REGIONAL ANALGESIA FOR TRAUMATIC RIB FRACTURES - A BAYESIAN NETWORK META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS

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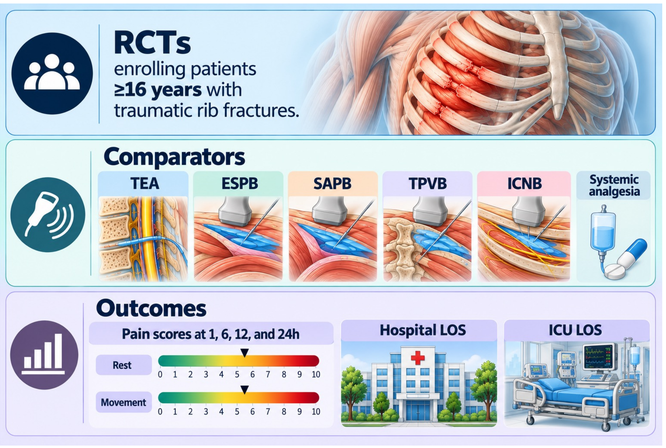
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INTRODUCTION

- Rib fractures occur in **up to 10% of trauma admissions** and contribute disproportionately to trauma-related morbidity and mortality.
- **Effective pain control** is a cornerstone of traumatic rib fracture management. However, the comparative effectiveness of **regional analgesic** techniques remains unclear.

METHODS

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RESULTS

1,428 patients
20 RCTs

TEA
ESPB
Most effective strategies for pain outcomes

Same results after sensitivity analyses

RCTs with low risk of bias

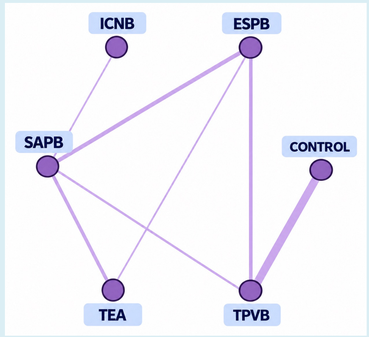


Figure 1. Network plot for pain at 24 hours with movement

1h	**ESPB and TEA ↓ pain** (at rest and with movement)
6h	**ESPB ↓ pain** (at rest and with movement)
12h	**No difference**
24h (movement)	**ESPB and TEA ↓ pain** compared with systemic analgesia + ICNB
24h (rest)	**TEA ↓ pain** compared with ICNB

Figure 2. Summary of significant differences in pain scores at rest and with movement across assessed time points.



Figure 3. SUCRA probability values for hospital LOS (A), ICU LOS (B) and VAS with movement 24h (C).

DISCUSSION

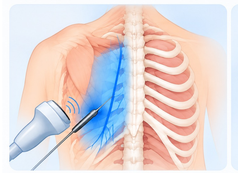
Analgesic effects varied across timepoints.

Higher SUCRA rankings alone **do not establish superiority.**

Clinical feasibility should complement analgesic efficacy.

CONCLUSIONS

- Regional analgesia **improved pain control** versus systemic analgesia at **selected timepoints**.
- TEA and ESPB **reduced movement-related pain at 24 h** versus systemic analgesia and ICNB.
- **No technique** was consistently superior; selection should be individualized.







ABBREVIATIONS: ESPB, erector spinae plane block; **ICNB**, intercostal nerve block; **ICU**, intensive care unit; **LOS**, length of stay; **RCTs**, randomized controlled trials; **SAPB**, serratus anterior plane block; **SUCRA**, surface under the cumulative ranking curve; **TEA**, thoracic epidural analgesia; **TPVB**, thoracic paravertebral block; **VAS**, visual analog scale.