TAKE-HOME MESSAGE
There is inadequate evidence to support or discourage the combination of epinephrine with lidocaine for digital nerve blocks.

Should I Use Lidocaine With Epinephrine in Digital Nerve Blocks?

EBEM Commentators
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Results
Of the 1,164 identified studies, only 4 met inclusion criteria for analysis, which included 167 patients. None of the studies were deemed to be high quality according to risk-of-bias analysis. Three studies used epinephrine with lidocaine concentration 1:100,000, whereas 1 used 1:200,000. Only 1 study reported prolonged anesthesia duration with epinephrine with lidocaine, and 2 studies demonstrated a reduction of bleeding during surgery. No studies reported any adverse events (eg, digital ischemia) in the lidocaine with epinephrine group.

Commentary
Digital nerve blocks are common procedures in the emergency department (ED). The use of lidocaine with epinephrine offers the potential benefits of a bloodless field and prolonged anesthesia time because of vasoconstriction. However, it is traditionally taught to avoid using epinephrine with local anesthetic agents in digital nerve blocks because of the potential risk of digital ischemia and necrosis. This well-held convention is taught for other anatomical sites with end artery flow, such as the nose and earlobes.
Physicians who routinely use lidocaine with epinephrine in digital nerve blocks must rely on lower-quality evidence to support their practice. In a retrospective chart review of 1,111 digit or hand surgery cases, 611 patients received lidocaine with epinephrine. Of the 986 patients (89%) captured in follow-up, none in the epinephrine group experienced digit necrosis. An earlier literature review found 50 cases of digital gangrene reported. Most occurred in the early 20th century; 21 cases used epinephrine, with concentrations reported in only 4 cases (ranging from 1:160,000 to 1:400,000). None of these cases used lidocaine but rather older anesthetics or water, and many had confounding factors (e.g., infection, tourniquets). The authors concluded that the literature failed to prove that lidocaine with epinephrine leads to digital necrosis.

Although the current available randomized controlled trial evidence suggests that the addition of epinephrine to lidocaine in digital nerve blocks prolongs anesthesia duration and reduces bleeding during surgery, with low risk of digital ischemia, there is not enough high-quality evidence to recommend or refute the routine use of lidocaine with epinephrine for digital nerve blocks in the ED. Further prospective randomized controlled trials of high methodological quality with patient-centered outcomes are needed to establish the benefits, risks, and best practice recommendations.


Michael Brown, MD, MSc, and Alan Jones, MD, serve as editors of the SRS series.