

Background

Bunion (hallux valgus) deformities are among the most prevalent forefoot pathologies encountered in orthopedic and podiatric practice. While conservative management is generally effective, advanced deformities can result in significant joint subluxation, tendon imbalance, and secondary digital fractures. Surgical correction in such cases—especially when combined with ORIF—creates a high-risk environment for complex postoperative pain syndromes. Understanding and applying multimodal pain strategies are vital to minimizing opioid dependence and optimizing functional recovery.

Case Presentation

A middle-aged male presented with progressive hallux valgus deformity unresponsive to multiple conservative modalities, including orthotic correction, physical therapy, NSAIDs, and corticosteroid injections. Over time, the deformity caused compensatory gait alterations and instability, culminating in stress fractures of the **2nd and 3rd metatarsophalangeal joints**.

He underwent combined **bunionectomy** and **ORIF with K-wire stabilization**. Postoperatively, he developed severe burning, throbbing forefoot pain disproportionate to expected surgical pain, partially refractory to standard opioid therapy. Differential diagnoses included surgical neuropathy and early **complex regional pain syndrome (CRPS)**.

Multidisciplinary pain management consultation was initiated early in the postoperative course.

Pain Management Strategy

A multimodal approach was employed:

Regional Analgesia: A preemptive single-shot sciatic nerve block with 0.5% ropivacaine for intra- and immediate postoperative pain control.

Pharmacologic Therapy: Scheduled acetaminophen and NSAIDs, with gabapentin added for neuropathic modulation.

Adjunctive Measures: Cryotherapy, compression, and elevation reduced inflammation and edema. Transdermal lidocaine and graded desensitization exercises supported outpatient recovery.

The patient's symptoms improved steadily without CRPS development, and opioid use was rapidly tapered within two weeks.

Discussion

This case underscores the interplay between surgical trauma, peripheral nerve sensitization, and postoperative neuroinflammation in complex forefoot reconstructions. When pain persists beyond the expected recovery trajectory, early recognition of neuropathic components is critical.

Regional anesthesia—particularly preemptive blocks—can mitigate central sensitization by reducing nociceptive transmission during surgery. Adjunctive neuropathic agents such as gabapentinoids further decrease hyperalgesia risk. The combination of pharmacologic, rehabilitative, and regional techniques exemplifies the **ASRA-endorsed multimodal paradigm**.

Importantly, structured desensitization therapy and close monitoring prevented progression to chronic pain states. This highlights the essential **collaboration between pain specialists, surgeons, and rehabilitation teams in optimizing postoperative recovery and reducing opioid exposure**.

Conclusion

This case underscores the importance of early, individualized, and multimodal pain management in patients undergoing complex forefoot reconstructions involving bunionectomy with concurrent digital ORIF. Postoperative pain in such procedures often results from a combination of somatic, inflammatory, and neuropathic mechanisms, requiring proactive and layered management rather than reactive opioid escalation.

The integration of **regional anesthesia, non-opioid multimodal analgesics, and early neuropathic modulation** through agents such as gabapentin can substantially reduce pain intensity and opioid requirements. Furthermore, **physical therapy and desensitization strategies** play a vital role in promoting neural adaptation, restoring functional mobility, and preventing long-term complications such as chronic postoperative pain or complex regional pain syndrome (CRPS).

By emphasizing a coordinated approach among surgeons, anesthesiologists, and rehabilitation specialists, this case highlights how structured multimodal pain protocols improve patient satisfaction, decrease hospital stays, and reduce the risk of chronic pain syndromes. Future directions may include standardized pain pathways for forefoot surgeries to further enhance recovery and minimize opioid dependence.

References

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Images



1. **Figure 1.** Dorsal view of right foot immediately postoperatively showing midfoot and forefoot incisions with surgical staples and visible edema. Note the presence of K-wires used to stabilize the 2nd and 3rd metatarsophalangeal joints following ORIF.
2. **Close-up image** showing surgical site on postoperative day 3. Moderate ecchymosis and early signs of superficial dehiscence between 2nd and 3rd toes are visible. K-wires are pinned externally with protective caps.
3. **Figure 3.** Later postoperative image demonstrating partial eschar formation over the incision sites, with resolving edema and discoloration in the toes. Careful monitoring was conducted for signs of ischemia or complex regional pain syndrome (CRPS).