- **FACT SHEET No. 12**

Acupuncture for Acute Pain After Surgery

Acute pain management strategies have evolved over the past 15 years, becoming increasingly multimodal, with modern understanding of the benefits of combining analgesics with additive or synergistic effects [8]. One non-pharmacologic modality—acupuncture—holds promise in providing postoperative pain relief and in diminishing the side effects associated with volatile anesthetics, opioids, and adjuvant analgesics.

Acupuncture for Postoperative Pain: Mechanistic Evidence

- Electro-acupuncture stimulates the release of β-endorphin, encephalin, and endomorphin, which in turn activates the μ- and δ-opioid receptors, key receptor sites in the management of acute, chronic, and neuropathic pain [2].
- High-frequency stimulation (100-200 Hz) provides rapid-onset analgesia that does not appear to be blocked by naloxone (a μ-opioid antagonist), suggesting it may be mediated by norepinephrine, serotonin, and dynorphins [1].
- Low-frequency (2-4 Hz) and medium-frequency stimulation (15-30 Hz) appear to produce an analgesic effect that is reversed by naloxone, suggesting it is mediated by enkephalins and endorphins [1,9]. These frequencies also appear to produce analgesia that accumulates, lasting at least an hour after treatment [1].

Acupuncture for Postoperative Pain: Clinical Evidence

- A systematic review of 15 randomized controlled trials (RCT) comparing acupuncture versus sham in various surgeries revealed that postoperative pain intensity was significantly reduced in the acupuncture groups at 8 and 72 hours post-surgery compared with the sham control group. Significant difference was also found in mean opioid consumption at 8, 24, and 72 hours between acupuncture versus control groups [7].
- When preoperative acupuncture was analyzed as a subgroup, results showed that cumulative opioid consumption was lower in the acupuncture group compared with placebo, but this effect

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was only statistically significant when acupuncture was administered prior to the operation, suggesting the potential role for acupuncture in securing preemptive analgesia [7].

Acupuncture for Postoperative Pain: Additional Benefits

- One RCT for total knee arthroplasty found that patients who received acupuncture three times a week had significantly reduced pain and swelling compared with patients with usual care on postoperative days 14 and 21 [3]. The acupuncture group also experienced a significantly faster return to preoperative range of motion levels (average difference=5.7 days; $p<0.01$).
- In a systematic review of 21 articles, the addition of acupuncture and acupressure to standard care was found to significantly reduce the incidence of postoperative nausea and vomiting compared with antiemetic prophylaxis used alone [4].
- A meta-analysis pooled 24 RCTs for nausea, 29 for vomiting, and 19 for the use of rescue anti-emetics and found that compared with placebo and medication control groups, all acupoint stimulations (acupuncture, acupressure, or electrical stimulation) significantly reduced nausea, vomiting, and the use of rescue anti-emetics ($p<0.0001$) [5].

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AUTHOR

Kathryn Walker, MS, MAOM, Lic. Ac.
Clinical Acupuncturist, Neurosurgical Consultants, Norwood Hospital
Norwood, Mass., USA
Research Acupuncturist, Martinos Center, Massachusetts General Hospital
Boston Mass., USA

REVIEWERS

Chester 'Trip' Buckenmaier III, MD
Program Director
Defense and Veterans Center for Integrative Pain Management
Professor of Anesthesiology
Uniformed Services University
Bethesda, Md., USA

Lynn Teo, MS, Lic. Ac.
Senior Research Associate
Thought Leadership & Innovation Foundation
Leesburg, Va., USA

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