

## Background

**10%** of all trauma patients have rib fractures

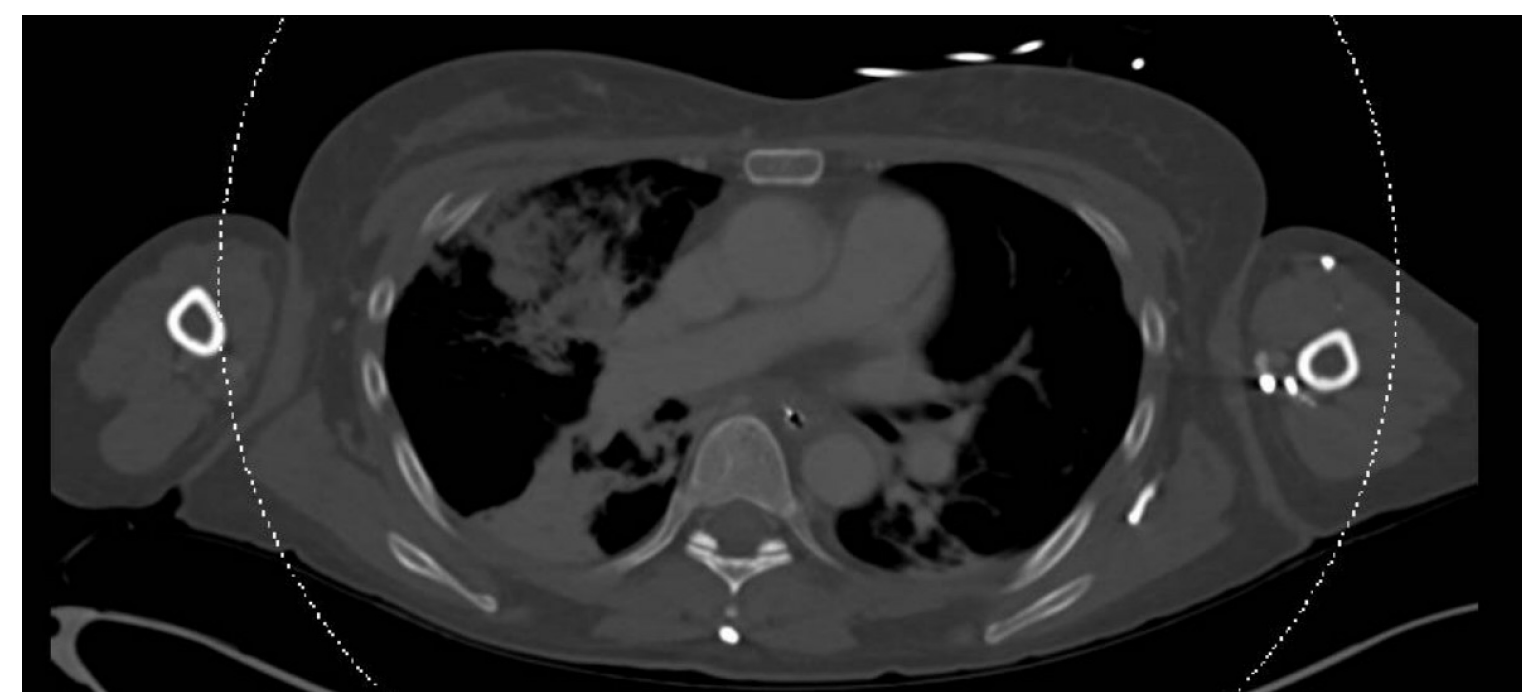
Pain-induced  
Hypoventilation

Altered Breathing  
mechanics

Multimodal pain control

Early mobilization

Supportive respiratory care



Plane  
Blocks &  
Nerve  
Catheters

Thoracic  
Epidural  
(gold  
standard)

Oral  
adjuncts

What if the daily epidural efficacy assessment is  
altered by pre-existing peripheral neuropathy?

## References

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2. Easter A. Management of patients with multiple rib fractures. Am J Crit Care. 2001 Sep;10(5):320-7; quiz 328-9. PMID: 11548565.
3. Peek, J., Smeeing, D.P.J., Hietbrink, F. et al. Comparison of analgesic interventions for traumatic rib fractures: a systematic review and meta-analysis. Eur J Trauma Emerg Surg **45**, 597–622 (2019). <https://doi.org/10.1007/s00068-018-0918-7>
4. van Boekel RLM, Vissers KCP, van der Sande R, Bronkhorst E, Lerou JGC, Steegers MAH. Moving beyond pain scores: Multidimensional pain assessment is essential for adequate pain management after surgery. PLoS One. 2017 May 10;12(5):e0177345. doi: 10.1371/journal.pone.0177345. PMID: 28489926; PMCID: PMC5425226.

## Case Presentation

**40-year-old female with a history of alcohol use disorder, adrenal insufficiency on chronic steroids, and peripheral neuropathy who presented following MVC.**

### Injuries

- Right anterior 3-5<sup>th</sup> rib fractures
- Left anterior 3<sup>rd</sup> rib fracture
- Bilateral pulmonary contusions
- Right mandibular fracture
- C2 fracture
- Skull fracture w/o intracranial hemorrhage
- Grade I splenic laceration

### Hospital Course

- Intubated in the field, admitted to SICU
- Fractures managed non-operatively, IR embolization for spleen laceration
- Course complicated by VAP and hemothorax → left thoracostomy tube placement x2
- Poor respiratory status requiring high flow nasal cannula

### Acute Pain Interventions

- Pain refractory to multimodal regimen including oral and IV narcotics, NSAIDs, gabapentin
- Bilateral erector spinae blocks performed without any reduction in pain, pain score 10/10
- Left serratus anterior catheter placed without change to pain score, 10/10
- Thoracic epidural placed with near-immediate subjective relief, pain score 7/10

No reproducible PE signs of epidural efficacy

- Ice level not reliable

- At baseline, sensation to pinprick markedly decreased in bilateral extremities up to her shoulders

Replace epidural?

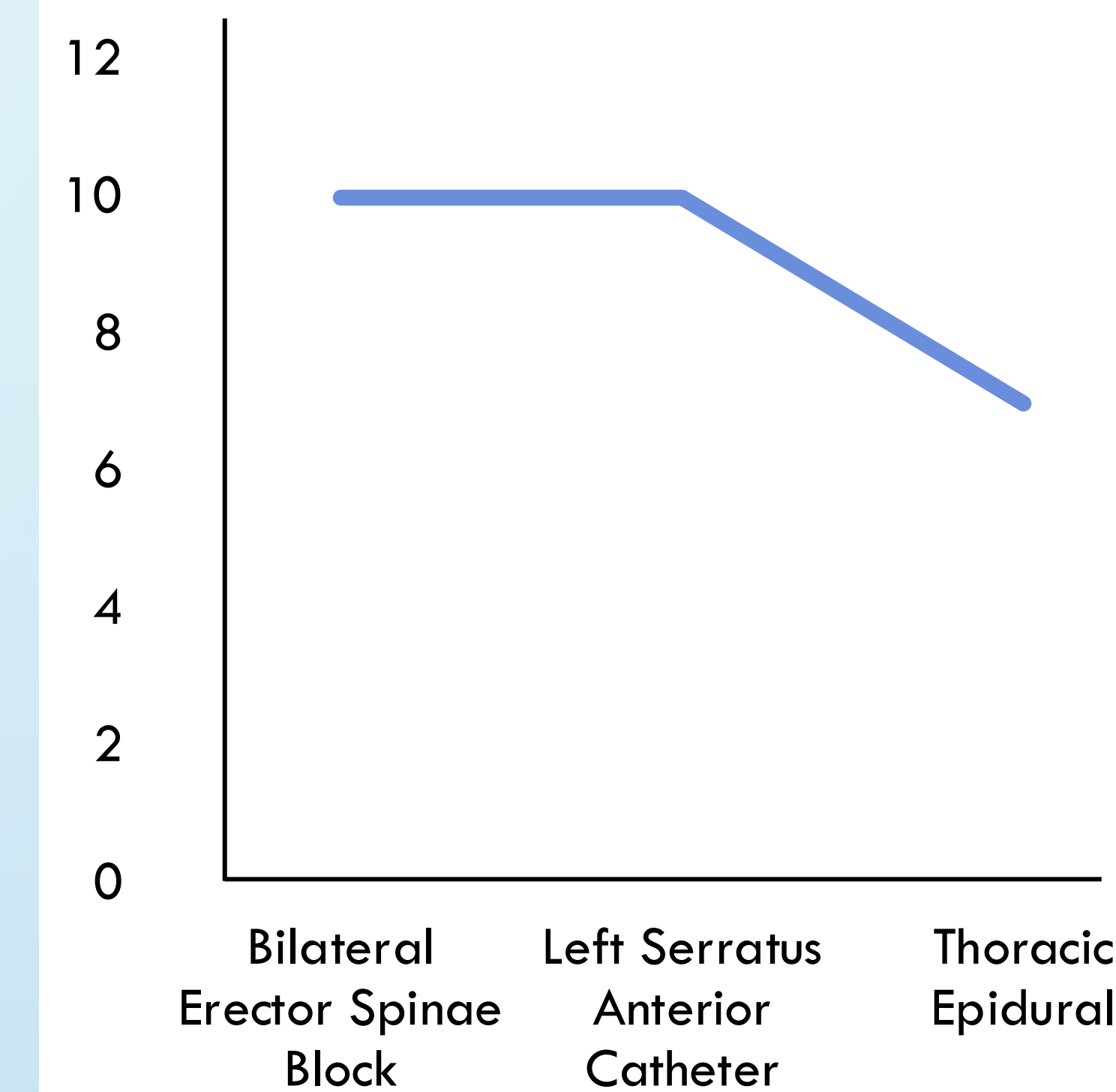
- Objective functional improvement metrics
- Patient reported significant subjective improvement

Epidural not replaced

- Existing epidural removed after a few days
- Quick progression to floor level of care and then discharge

## Data

Subjective change in pain score after  
epidural placement



Functional Improvement

**Before Epidural**

- Immobile
- HFNC
- <250cc on incentive spirometer

**After Epidural**

- Engaged in daily PT
- Room air
- >500cc on incentive spirometer

## Conclusions

Pre-existing peripheral neuropathy complicated the traditional exam-based assessment of epidural efficacy

Thoracic epidural was the most effective acute pain intervention

In patients with rib fractures, pain management should be guided by the many dimensions of the patient's pain experience and optimize return of function status, especially when they have underlying neurological deficits

This patient was an active participant in her care, and shared decision making played an essential role in deciding the pathway to optimizing functional status