Interscalene brachial plexus block for surgical repair of clavicle fracture : a matched case-controlled study

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Introduction

Innervation of the clavicle is complex and debated, with scarce data on the analgesic impact of regional anaesthesia after surgical repair of clavicle fracture. We report a matched case-control cohort study of patients undergoing clavicle fracture fixation performed under general anaesthesia with or without an interscalene brachial plexus block (ISB).

Methods

Fifty consecutive patients scheduled for surgical fixation of middle/distal clavicle fracture under general anaesthesia with ISB were prospectively enrolled. This cohort was compared to a historical control of 76 retrospective patients without regional block. The primary outcome was total intravenous morphine equivalent consumption at 2 postoperative hours. Secondary outcomes included perioperative sufentanil administration, intravenous morphine equivalent consumption at 24 postoperative hours, and resting pain scores at 2 and 24 postoperative hours. To assess the ISB impact, we performed both an overall cohort analysis and a case-matched analysis with each ISB-treated patient matched to a Non-ISB-treated patient. Matching employed a 1-to-1, nearest-neighbor approach using the Mahalanobis metric.

Results

In the overall cohort, patients with ISB had significantly lower i.v. morphine equivalent consumption at 2 postoperative hours (0.7mg[95%CI:0.1-1.2]) versus controls (8.8mg [95%CI:7.1-10.4];p<0.0001). Secondary outcomes were also significantly reduced, except resting pain scores at 24 postoperative hours. These results persisted after case-matching the cohorts (mean difference for the primary outcome: 8.3mg [95%CI:6.5-10.0;p<0.001).

Conclusion

ISB provides effective analgesia after surgical fixation of middle/distal clavicle fracture suggesting clinically relevant clavicle innervation mainly from branches of the brachial plexus. These results should help physicians establishing an analgesic strategy for this type of surgery.

Figure 1. I.v. morphine consumption equivalents at 2 postoperative hours (mg). Data are expressed as the median with 25th and 75th percentiles (box), along with upper adjacent and lower adjacent values (whiskers).

Table 2. Secondary outcomes before matching. Data are presented as means and 95% confidence intervals.

	Control group (n = 76)	US-ISB group (n = 50)	p value
Perioperative sufentanil administration (µg)	45 (42 – 49)	17 (15 – 18)	<0.001
Pain scores at rest at 2 postoperative hours (NRS, 0-10)	2.2 (1.8 – 2.6)	0.6 (0.2 – 1.1)	<0.001
I.v. morphine equivalent consumption at 24 postoperative hours (mg)	16.7 (14.6 – 18.7)	6.9 (5.1 – 8.8)	< 0.001
Pain scores at rest at 24 postoperative hours (NRS, 0-10)	2.0 (1.5 – 2.4)	2.5 (1.9 – 3.1)	0.12
Rate of PONV within 24 postoperative hours	17%	4%	0.02

NRS, numeric rating scale; PONV, postoperative nausea and vomiting

References

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