

REGIONAL ANESTHESIA FOR CARDIAC IMPLANTABLE ELECTRONIC DEVICES (CIED) IN TEENAGERS AND YOUNG ADULTS

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Background: Patients at most pediatric centers receive general anesthesia (GA) during implantation or revision of transvenous cardiac implantable electronic devices (CIED). Regional anesthesia (RA) with procedural sedation (PS) is an alternative. In RA for CIEDs, local anesthetic is injected into anatomic intramuscular planes, primarily between pectoralis major and minor (Pecs I block) and between pectoralis minor and serratus anterior (Pecs II block). RA provides procedural and postoperative analgesia for CIED interventions including pocket creation, lead placement, and generator changes. In this study, RA was coupled with intravenous sedation, without intubation or GA.

Objective: To compare RA with sedation against GA in teenagers and young adults during invasive transvenous CIED management.

Methods: We performed a retrospective chart review at a tertiary care, free-standing pediatric hospital (2016-2021). Pecs I and II blocks were used in RA cases. Age-matched controls from a cohort of transvenous CIED procedures with GA were identified. Pain scores were tabulated over the first 24 post-operative hours and a fixed effects model was used to discriminate cases versus controls.

Results: Overall group characteristics were similar. Pain scores were low in both groups, but lower for the first 8 hours in the PS + RA group as determined by fixed effects analysis (0.73 vs 1.41, $p < 0.011$), figure. Fewer than a quarter of the cases and controls received postoperative intermediate-duration opioid and the medial oral morphine equivalent was similar in both groups (0.022 mg/kg in PS + RA (IQR 0-0.19) vs 0 mg/kg in GA (IQR 0-0.057), $p = 0.823$). There were no RA-related complications nor complication with PS or GA.

Conclusions: In this proof-of-concept case-control series, RA and procedural sedation in young patients resulted in lower mean post-operative pain scores and all procedures were successful. RA with intravenous sedation can be used for invasive CIED management in pediatric centers.

