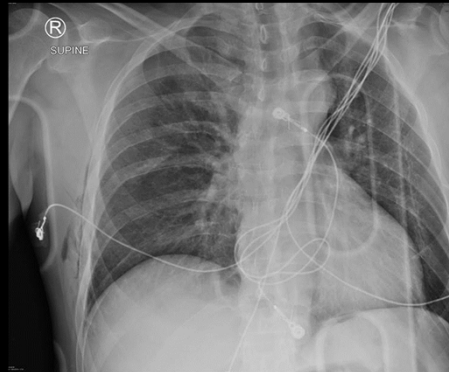
Rib Fixation to Sternum



Posterior Fractures

Rationale for repair

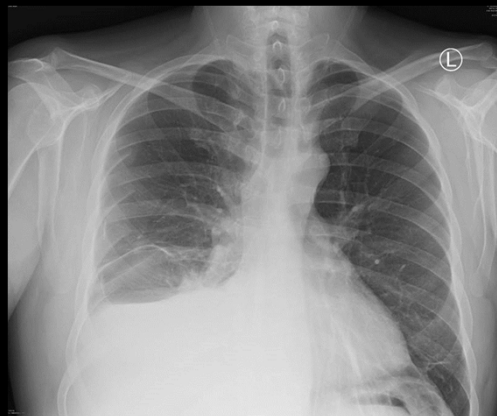
- Interval displacement
- Bony bridging



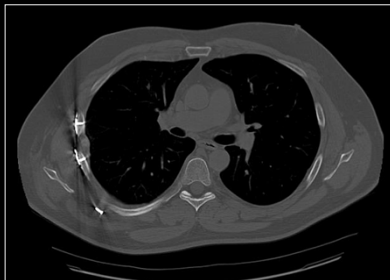
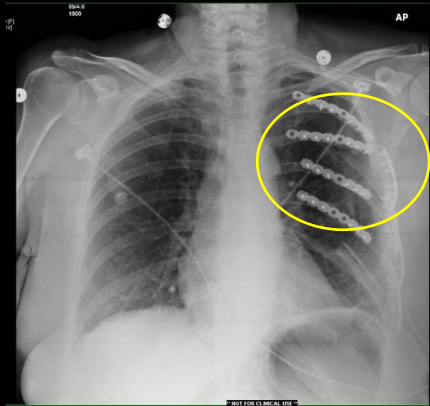
Posterior Fractures

Rationale for repair

- Interval displacement
- Bony bridging



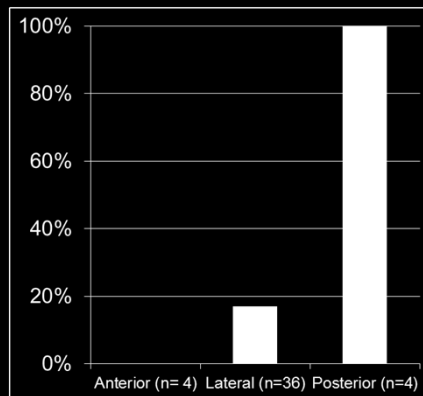
Hardware Failure



ORIGINAL ARTICLE

Mode of Failure of Rib Fixation With Absorbable Plates: A Clinical and Numerical Modeling Study

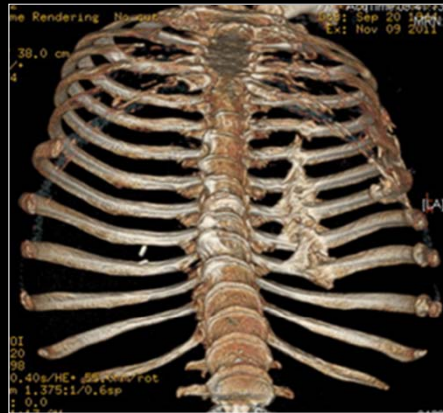
Silvana F. Marasco, FRACS, Ilija D. Šutalo, PhD, and Anh V. Bui, PhD



Posterior Fractures

Rationale for repair

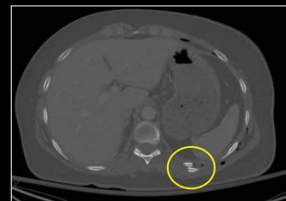
- Interval displacement
- Bony bridging



Posterior Fractures

Challenges

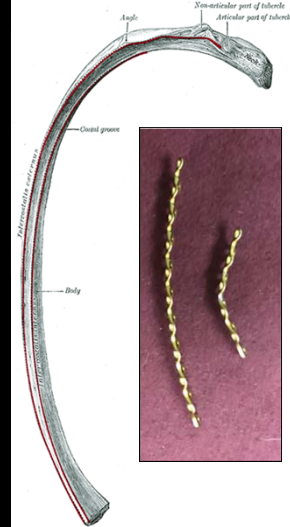
- Proximity to transverse process
- Rib angle
- Subscapular location



Posterior Fractures

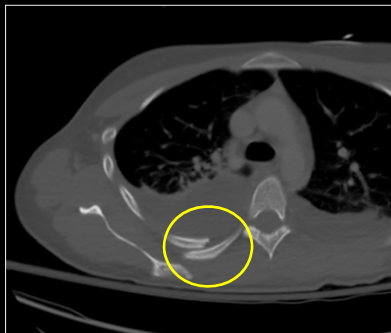
Challenges

- Proximity to transverse process
- Rib angle
- Subscapular location



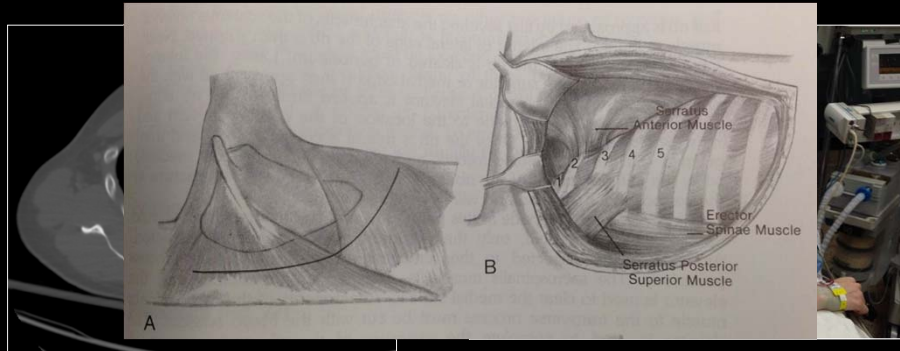
Positioning/Incision(s)

Posterior Fractures



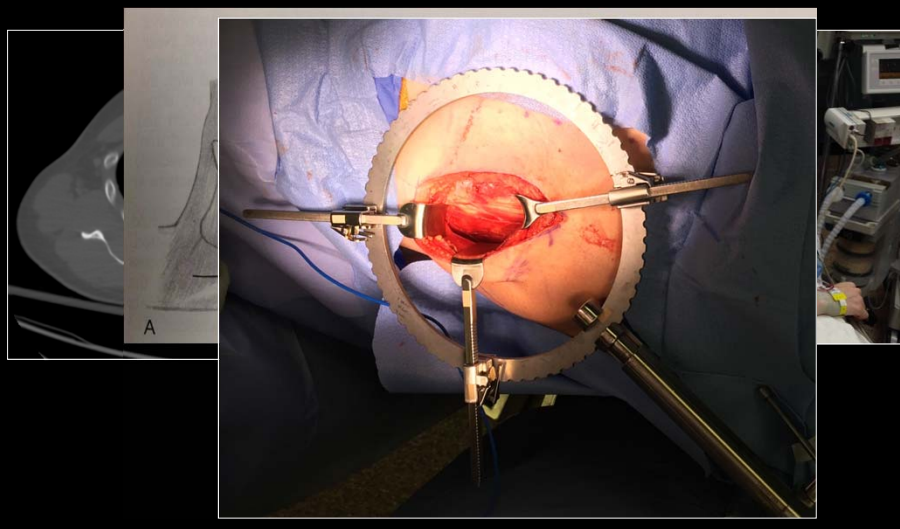
Positioning/Incision(s)

Posterior Fractures



Positioning/Incision(s)

Posterior Fractures



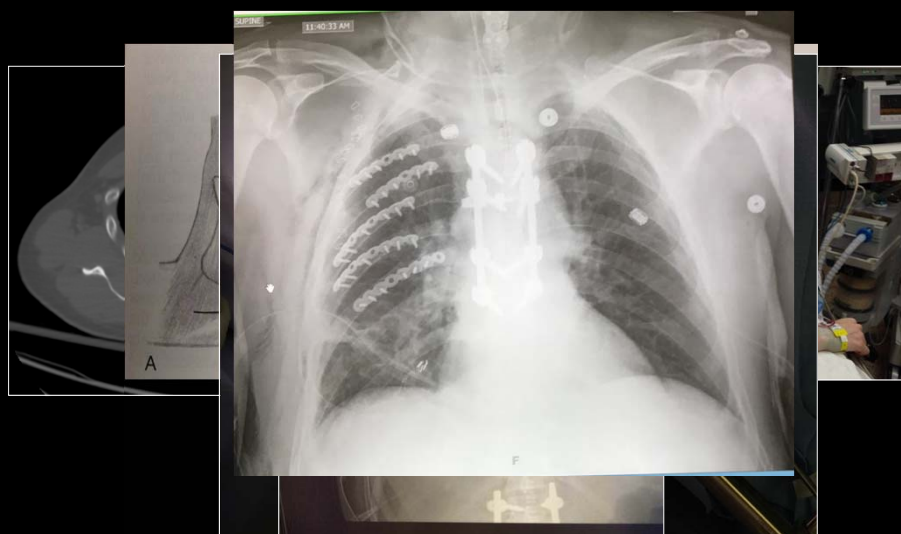
Positioning/Incision(s)

Posterior Fractures



Positioning/Incision(s)

Posterior Fractures



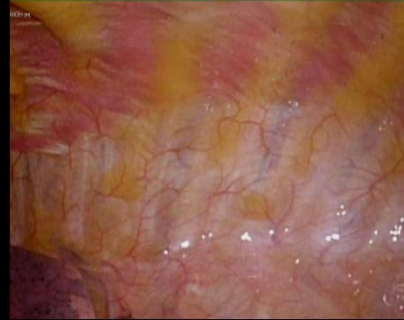
Postoperative Considerations

Thoracic “Tune Up”

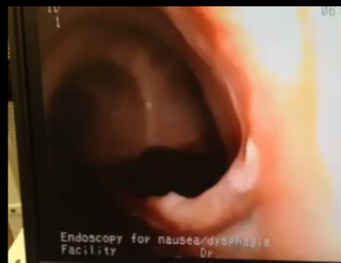
1. Pulmonary toilet
2. Pleural space evaluation/evacuation
3. Logoregional anesthesia
4. Rib repair

The Pleural Space

- Diagnose and treat associated pathology
 - Retained hemothorax
 - Diaphragm injury
- Provide directed loco-regional anesthesia
- Repair rib fractures



Bronchoscopy/Lung Isolation







Surgical stabilization of severe rib fractures decreases incidence of retained hemothorax and empyema



Sarah Majercik, M.D., M.B.A., F.A.C.S.^{a,*},
 Sathya Vijayakumar, M.S., M.B.A.^b, Griffin Olsen, M.S.^b,
 Emily Wilson, M.S.^c, Scott Gardner, P.A.-C., M.M.Sc.^a,
 Steven R. Granger, M.D., F.A.C.S.^a, Don H. Van Boerum, M.D., F.A.C.S.^a,
 Thomas W. White, M.D., F.A.C.S.^a

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KEYWORDS:

Retained hemothorax;
 Thoracic trauma;
 Surgical stabilization
 of rib fractures;
 Rib fractures;
 Outcomes

Abstract

BACKGROUND: Retained hemothorax (RH) is relatively common after chest trauma and can lead to empyema. We hypothesized that patients who have surgical fixation of rib fractures (SSRF) have less RH and empyema than those who have medical management of rib fractures (MMRF).

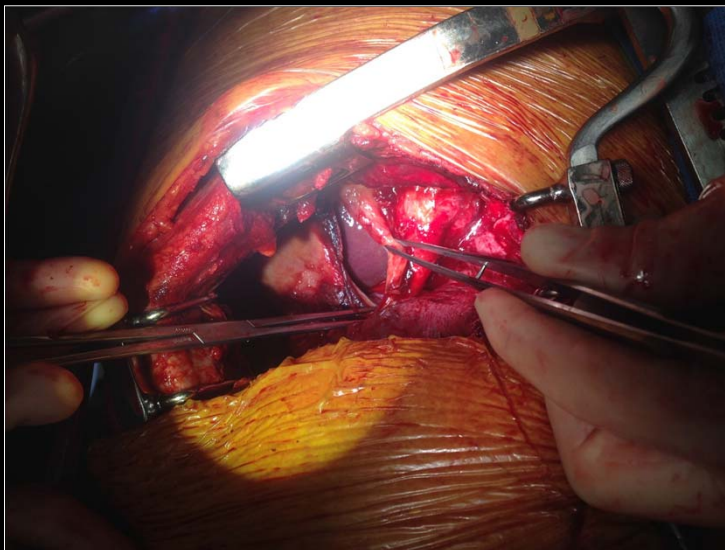
METHODS: Admitted rib fracture patients from January 2009 to June 2013 were identified. A 2:1 propensity score model identified MMRF patients who were similar to SSRF. RH, and empyema and readmissions, were recorded. Variables were compared using Fisher exact test and Wilcoxon rank-sum tests.

RESULTS: One hundred thirty-seven SSRF and 274 MMRF were analyzed; 31 (7.5%) had RH requiring 35 interventions; 3 (2.2%) SSRF patients had RH compared with 28 (10.2%) MMRF ($P = .003$). Four (14.3%) MMRF subjects with RH developed empyema versus zero in the SSRF group ($P = .008$); 6 (19.3%) RH patients required readmission versus 14 (3.7%) in the non-RH group ($P = .002$).

CONCLUSIONS: Patients with rib fractures who have SSRF have less RH compared with similar MMRF patients. Although not a singular reason to perform SSRF, this clinical benefit should not be overlooked.

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Right diaphragm 6 cm injury

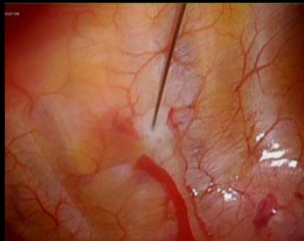
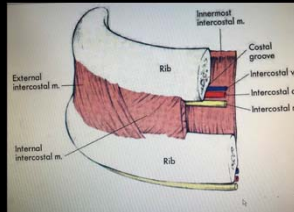


Continuous Intercostal Nerve Blockade for Rib Fractures: Ready for Primetime?

Michael S. Truitt, MD, Jason Murry, MD, Joseph Amos, MD, Manuel Lorenzo, MD, MBA, Alicia Mangram, MD, Ernest Dunn, MD, and Ernest E. Moore, MD



VATS Intercostal Nerve Blocks with Liposomal Bupivacaine



VATS – intra-pleural plates

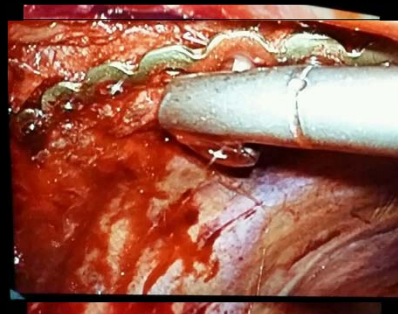
Theoretical Advantages

- Minimize incisions and muscle division
- Eliminate scapular retraction
- Wide exposure to all fracture patterns
- Minimize pulmonary/cardiac injury
- Eliminate discomfort from palpable/subscapular plates

Thoacoscopic Rib Repair



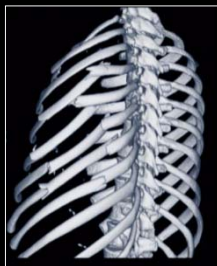
Thoacoscopic Rib Repair



Thoacoscopic Rib Repair



EAST Rib Fixation Webinar: Special Situations and Post Operative Management



Fredric M. Pieracci, MD, MPH, FACS
Trauma Medical Director
Denver Health Medical Center
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University of Colorado SOM





Thank You!

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Live Webinar #4:
Rib Fracture Plating**



Thank You!

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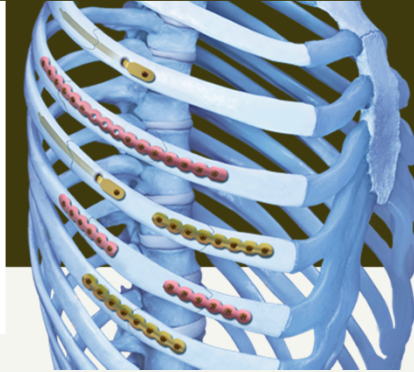


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News

Spotlight on 2017 Raymond H. Alexander MD Resident Paper Competition (Clinical Science) winner - Joshua Brown, MD, MSc 02/13/2017
NTI Requests Proposals for the National Trauma Repository 02/06/2017

Events

Feb 22 EAST Master Class #3: Rib Stabilization Techniques Webinar Supported by DePuy Synthes
Feb 28 2017 Surgical Volunteerism Award(s) and Surgical Humanitarian Award

President's Message

Friends and Colleagues,
The term "Kaizen," which is Japanese for continuous improvement, was first introduced to the West in 1988 by



east.org/education