

ORIGINAL RESEARCH

A Review of Post-operative Pain Management of Hallux Valgus Procedures

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Abstract: **Background:** The management of hallux valgus is important in orthopedic surgery. The purpose of the current study was to look into the techniques for reducing pain after surgery for hallux valgus. **Method:** The results of this study were obtained by reviewing English-language papers about foot and ankle surgery that were published in the PubMed and Scopus databases between 1991 and 2021. Ultimately 41 articles were retrieved.

Results: Based on the results of this study, systemic steroids and opioids, when used without paracetamol, non-steroidal anti-inflammatories, and cyclo-oxygenase inhibitors II, can be used properly to provide analgesia during hallux valgus surgery. **Conclusion:** Postoperative analgesics and sciatic nerve blocks in conjunction with other techniques are used to manage the pain after this procedure.

Keywords: bunion, pain control, hallux valgus

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1. Introduction

Hallux valgus, an orthopedic foot disorder, results in first toe deviation in a valgus direction as well as the middle protrusion of the head of the first metatarsal. Reports have shown that the prevalence of hallux valgus is 33%, and 200,000 people in America need surgery for this condition every year (1 and 2). The management of hallux valgus is important in orthopedic surgery (3). The average postoperative pain following hallux valgus surgery is reported to be 5.1 out of 10, and it is one of the procedures linked with moderate to severe postoperative pain (2). In order to select the optimum management and treatment strategy, this study reviews the techniques used to manage pain after hallux valgus surgery.

2. Methods

The results of this study were obtained by reviewing English-language papers about foot and ankle surgery published in PubMed and Scopus databases between 1991 and 2021. Pain

management and hallux valgus were among the keywords. A total of 41 articles were retrieved, and 28 of them underwent comprehensive review (Figure 1).

There are several evidences that propose different management options for controlling pain following hallux valgus surgery, including using systemic steroids, cyclo-oxygenase-2 inhibitors, non-steroidal anti-inflammatory medications, and paracetamol both before and after the procedure (1 and 9). (References should be in order) Ankle blocks are typically used to relieve pain, while wound infiltration using local anesthetics is also an option. Infusion of local anesthetic into a wound typically has little effect on pain. The use of opioids while managing side effects including nausea and vomiting after surgery can be useful in cases where other pain management techniques are ineffective (Table 1) (4).

One of the relievers with low adverse effects and good tolerability is paracetamol. Despite the fact that there have been little studies on how Paracetamol functions, it can be utilized as a simple painkiller because of its beneficial effects (5). Even though oral dexamethasone and intramuscular betamethasone have been the subject of numerous research, intravenous dexamethasone is still preferred when using systemic steroids. This may be because intravenous dexamethasone helps minimize postoperative nausea and vomiting and enhances the effects of procedures such as anesthetic infiltration and ankle block (6, 7).

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Anatomical landmark ankle block, as compared to general anesthesia, can lessen suffering or delay the onset of the initial pain following surgery, according to the findings of two clinical trials (8, 9). Ankle block is more successful than local anesthetic wound infiltration, according to the findings of a clinical investigation, and it can be used to provide the circumstances needed to do surgery without requiring general or spinal anesthesia (10, 11).

Sciatic nerve blocks in the saphenous and popliteal regions are another technique for managing pain after hallux valgus surgery.

McLeod and colleagues investigated the effects of wound infiltration and sciatic nerve block and found that both groups of patients who underwent general anesthesia experienced the same level of pain after surgery (12,13). The combination of an ankle block and a sciatic nerve block in the time following forefoot surgery greatly lessens patients' discomfort, according to the findings of a 25-year review (14). According to this research, a sciatic nerve block causes patients to feel pain for a longer period of time than an ankle block or a wound infiltration with 0.5% bupivacaine (15).

Numerous investigations have been done on the subject of blocking the sciatic nerve with various local anesthetic doses (16 - 19).

The use of local anesthetics, fentanyl, or clonidine, as well as opioids cannot be reduced, according to research, although they can delay the onset of the first acute pain following surgery. It is crucial to pay close attention to weight bearing and patient recovery during outpatient operations that involve sciatic nerve blocks. The use of an ankle block minimizes foot drop in patients for whom weight bearing is not a restriction during the recovery phase, ensuring their safety at home (20). Only a small number of clinical trials (21-25) have shown evidence for the use of Gabapentinoids for wound infiltration with medications having extended release, such as dexamethasone and bupivacaine.

In some studies, patients did not receive basic analgesics such non-steroidal anti-inflammatory medications or paracetamol (26-28). Additionally, a lot of these studies assessed patients' pain levels using unconventional criteria and by taking into account their typical daily pain levels, their total variation in pain intensity during an 8-hour period, or both. The blocks were also combined with general anesthesia, and only two ankle block studies in total were investigated and confirmed.

Table 2 summarizes analgesic interventions that are not recommended for pain management in patients undergoing hallux valgus repair.

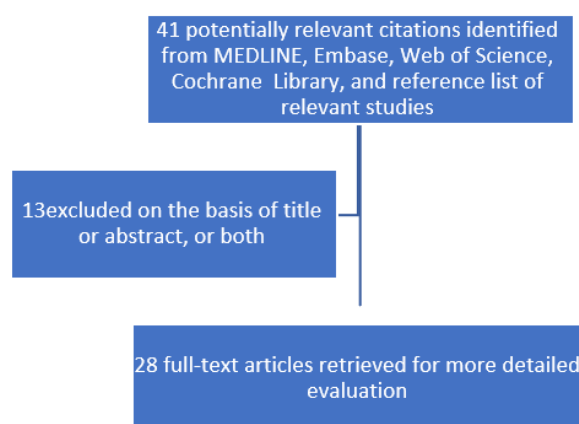


Figure 1: Diagram of study steps.

3. Results

Based on the results of this study, systemic steroids and opioids, when used without paracetamol, non-steroidal anti-inflammatories, and cyclo-oxygenase inhibitors II, can be used properly to provide analgesia during hallux valgus surgery.

4. Conclusion

Our research showed that in the absence of contraindications, systemic steroids and opioids, when used without paracetamol, non-steroidal anti-inflammatories, and cyclo-oxygenase inhibitors II, can be used properly to provide analgesia during hallux valgus surgery or during the postoperative period. Systemic opioids and steroids are used to keep the pain-control procedure going during the recovery phase. Additionally, wound infiltration with the aid of a local anesthetic and ankle block as a regional technique may be considered as viable alternatives. There is currently insufficient data to support the use of gabapentinoids and wound infiltration with bupivacaine released gradually for pain management following hallux valgus surgery.

5. Appendix

5.1. Acknowledgment

None.

5.2. Conflict of interest

The authors declare no conflict of interest.

5.3. Funding support

None.

Table 1: Overall recommendations for pain management in patients undergoing hallux valgus repair**Preoperative and intraoperative.**

Paracetamol (grade of recommendation D). Cyclo-oxygenase-2 selective inhibitor or non-steroidal anti-inflammatory drugs (grade of recommendation A).

Systemic steroids (grade of recommendation A).

Ankle block (grade of recommendation A) or wound infiltration with single administration of local anesthetics (grade of recommendation A). Ankle block recommended as a first choice and wound infiltration as an alternative (grade of recommendation D).

Postoperative.

Paracetamol (grade of recommendation A).

Cyclo-oxygenase-2 selective inhibitor or non-steroidal anti-inflammatory drugs (grade of recommendation A).

Opioid for rescue (grade of recommendation D).

Noteworthy, the literature on sciatic nerve block did not meet the inclusion requirements for PROSPECT methodology. PROSPECT, PROcedure SPECific Postoperative Pain Management.

Table 2: Analgesic interventions that are not recommended for pain management in patients undergoing hallux valgus repair

Intervention	Reason for not recommending
Preoperative	
Pregabalin	Limited procedure-specific evidence
Clonidine as perineural adjunct for a combined femoral and sciatic nerve block	Lack of procedure-specific evidence
Fentanyl as perineural adjunct for a combined femoral and sciatic nerve block	Lack of procedure-specific evidence
Intraoperative	
Wound infiltration with extended-release bupivacaine	Limited procedure-specific evidence
Wound infiltration with dexamethasone	Limited procedure-specific evidence
Continuous wound infiltration with local anesthetics	Lack of procedure-specific evidence
Postoperative	
Plaster slipper vs crepe bandage	Lack of procedure-specific evidence.
Homeopathic Traumeel	Lack of procedure-specific evidence
Surgical technique	
Percutaneous chevron osteotomy.	Conflicting procedure-specific evidence
Bioabsorbable magnesium screws	Lack of procedure-specific evidence

5.4. Author's contributions

All the authors had the same contribution.

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