

Total Joint Cocktail: What's in Yours?

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Background

During total joint replacement surgery, it is routine for surgeons to use local anesthetic in the intraarticular space to assist in pain control postoperatively. Local Anesthetic Systemic Toxicity (LAST) is a potentially life-threatening adverse reaction that can result from several factors including exceeding the maximum dosage of local anesthetic.

Situation

In a large metropolis, our academic safety net county hospital performs about 300 total hip and knee replacements a year among 7 surgeons: 3 primary joint surgeons, 2 trauma surgeons, and 2 oncology surgeons. The protocol for preoperative peripheral nerve blocks and intraarticular injections varied from surgeon to surgeon. The discrepancy in practice with a breakdown in communication subsequently led to multiple medication errors in local anesthetic administration.

Implementation

- An interdisciplinary team was formed comprising of anesthesia providers, orthopedic surgeons, pharmacy, the pain service, and operating room nurses.
- After review of literature, the team discussed creation of a standardized protocol for local anesthetic used for total joint replacement patients.
- The protocol included:
 - All patients to receive preoperative peripheral nerve block using only 0.25% bupivacaine.
 - All patients to receive intraoperative "joint cocktail" comprised of: 0.25% bupivacaine with epinephrine 1:100,000 20mL, liposomal bupivacaine 20mL, and 0.9% sodium chloride 20mL.
- Education material created by team displayed in the OR newsletter and a yearly inservice to staff about the protocol and LAST. (picture 1)

Literature

- Interdisciplinary teams are useful in healthcare, Herrmann et al. (2023) cited interdisciplinary teams to be effective in improving communication, teamwork, and patient safety.
- Speth (2024) reported team communication to be key in prevention of medical errors and sentinel events. Creating a standardized workflow process with good team communication deemed most effective.
- Wang et al. (2017) found liposomal bupivacaine to be insignificant in peripheral nerve blocks but significant in intraarticular injections in controlling pain postoperatively.
- Utilizing liposomal bupivacaine, the additional local anesthetic agents must be compatible. Kharitonov V. (2014) suggested using any other local anesthetic other than bupivacaine with liposomal bupivacaine could cause a rapid release into the bloodstream.
- Wadlund D. L. (2017) discusses the prevention of LAST through staff education and perioperative nurse knowledge regarding indications, contraindications, and dosing parameters of local anesthetics.

Conclusions

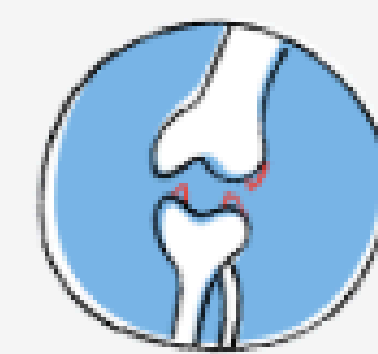
- In the operating room, medication errors can occur due to discrepancies in practice and workflow.
- An interdisciplinary team of key stakeholders is important in the effectiveness of implementing medication protocol in the operating room.
- A combination of both a preoperative peripheral nerve block and intraarticular injection is superior to one singularly, with liposomal bupivacaine being most effective in pain control in the intraarticular injection.
- A standardized protocol for local anesthetic during total joint replacement is an effective measure to preventing medications errors and keeping the patients safe in the operating room.

Nursing Implications

The orthopedic nurse in the operating room is a key stakeholder in the implementation of a standardized local anesthetic protocol.

The nurse must advocate for best practices within the perioperative space to protect the patient and provide safe positive outcomes.

TOTAL JOINT COCKTAILS



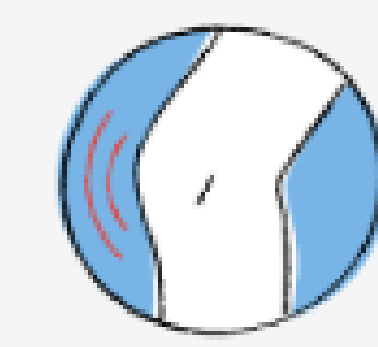
PREOP BLOCK

Block team will use 0.25% bupivacaine plain with no exparel.



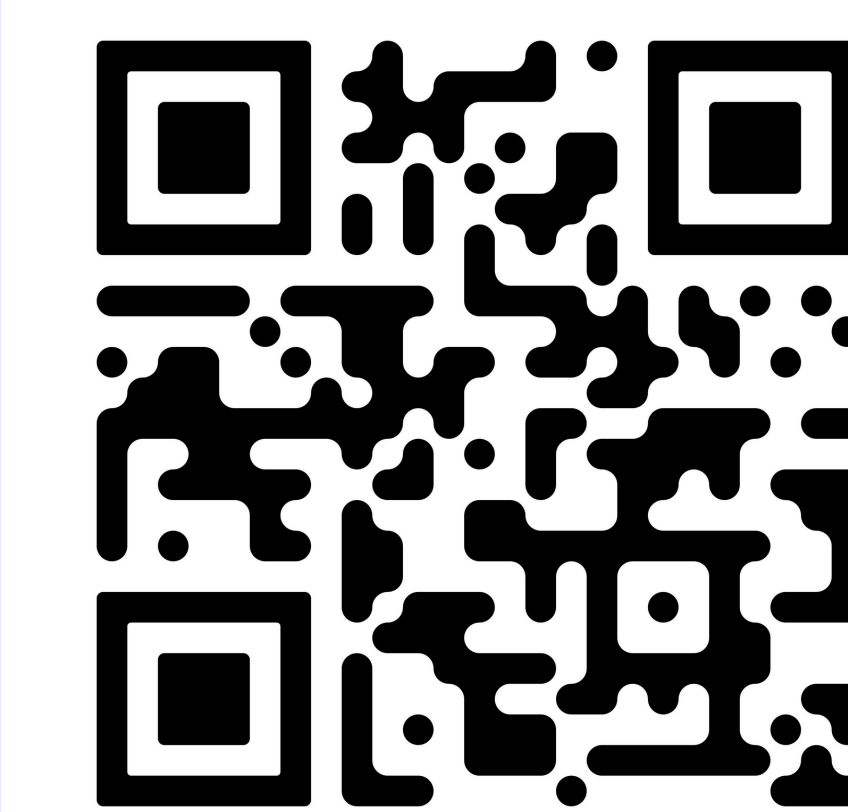
TOTAL KNEE AND TOTAL HIP INTRAOP COCKTAIL

20 mL of 0.25% bupivacaine with epinephrine 1:200,000 (0.10 mL)
20 mL of 0.9% NaCl
20 mL exparel



(picture 1)

References



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