



Intercostal Cryoneurolysis for Traumatic Rib Fractures After Unsuccessful Weaning of a Thoracic Epidural

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Background

- Rib fractures are associated with significant morbidity due to pain and resultant respiratory complications.¹
- Regional anesthesia provides both pain relief and reduction of morbidity and mortality.²
- Epidural analgesia precludes discharge and rib fracture pain commonly persists for weeks following trauma.
- Percutaneous ultrasound guided intercostal cryoneurolysis may provide analgesia for weeks.^{3,4}

Case Description

- 35-year-old male presented after a car accident with multiple injuries including fractures of the right 2nd, 8th, and 9th ribs and left 3rd-7th ribs (fig. 1).
- Poorly controlled pain and desaturations requiring oxygen via high-flow nasal cannula.
- Epidural placed at T8-9 on hospital day 2 with good pain control.

Case Description (cont.)

- Weaning of the epidural was attempted over the next few days but unsuccessful due to pain.
- Although not initially considered due to the number of fractured ribs, cryoneurolysis was offered on day 6.
- Ultrasound-guided percutaneous intercostal cryoneurolysis was performed at the left 3rd-7th and right 2nd, 8th - 9th intercostal nerves.
- Each nerve was treated with 2 cycles, each consisting of a 2-minute freeze and 1-minute thaw (fig. 2).

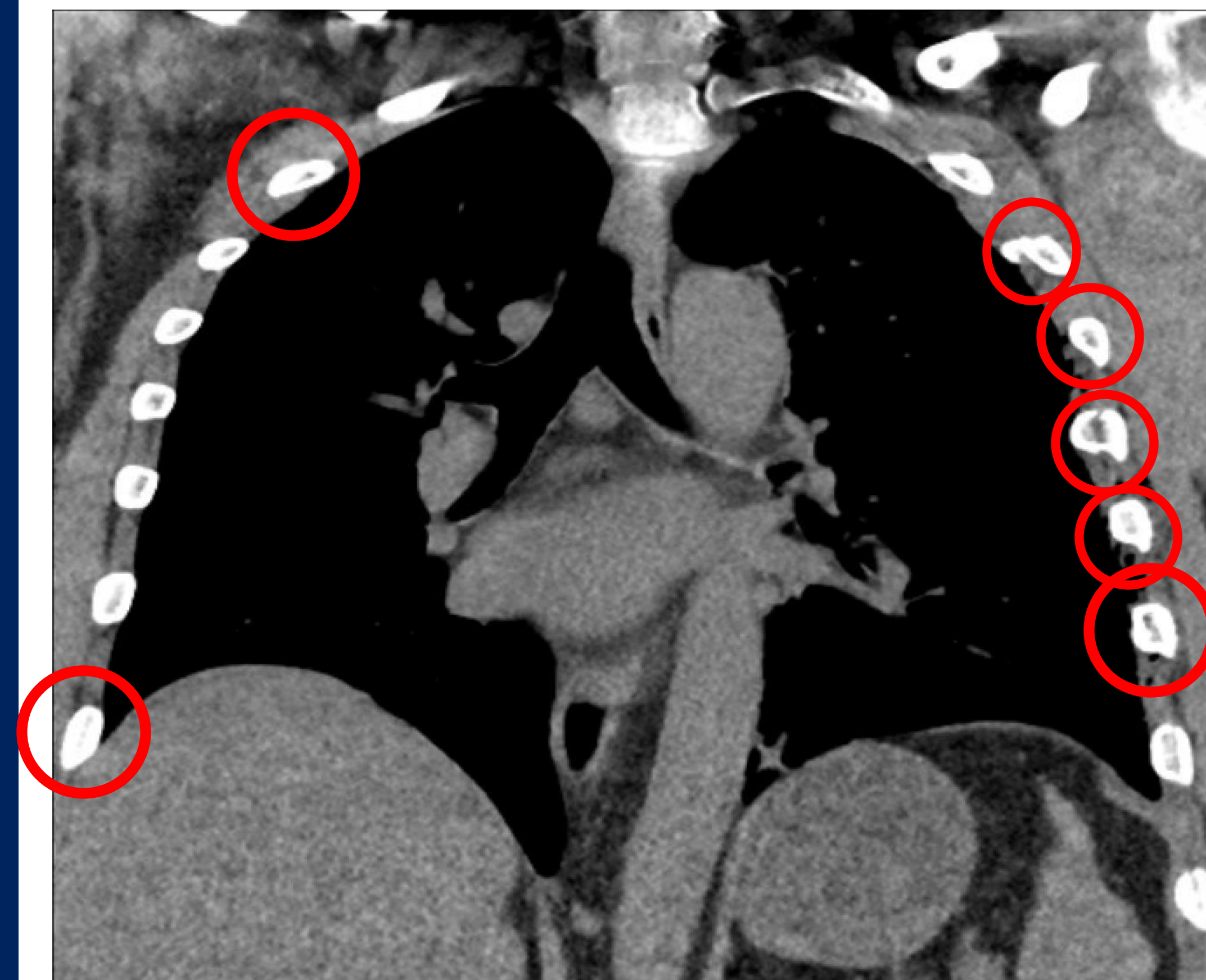


Fig. 1: Coronal chest CT imaging showing multiple left-sided rib fractures. Right-sided rib fractures not included in this slice.

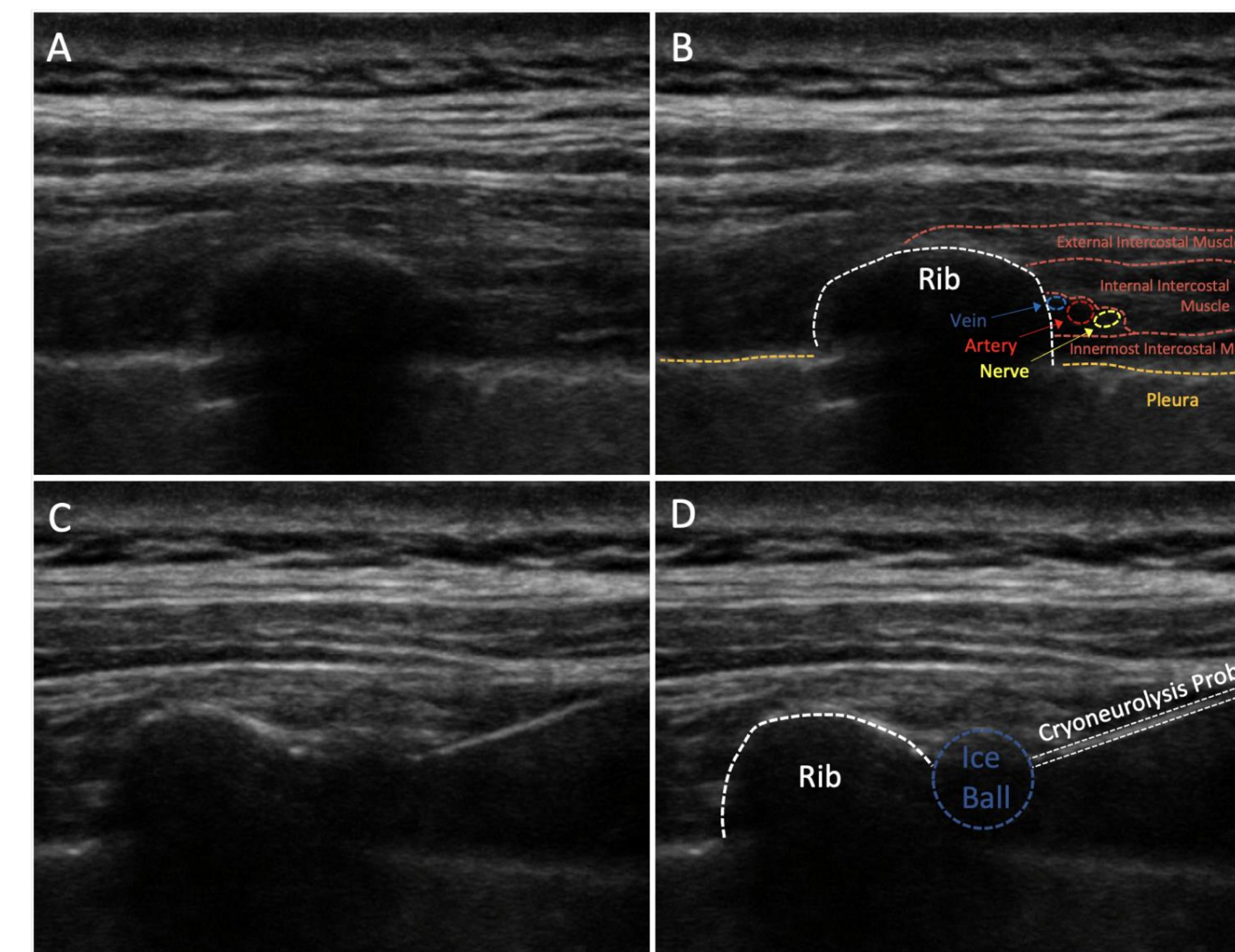


Fig. 2: Intercostal view (A) with anatomy overlay (B). Same view after cryoneurolysis (C, D). Used with permission of John Finneran IV, MD, who retains the rights to this image.

Discussion

- This patient was able to be weaned from a continuous thoracic epidural and discharged after percutaneous intercostal cryoneurolysis.
- Cryoneurolysis has the advantage of long duration and no post-block equipment.
- Disadvantages include administration at every intercostal level, increased time, resource requirement, patient discomfort, and cumulative procedural risk.
- Further studies are indicated to quantify the benefit provided and determine the optimal patient population.

References

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