

Lisette Romo PA-S2

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The Anesthetic Effects of Lidocaine with Epinephrine in Digital Nerve Blocks: *A Systematic Review*

One of the most long-standing beliefs taught in medicine is to avoid using lidocaine with epinephrine in the fingers due to the possibility of complications such as digital ischemia and necrosis. Many providers were trained not to use epinephrine in high areas of arterial blood supply, which include the fingers, toes, nose, and penis. However, there have been recent studies that challenged this practice and actually suggest that using lidocaine with epinephrine for digital nerve blocks might actually be a safe procedure to perform in healthy individuals. Being informed on this topic is necessary in emergency medicine since there is a wide range of trauma presenting, such as finger lacerations, hand trauma, nail injuries, that require digital nerve blocks.

The article, “The Anesthetic Effects of Lidocaine with Epinephrine in Digital Nerve Blocks: A Systematic Review,” reviewed randomized controlled trials that compared participants receiving lidocaine with epinephrine to plain lidocaine for digital nerve blocks. This was comprised of 7 RCTs, which included 363 adult participants and 442 digital nerve blocks. The main goal was to assess whether adding epinephrine affected the onset of anaesthesia to work, the length of the effect of anaesthesia, bleeding control, and adverse risks such as necrosis.

What was found as a result was that lidocaine with epinephrine had several advantages in comparison to lidocaine alone. Out of the 7 RCTs, 5 studies specifically evaluated the duration of anaesthesia, and all 5 demonstrated that lidocaine with epinephrine provided a longer duration of numbing. Two of the studies also found that lidocaine with epinephrine had a much faster onset of action. In the emergency department, this can make a significant difference in time efficiency and an easier process to perform procedures, especially laceration repairs. The studies also reported an improvement in the amount of bleeding during procedures, and this is helpful when trying to visualize the wound and trying to control the bleeding.

Additionally, a key finding from the review was that there were no actual reports of digital necrosis in the group of participants that received lidocaine with epinephrine. This is an important finding since it supports the recent evidence that the standards for not using epinephrine in the digits are becoming outdated. The article also references larger prospective cohort studies conducted on thousands of participants that also had the same conclusion: that after giving lidocaine with epinephrine, there were no complicated cases causing tissue loss or any ischemic effects, as they reported on over 7,000 cases with no digital necrosis. The reason why this belief most likely occurred is because of older reports on necrosis occurring with outdated anesthetics, poor mixing of agents, tight tourniquets, infections, and very high

concentrations of epinephrine being used instead of the current diluted preparations that are now used today.

Overall, this systematic review article was very informative and highly applicable to emergency medicine since it directly applies to procedures that are frequently performed. The evidence supports that using lidocaine with epinephrine provides great benefits, leading to better wound repair. In healthy patients, lidocaine with epinephrine is safe to use for digital nerve blocks. Conditions in which clinicians must be cautious in using this are in patients who present with peripheral vascular disease or Raynaud's. This article provides strong evidence of how emergency medicine practices continue to evolve.