

Concomitant Use of Spasmolytics and Opioids for Postoperative Pain After Foot and Ankle Surgery *Fair or Foul?*

Brandon M. Brooks, DPM, MPH*
Robert G. Smith, DPM, MSc, RPh, FNAP†

Skeletal muscle relaxants are medications that affect skeletal muscle function and decrease muscle tone; they may be used to alleviate symptoms such as muscle spasms, pain, and hyperreflexia.¹ The term *muscle relaxant* primarily refers to two major therapeutic groups: neuromuscular blockers and spasmolytics. Carisoprodol, cyclobenzaprine, metaxalone, and methocarbamol are examples of spasmolytics that are commonly prescribed to relieve painful musculoskeletal conditions,¹ particularly muscle spasms, and may also help with improving movement and range of motion,² which coincide with AO principles.³ Furthermore, spasmolytics may also be useful in combating the US opioid epidemic because they can potentially reduce the need for higher-dose opioids, which are associated with addiction and an increased risk of opioid overdose⁴; the benefits of multimodal analgesia are well documented in the literature.⁵ Podiatric physicians who are continuing to develop and add to their analgesic armamentarium to effectively treat their patients' pain should familiarize themselves with the short-term use of spasmolytics in the context of concomitant prescribing with opioids because opioid therapy is a cornerstone of the pharmacologic management of acute and chronic pain.^{6,7}

We know that clinically meaningful variation exists in postoperative pain management in foot and ankle surgery.⁸⁻¹¹ In addition, research from the University of Florida estimated that 10% to 30% of prescription opioid users also use some form of a neuromuscular blocker or a spasmolytic.¹² Brooks et al⁹ conducted an investigation using data collected from 860 podiatric

physician respondents and determined that 2% to 10% (n = 18–87) prescribe spasmolytics with opioids for various foot and ankle surgeries. The investigation by Brooks et al⁹ was based on the earlier study by Hearty et al¹¹ (n = 64) using the same scenarios, which allows for an apples-to-apples comparison between podiatric physicians and orthopedic physicians. Hearty et al¹³ demonstrated that 3% to 13% of orthopedic physicians prescribed spasmolytics, which is similar to what podiatric physicians prescribe.⁹ The top two opioids prescribed by podiatric physicians concomitantly with spasmolytics are hydrocodone and oxycodone.⁹

One explanation for why so few podiatric physicians prescribe spasmolytics might be recommendation 11 from the Centers for Disease Control and Prevention (CDC) 2016 Guidelines for Prescribing Opioids for Chronic Pain.⁴ The CDC advises against prescribing spasmolytics and opioids concurrently due to concerns of additive central nervous system depressant effects on brain function⁴; this recommendation, in part, was based on the work of Park et al,¹⁴ which found that concomitant benzodiazepine use with prescription opioids was associated with almost four times the risk of overdose death compared with opioid use alone; however, correlation is not causation, and the specifics matter. Park et al¹⁴ examined a veteran population in 2004–2009 and did not differentiate between short- and long-term use; Park et al¹⁴ point out that a daily dose-dependent association does exist. That is important because certainly the dose of any drug matters. Paracelsus is credited with the classic toxicology dictum, “What is there that is not poison? All things are poison, and nothing is without poison. Solely the dose determines that a thing is not a poison.”^{15(p126)} The CDC guidelines for chronic pain offer very little in terms of recommendations for acute pain, dodging the topic of morphine milligram equivalents for acute or postoperative pain altogether.⁴ Note that concomitant use of spasmolytics and opioids can be safe and effective for acute pain for certain patients.¹⁶

*Geisel School of Medicine at Dartmouth, Hanover, NH.

†Studying Opioid Harm 501.3c, Ormond Beach, FL 32174.

Corresponding author: Brandon M. Brooks, DPM, MPH, Geisel School of Medicine at Dartmouth, 1 Rope Ferry Rd, Hanover, NH 03755. (E-mail: brandon.m.brooks.med@dartmouth.edu)

A 2020 study by Li et al,¹⁶ which assessed the medical records of almost 20 million patients, found that short-term concomitant use of spasmolytics (ie, ≤ 2 weeks) and opioids posed no greater risk of overdose than using opioids alone. Li et al¹⁶ upheld the CDC's concerns for long-term use of spasmolytics with high-dose opioids. Specifically, Li et al^{16(p81)} note that "this risk seemed to increase with treatment duration (≤ 14 days: 0.91; 95% CI [confidence interval], 0.67–1.22; 15–60 days: 1.37; 95% CI, 0.81–2.37; > 60 days: 1.80 and 95% CI, 1.30–2.48). Concomitant users with daily opioid dose ≥ 50 mg (1.50; 95% CI, 1.18–1.92)." When examining particular muscle relaxants, baclofen and carisoprodol were associated with an increased risk of complications¹⁶; podiatric physicians should proceed with caution using these two drugs with opioids. Finally, Li et al¹⁶ note that both higher-dose opioids and combining opioids, spasmolytics, and benzodiazepines were associated with increased complications and unsafe.¹⁶ Podiatric physicians should avoid this triple combination.

In conclusion, podiatric physicians should avoid prescribing certain spasmolytics with opioids, particularly carisoprodol and baclofen. Prescribing other spasmolytics and opioids prescribed concomitantly for short-term (ie, ≤ 14 days) postoperative pain may be beneficial for certain patients. It remains up to the podiatric physician to assess their patients' opioid history, pain tolerance, and comorbidities to formulate a patient-centric and procedure-focused approach to determine which nonopioid analgesics and opioids are best for managing their patients' postoperative pain.¹⁷⁻²⁰

Financial Disclosure: None reported.

Conflict of Interest: None reported.

References

1. SEE S, GINZBURG R: Skeletal muscle relaxants. *Pharmacotherapy* **28**: 207, 2008.
2. CHOU R, PETERSON K, HELFAND M: Comparative efficacy and safety of skeletal muscle relaxants for spasticity and musculoskeletal conditions: a systematic review. *J Pain Symptom Manage* **28**: 140, 2004.
3. PERREN SM, FERNANDEZ DELL'OCA A, REGAZZONI P: Evolution of AO fracture treatment: part 1. The internal fixator. *Acta Chir Orthop Traumatol Cech* **84**: 413, 2017.
4. DOWELL D, HAEGERICH TM, CHOU R: CDC Guideline for Prescribing Opioids for Chronic Pain—United States, 2016. *MMWR Recomm Rep* **65**: 1, 2016.

5. SMITH RG: Mitigating the shadow of the worldwide opioid crisis: a review for the foot and ankle specialist. *Foot Ankle Spec* **13**: 242, 2020.
6. SMITH RG: A review of opioid analgesics frequently prescribed by podiatric physicians. *JAPMA* **96**: 367, 2006.
7. BROOKS BM, SALVO NL, ROBBINS JM: The opioid use agreement in foot and ankle surgery: an addition to your informed consent. *JAPMA* **113**: 1, 2023; doi: <https://doi.org/10.7547/23-045>.
8. BROOKS BM, BROOKS BM, BROOKS BM, ET AL: Postoperative opioid prescribing practice in foot and ankle surgery. *JAPMA* [March 3, 2021; doi: 10.7547/20-223].
9. BROOKS BM, BRATCHES RWR, NETTLES AM, ET AL: American podiatric surgeons' postoperative multimodal analgesic prescribing practice: a 2019-2020 National Survey. *JAPMA* **113**: 1, 2023; doi: <https://doi.org/10.7547/21-145>.
10. BROOKS BM, SHIH CD, BRATCHES RWR, ARP AS, ET AL: Cognitive bias in postoperative opioid-prescribing practice. *JAPMA* **113**: 1, 2023; doi: <https://doi.org/10.7547/21-215>.
11. BROOKS BM: Podiatry and the opioid epidemic: a call to action. *JAPMA* **113**: 1, 2023; doi: <https://doi.org/10.7547/23-160>.
12. University of Florida College of Pharmacy: UF study finds some combinations of opioids and muscle relaxants are safe, others raise overdose risk. Available at: <https://pharmacy.ufl.edu/2020/07/06/uf-study-finds-some-combinations-of-opioids-and-muscle-relaxants-are-safe-others-raise-overdose-risk/>. Published July 6, 2020. Accessed November 20, 2021.
13. HEARTY TM, BUTLER P, ANDERSON J, ET AL: Postoperative narcotic prescription practice in orthopedic foot and ankle surgery. *Foot Ankle Orthop* **3**: 247301141877594, 2018.
14. PARK TW, SAITZ R, GANOCZY D, ET AL: Benzodiazepine prescribing patterns and deaths from drug overdose among US veterans receiving opioid analgesics: case-cohort study. *BMJ* **350**: h2698, 2015.
15. GRANDJEAN P: Paracelsus revisited: the dose concept in a complex world. *Basic Clin Pharmacol Toxicol* **119**: 126, 2016.
16. LI Y, DELCHER C, WEI Y-JJ, ET AL: Risk of opioid overdose associated with concomitant use of opioids and skeletal muscle relaxants: a population-based cohort study. *Clin Pharmacol Ther* **108**: 81, 2020.
17. BROOKS BM, BRATCHES RWR, WOLFF KB, STAPP MD, ET AL: Opioid-prescribing approaches-one-size-fits-all versus patient-centric and procedure-focused-among podiatric physicians: a cross-sectional study. *JAPMA* **113**: 1, 2023; doi: <https://doi.org/10.7547/21-246>.
18. BROOKS BM, LI Q, FLEISCHER AE, ET AL: Postprocedural opioid-prescribing practice in nail surgery. *JAPMA* **113**: 1, 2023; doi: <http://doi.org/10.7547/21-139>.
19. BROOKS BM, SHIH CD, BROOKS BM, ET AL: The diabetic foot-pain-depression cycle. *JAPMA* **113**: 1, 2023; doi: <http://doi.org/10.7547/22-126>.
20. ARP AS, MULTANI JK, YEN RW, ET AL: The anesthetic effects of lidocaine with epinephrine in digital nerve blocks: a systematic review. *JAPMA* **113**: 1, 2023; doi: <https://doi.org/10.7547/21-066>.