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Safety/QA/QI Projects

Choosing the Right Block, A New Web-Based Tool for Physicians Worldwide

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Introduction

Regional anesthesia is a rapidly expanding field that has allowed for advances in both acute and chronic pain management. Specifically, in the perioperative setting, regional anesthesia techniques allow for focused surgical anesthesia and analgesia while demonstrating significant benefits including superior pain control, decreased opioid requirements, decreased blood loss, improved postoperative cardiac and pulmonary function, and shortened post-anesthesia care unit (PACU) stays [1]. However, block selection and execution is extremely nuanced, and requires extensive subspecialty training. This may serve as a limiting factor for the consideration of regional anesthetic techniques when managing pain [2]. We created a new interactive, portable, and user-friendly database that will allow physicians to easily visualize and understand regional blocks. Our resource aims to help physicians construct a foundational knowledge base of regional techniques while serving as a bridge to further subspecialty training.

Materials and Methods

We created a website which is designed to be accessed from either a phone or desktop computer and enables users to search a novel regional anesthesia block database based on either text or diagram based search queries. There are four different distinct ways that this database can be searched:

1. A user can click on a region on a human body diagram to search for regional blocks which have sensory coverage in that area.
2. A user can type the name of a surgery to see a list of potential blocks or block combinations which could be useful for that procedure.
3. A user can click on a nerve on an anatomical nerve map diagram to see which blocks correspond to that location.
4. A user can search for a specific regional block by name.

Results/Case Report

The results of user search queries appear as a list of block names, which can be selected to reveal

specific corresponding factual information about the block, as well as a visualization of the block's sensory coverage on a common human body diagram. This human body diagram can be "flipped" over to show either side, and layers can be revealed to show sensory distributions of the skin (dermatomes), bones (osteotomes), and muscles (myotomes).

Figure 1: Search results by body location (marked with a yellow circle)

Original diagrams created by the authors for this site and original block information content were written with review by expert Anesthesiology faculty in the field of regional anesthesia.

Discussion

We anticipate that our resource will have multiple applications for utilization in the near future as we continue to develop our database of regional techniques. The first application will be to assist with trainee education in the context of preoperative planning for surgical cases, chronic pain interventions, and general studying. Another anticipated user base would be physicians who perform certain regional techniques infrequently and are seeking resources to assist with block selection. We also anticipate that this type of resource could be uniquely beneficial in a low resource setting in low and middle income countries (LMICs), where regional techniques could allow for less use of limited resources (ventilators, anesthetic drugs, specialized staff, etc) [3]. Finally, some surgeons have expressed interest in using a resource like this to learn more about the ways that regional anesthesia techniques can affect their intra-operative plans and post-operative pain control.

Each of these potential applications requires unique considerations as different information is relevant to different scenarios, even for the same regional blocks. In an LMIC context, some important considerations include local stakeholder feedback, text translation, offline support, and potential adaptation of suggested medications and resources to match local availability. We plan to attempt to meet each of these different needs with one resource, but if it becomes difficult to make one solution to meet all needs, then multiple different versions of the resource may need to be created and adapted. We will also accept content edit suggestions through the website, in order to best meet the needs of people who use the resource.

Overall, we look forward to collecting ongoing feedback and continuing to develop this tool into a valuable resource for regional anesthesia technique selection for the ultimate benefit of patients throughout the world.

References

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Disclosures

No

Tables / Images

Regional Anesthesia Guide

☰ Blocks by Location ▾ Clear 🗑️ 🧑 Body Map

- ✕ Interscalene Block (ISB) →
- ✕ Supraclavicular Block →

📄 Notes

Supraclavicular Block

Sensory Coverage: C5-T1 trunks

Description: A versatile upper extremity block which provides surgical anesthesia below the shoulder at the level of the trunks. Works well for elbow and hand surgery.

Indications: Surgery of the upper extremity distal to the proximal humerus. Consider adding an intercostobrachial nerve block for medial arm coverage.

Common Surgeries: Distal Humerus fracture, Forearm surgery,

