Medical Xpress

Multimodal analgesia: The new 'standard of care' for pain control after total joint replacement

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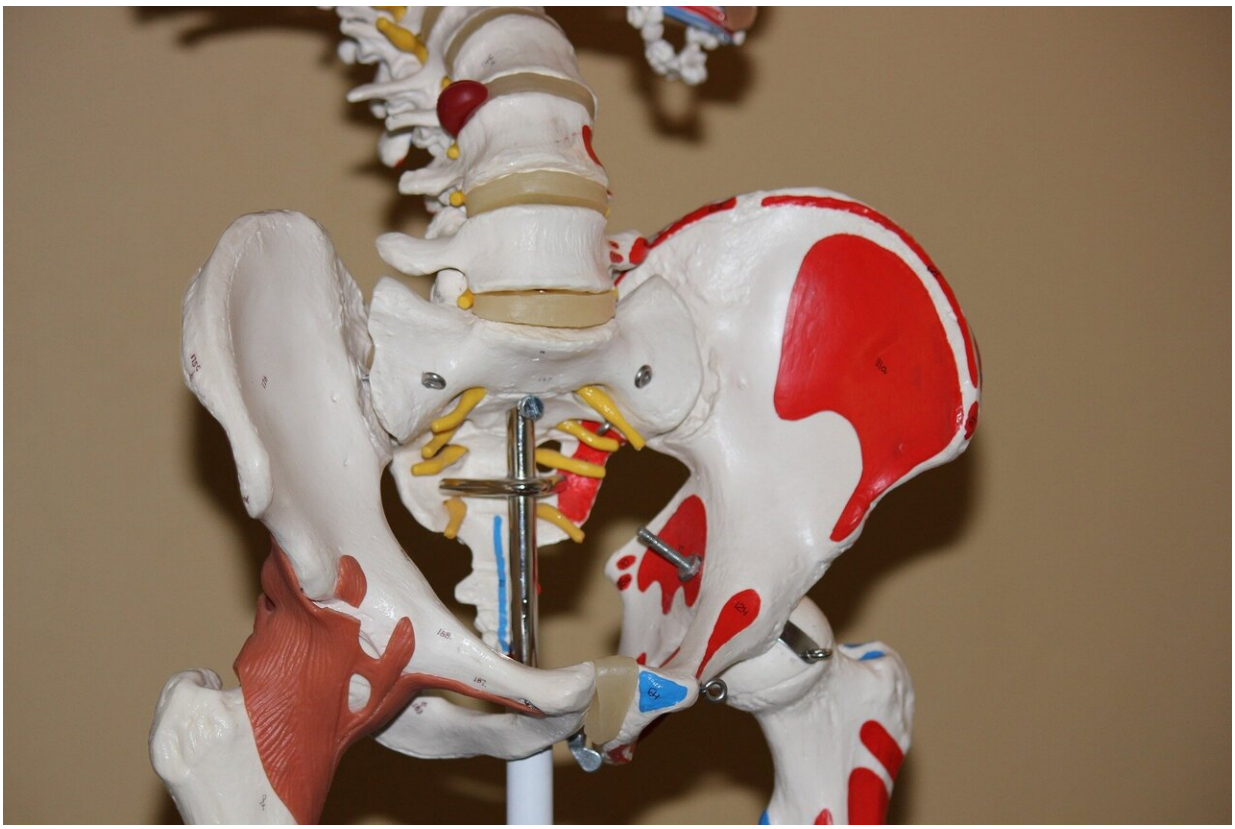

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Until relatively recently, opioids were a mainstay of treatment for pain following total hip or knee replacement. Today, a growing body of

evidence supports the use of multimodal analgesia—combinations of different techniques and medications to optimize pain management while reducing the use and risks of opioids, according to a paper in *The Journal of Bone & Joint Surgery*.

"Multimodal analgesia has become the standard of care for total joint arthroplasty as it provides superior analgesia with fewer side effects than opioid-only protocols," write Javad Parvizi, MD, FRCS, of Rothman Orthopaedic Institute at Thomas Jefferson University, Philadelphia, and coauthors. They provide an update on multimodal analgesia for patients undergoing total joint arthroplasty (TJA), including the protocol utilized at their institution.

Following TJA, combination techniques improve pain control—and reduce opioid risks

Good pain management is critical to achieving the best possible outcomes in hip or knee replacement. Traditionally, pain following TJA was treated with opioid-based regimens, especially patient-controlled analgesia with intravenous opioids. However, opioids have substantial adverse effects, including confusion, nausea and vomiting, and respiratory depression—in addition to the well-known risks of opioid addiction, abuse, and misuse.

"Multimodal analgesia involves the use of various agents with different mechanisms of action, thus maximizing benefit while minimizing side effects," Dr. Parvizi and colleagues write. Although the exact medications and techniques may vary by hospital, multimodal combinations are now preferred over opioid-based approaches.

Ideally, multimodal analgesia starts before surgery and continues during and after the procedure, including after the patient is discharged from

the hospital. Recent studies have shown that multimodal analgesia can improve pain scores and side effects while reducing opioid use, compared to opioid-based regimens.

In their review, Dr. Parvizi and coauthors provide an update on the use of multimodal analgesia for TJA, including:

- *Analgesic Medications.* Familiar drugs with good safety characteristics, such as acetaminophen and nonsteroidal anti-inflammatory drugs, which provide excellent pain control. Other useful medications include certain antiseizure medications, which are typically used for the treatment of nerve pain, and corticosteroids such as dexamethasone, which are highly effective in reducing inflammation. The "weak" opioid drug tramadol is sometimes used, although questions remain about its safety.
- *Local Anesthetics.* Multimodal analgesia may also include various local anesthetic techniques. These include anesthetics given via local infiltration: similar to local anesthesia for dental procedures, these techniques prevent pain by numbing the nerves in a specific area. Local anesthetics can also be used to perform specific types of nerve blocks, especially for knee replacement surgery.
- *Nondrug Strategies.* Nonpharmacologic techniques such as electrotherapy, acupuncture, or cryotherapy, which can be as simple as applying an ice pack, have shown promising results. However, there are questions about the quality of the current studies on these modalities. New surgical techniques, such as those that avoid the use of a tourniquet, may help reduce the need for opioids.

Dr. Parvizi and coauthors look at some emerging treatments for pain control, such as the local delivery of pain medications via implants, a

procedure using cold to temporarily block pain transmission by nerves (cryoneurolysis), and the stimulation of peripheral nerves. Cannabis is being explored as a possible multimodal treatment, although studies so far have shown no reduction in pain or opioid use after TJA.

The article includes a table summarizing the Rothman Institute protocol for multimodal analgesia for TJA—from pre-emptive analgesia before surgery through follow-up care after discharge. Dr. Parvizi and colleagues conclude that "multimodal pain management is essential to guarantee proper perioperative pain control in TJA and optimize surgical outcome and postoperative recovery, while minimizing the use of opioids."

More information: Joseph A. Karam et al, An Update on Multimodal Pain Management After Total Joint Arthroplasty, *Journal of Bone and Joint Surgery* (2021). DOI: 10.2106/JBJS.19.01423

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