

# IN THE IMMEDIATE POST-OPERATIVE CARDIAC SURGICAL PATIENT POPULATION, WHAT IS THE DIFFERENCE BETWEEN THE USE OF AN ULTRASOUND GUIDED SERRATUS REGIONAL BLOCK COMPARED TO CONVENTIONAL USE OF NARCOTICS WHEN MEASURING THE SEVERITY OF POST-OPERATIVE PAIN?

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### Abstract

**Purpose:** Enhanced recovery and decreased narcotic usage following cardiac surgery center on multi-modal analgesia methods. Regional anesthesia techniques are the new cutting-edge implementation as a result of reduced adverse effects and increased safety. A systematic review of the literature was conducted to investigate the difference between utilizing an ultra-sounded guided serratus block versus narcotics to decrease post-operative pain after cardiothoracic surgery.

### Objective

The objective is to analyze and critique peer-reviewed scholarly articles to determine the effectiveness of the serratus block for post-operative pain control compared to conventional narcotic pain control measures.

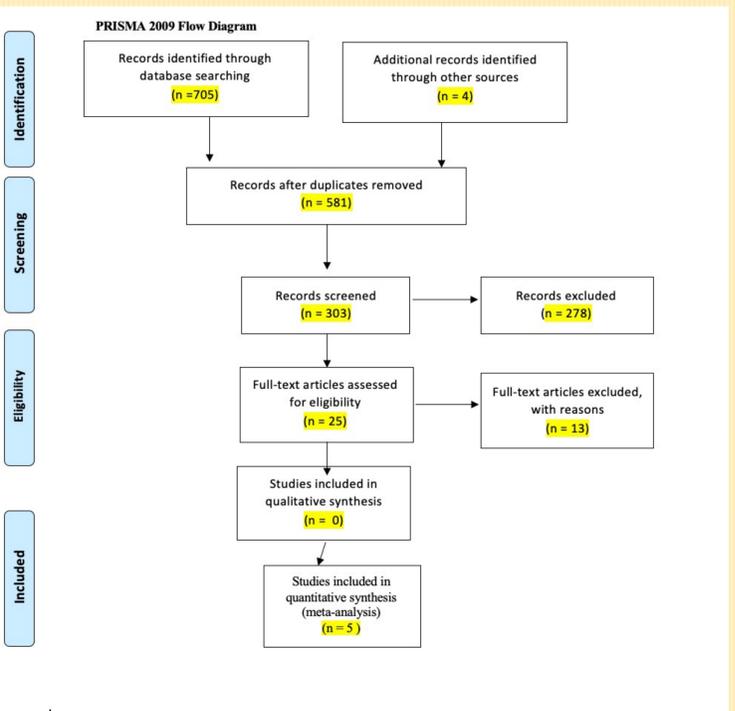
Pain following cardiothoracic surgery is a multifaceted phenomenon explored through a magnitude of different mechanisms. Research has shown that pain is moderate to severe despite being largely avoidable in up to seventy-five percent of patients (Choiniere et al., 2014).

- Adequate pain control is complex and multifactorial, but it is necessary to decrease the length of stay and narcotic usage.
- The introduction of regional anesthesia for post-operative pain has become an effective modality for enhanced pain control.
- The introduction of ultrasound has provided serratus regional blocks as a means of pain control for thoracic wall incisions. The comparison of utilizing the ultra-sounded serratus block to decrease post-operative narcotic usage to enhance recovery and decrease the length of stay, is crucial in helping modify the management of pain in cardiothoracic surgery.

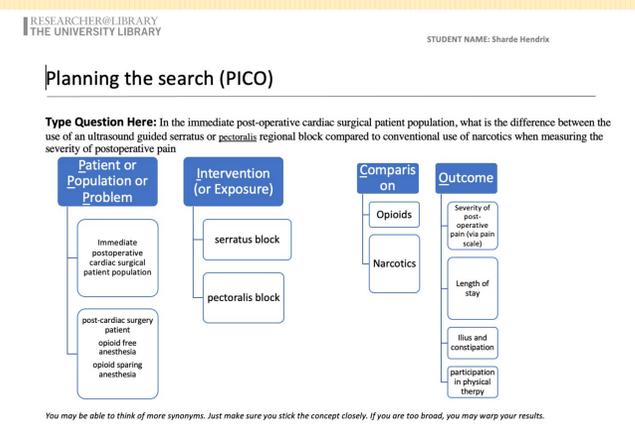
### Methods

An organized, concise, structured literature review of peer-reviewed published articles from 2011 to 2021 was performed. Search strategies were applied to exclude irrelevant data. ProQuest, Medline, and Academic Search were selected as scholarly databases. A two-person independent search of each database was conducted. Both researchers did not identify any additional resources. All duplicates were removed before final appraisals.

### PRISMA Flow Diagram



### PICO Search Strategy



### Results

Researchers conducted evaluation on a total of six scholarly articles. All the analyzed studies were randomized control clinical trials with a control group and the initiation of intervention. The randomized trial was a blind study where participants were assigned software or given a group via sealed envelope methods. The introduced intervention was a regional nerve block. Blocks included serratus anterior nerve blocks, pectoral nerve blocks, intercostal nerve blocks, and erector spinae blocks. All were instituted to decrease sternotomy and thoracotomy pain in cardiothoracic surgery patients.

All the studies used the Visual Analog Scale (VAS) to assess post-operative pain. Pain intensity was evaluated at different time increments of two, four, six, eight, twelve- and twenty-four-hours post-surgery by nurses who were blinded to the type of treatment the patient received. In all the studies, the results yielded that the VAS was significantly lower in patients who received a selected regional anesthesia block, and pain management was reported to be more satisfactory in the interventional groups.

### Discussion

In summary, all research provided evidence to earn a grade of a "B" on the U.S. Preventative Task Force Ratings. This indicates there is a high certainty that the net benefit is of moderate or reasonable confidence and that the net use is moderate to substantial. Based on this grade, offering, and providing this service would be recommended. According to (Padala et al., 2020), "The optimum cardiac surgical pain management has been known to maintain hemodynamic stability and reduce respiratory and cardiovascular complications."

### Conclusion

Research states that the mortality and morbidity of cardiac surgery are due to complications including renal function, pulmonary function, and infection. An effective strategy to decrease these complications includes the reduction of recovery time. A central component of recovery is pain management. A significant source of pain in cardiac surgery patients is the median sternotomy incision. The use of serratus regional anesthesia infiltrated blocks around the sternum and thoracotomy sites have been demonstrated to provide early post-operative analgesia, reduce opioid requirements, and produce a potentially positive effect on recovery.

### Limitations

- A small sample size was addressed in several of the articles. Some other limitations specified the visual analog score (VAS) was not measured in the first three hours postoperatively due to patients still being intubated or unstable hemodynamically.
- Variation of blocks since in one of the studies, the block was pre-incisional performed by a cardiac anesthesiologist, and the surgeon administered the post-incisional block
- Some of the articles did not include a control group to assess the effectiveness of the nerve block.

### References

Available on request