Suprascapular Nerve Blockade for Postoperative Pain Control Following Arthroscopic Shoulder Surgery: A Systematic Review and Meta-Analysis

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Background

- Arthroscopic surgery of the shoulder can be associated with moderate to severe early postoperative pain that can interfere with recovery and rehabilitation.

- Regional nerve blocks including the interscalene brachial plexus block (ISB) - considered the gold standard - has consistently been shown to significantly reduce postoperative pain.

- However, complications ranging from the serious (accidental epidural anesthesia, vertebral artery injection, paralysis of the phrenic nerve, pneumothorax, and brachial plexus injury) to the unpleasant (extended motor block after the procedure) have been reported.

- The suprascapular nerve block (SSNB) has been described as an alternative strategy with fewer reported side effects. The suprascapular nerve is thought to innervate approximately 70% of the shoulder joint, capsule, subacromial space, acromioclavicular joint and coracoacromial ligament.
The purpose of this systematic review and meta-analysis was to examine the efficacy of SSNB for analgesia outcomes following shoulder arthroscopy in adult patients, and to identify the complication rate from such blocks. Secondarily the study assessed efficacy in comparison to ISB and non-nerve block controls.
Methods

Search
- The search terms “Nerve Block”/“Regional Anesthesia”, “Suprascapular,” “Shoulder”, and “arthroscopy,” were used from database inception until April 20, 2018.

Screen
- Titles, abstracts, & full-text articles were independently screened by two reviewers

Exclusion
- Exclusion criteria included non-randomized studies, cadaveric studies, conference papers, book chapters, review articles, and technical reports.

Analysis
- Meta-analysis of standard mean differences was used with a random effects model.
Methods

Figure 1: PRISMA flow diagram of the search strategy for randomized-controlled trials assessing the use of suprascapular nerve blocks for pain control following shoulder arthroscopy.
14 eligible studies included
All 14 randomized-controlled trials
1382 total patients included
Mean age 53.8 years (SD, 13.1)
Mean follow-up 3.1 days (range, 24 hours to 6 weeks)
Overall, study quality as assessed with the GRADE criteria was moderate.

Figure 2. Risk of bias assessment summary: suprascapular nerve block for pain control after shoulder arthroscopy.
SSNB vs. Control

Figure 3: Forest plots of standard mean difference between suprascapular nerve block (SSNB) group and control group for pain scores
(A) within 1 hour
(B) at 4 to 6 hours
(C) at 24 hours postoperatively
SSNB vs. ISB pt 1

Figure 4a: Forest plots of standard mean difference between suprascapular nerve block (SSNB) group and interscalene brachial plexus block (ISB) group for pain scores (A) while patients were recovering in the post anesthesia care unit and (B) 3 to 4 hours.
SSNB vs. ISB pt 2

Figure 4a: Forest plots of standard mean difference between suprascapular nerve block (SSNB) group and interscalene brachial plexus block (ISB) group for pain scores:

- (C) 6 to 8 hours
- (D) 24 hours postoperatively
Strengths and Limitations

😊 Poor reporting of the different outcomes across included studies
😊 Heterogeneity across the included studies in terms of nerve block techniques as well as outcome measures and timing of assessment
😊 Moderate Heterogeneity (as measured using I²)
😊 Multiple databases searched
😊 Only RCTs included
😊 Random effects model used
Conclusions

SSNB resulted in significantly improved pain control in the first 24-hour postoperative period compared with non–nerve block control groups.

Patients who received SSNB demonstrated significantly greater pain and increased opioid consumption compared with patients receiving ISB in the early postoperative period.

SSNB may be associated with fewer major (pneumothorax, Horner’s syndrome) and minor (prolonged motor block, hoarseness) complications than ISB.
References


