

Lay summary of study results

Erector Spinae Plane blocks for the Early Analgesia of Rib fractures in trauma (ESPEAR): a multicentre feasibility randomised trial. The ESPEAR study would like to thank the participants who took part in this research.

Background Rib fractures caused by trauma cause significant pain. Patients risk several serious issues, including:

- Hypoventilation: Breathing too slowly or shallowly, which limits oxygen intake.
- Atelectasis: This is when a lung collapses.
- Hypoxia: The body lacks enough oxygen for normal functions.
- Retained secretions: Mucus builds up in the lungs.
- Pneumonia: An inflammation of the lungs.
- Respiratory failure: Breathing may stop altogether.
- Death: The most severe outcome.

These conditions can arise if not monitored closely. Effective pain relief is thought to improve these outcomes. Patients receive various types of pain relief. These include oral (by mouth), intravenous (through a vein), and epidural (injection near the spinal cord). The Erector spinae plane (ESP) blockade is a new pain relief method. It may work, but more research in a clinical trial is needed.

Methods We conducted a multicentre, randomised controlled pilot study. This study aimed to see if a final clinical trial of ESP block and catheter for rib fractures is possible. It was a small study to check if we could run a larger one. Adults with rib fractures were randomised to either ESP blockade and catheter, or placebo ESP blockade and catheter. All participants also had other pain relief. Participants and outcome assessors did not know what treatment was given. The trial focused on three main points:

- Recruitment rate, aiming for 1.11 participants per site each month.
- Retention rate, with a target of 80% or higher for participants staying in the study.
- The ease of running the trial. This was found by staff interview.

Results Twenty-five participants joined this study. Their average age was 57 years, and they had on average 5 rib fractures each. The participants were recruited from three major trauma centres in the UK. Each centre brought in 0.69 participants per month. At the 6-week follow-up, 80% of participants stayed in the study. They did not withdraw or get lost to follow-up. Recruitment was lower than expected. This shows that the current study design isn't practical for a larger trial. For future research, we suggest key changes in: (i) the intervention, (ii) bias reduction methods, and (iii) the timing and type of outcome measures.

Conclusion A final study to check how well erector spinae plane blockade works for pain relief after blunt

force chest injuries needs major changes. An open-label study will look at single-shot ESP blockade. It will use patient-reported pain intensity in the first 24 hours as the main outcome. This may provide helpful insights. This should take place at sites where ESP blocks are already used to address the issues faced in this study.