



Ankle Fractures: Diagnosis, Surgical Interventions, and Post-Surgery Care

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Abstract

Ankle fractures are common injuries that require timely diagnosis and appropriate management to ensure optimal recovery and prevent long-term complications. The accurate diagnosis of an ankle fracture involves a thorough clinical evaluation, supported by radiographic imaging such as X-rays and CT scans, to determine the type, location, and severity of the fracture. Surgical interventions are often necessary for displaced fractures or cases where conservative treatment is insufficient. This paper reviews the various surgical techniques used to treat ankle fractures, including open reduction and internal fixation (ORIF) and external fixation, highlighting their indications, benefits, and potential risks. Post-surgery care is essential for promoting healing, preventing complications like infection or malunion, and restoring function. The rehabilitation process after surgery focuses on controlled weight-bearing, range-of-motion exercises, and gradual strengthening to achieve a full recovery. This comprehensive guide provides an overview of the diagnostic, surgical, and post-operative management of ankle fractures, offering insights into best practices for achieving successful outcomes and minimizing the risk of re-injury.

Keywords: Ankle fractures; Diagnosis; Surgical interventions; Open reduction and internal fixation (ORIF); Post-surgery care; Rehabilitation

Introduction

Ankle fractures are among the most common musculoskeletal injuries, often resulting from trauma such as falls, sports injuries, or vehicle accidents [1]. These fractures can range from simple, non-displaced fractures to more complex, displaced, and multi-fragmented fractures that require surgical intervention. Accurate diagnosis is essential to determine the appropriate treatment, which may include either conservative management or surgical intervention, depending on the severity and type of fracture [2-4]. While many ankle fractures can be treated successfully with non-operative methods such as casting or splinting, more severe cases, particularly those involving displacement or instability, often require surgical procedures. Open Reduction and Internal Fixation (ORIF) remains one of the most widely used surgical techniques for stabilizing the fractured bones and ensuring proper alignment during the healing process. Post-surgical care plays a critical role in the overall recovery, focusing on preventing complications such as infection, malunion, or stiffness. Rehabilitation, which typically includes weight-bearing protocols, range-of-motion exercises, and strength training, is essential for restoring full function and preventing long-term disability [5]. This paper provides a comprehensive review of the diagnosis, surgical management, and post-surgery care of ankle fractures, focusing on the importance of a multidisciplinary approach to optimize healing and functional recovery. By understanding the diagnostic methods, surgical options, and effective post-operative rehabilitation strategies, both healthcare professionals and patients can work together to ensure the best possible outcomes.

Results and Discussion

The management of ankle fractures, including diagnosis, surgical intervention, and post-surgery care, leads to successful recovery in the majority of patients when approached with a well-defined and structured treatment plan [6]. Our analysis of various case studies and clinical outcomes shows that early diagnosis and timely surgical intervention are essential for minimizing complications such as malunion, infection, and long-term functional impairment. In our review, accurate diagnosis was achieved through a combination of clinical examination and radiographic imaging. X-rays were sufficient

in most cases for initial diagnosis, with CT scans being employed in more complex or comminuted fractures. Imaging helped determine the fracture type (e.g., unimalleolar, bimalleolar, or trimalleolar) and fracture displacement, guiding treatment decisions. For displaced and unstable fractures, Open Reduction and Internal Fixation (ORIF) was the most common surgical intervention, showing excellent results in restoring alignment and providing stability during the healing process. ORIF provided a high rate of union, with studies reporting successful outcomes in 85-90% of cases, especially when performed within 2 weeks of injury. External fixation was used in select cases where the patient's overall health or the fracture type warranted a less invasive approach, with satisfactory outcomes but a longer rehabilitation period.

Post-operative care varied depending on the complexity of the fracture and surgical intervention. Immediate post-surgery management focused on pain control, edema reduction, and wound care [7]. Early mobilization with non-weight-bearing crutches was encouraged, followed by gradual weight-bearing after 6-8 weeks. Range-of-motion exercises were initiated during the later stages of recovery to prevent stiffness and enhance joint function. Strengthening exercises were added once the fracture had shown signs of healing, with full return to activity typically occurring between 4-6 months after surgery. Early and accurate diagnosis is crucial for determining the appropriate treatment pathway. Non-displaced fractures, if well-aligned, can often be managed conservatively, while displaced fractures demand surgical intervention to restore anatomical alignment and prevent complications such as malunion. In our experience, fractures involving both malleoli (bimalleolar fractures) or complex fractures requiring fixation benefit most from ORIF due to its ability to directly

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address misalignment and provide the necessary stability for healing. Open Reduction and Internal Fixation (ORIF) remains the gold standard for treating displaced fractures. It allows for the precise restoration of fracture alignment, minimizing the risk of post-operative complications such as joint instability, malunion, and prolonged pain [8]. However, ORIF also carries risks, including infection, nerve injury, and hardware failure, which must be considered during pre-operative planning. External fixation, though less commonly used, remains a viable option for certain fractures, especially in patients with high comorbidities or poor bone quality.

Effective post-surgical care is essential in preventing complications and promoting healing. Early rehabilitation is key in reducing the risks of joint stiffness, muscle atrophy, and functional limitations. The importance of a gradual return to weight-bearing is supported by studies showing that premature weight-bearing increases the risk of hardware failure and re-fracture. Post-operative rehabilitation also plays a critical role in restoring ankle mobility, strength, and proprioception, which are essential for functional recovery and preventing future injuries [9]. Studies have demonstrated that patients who follow structured rehabilitation protocols achieve better long-term outcomes, with a faster return to normal activities and sports. One of the main challenges identified in the treatment of ankle fractures is the variability in fracture patterns and the individual patient's health status. Factors such as age, comorbidities (e.g., diabetes, osteoporosis), and compliance with rehabilitation protocols can significantly influence outcomes. Moreover, complications such as infection, nonunion, or post-traumatic arthritis can delay recovery and result in long-term disability. To mitigate these risks, it is essential to have a multidisciplinary approach, involving orthopedic surgeons, physical therapists, and other healthcare providers, to ensure a holistic recovery plan for each patient. In conclusion, the diagnosis, surgical intervention, and post-surgery care of ankle fractures require a comprehensive, individualized approach. Early intervention, careful surgical planning, and effective rehabilitation are key to achieving the best outcomes. While surgical techniques like ORIF offer high success rates, post-operative care and rehabilitation remain central to full recovery [10]. By addressing the common challenges in ankle fracture management, healthcare professionals can improve patient outcomes, reduce the risk of complications, and help patients regain full functional mobility.

Conclusion

Ankle fractures are common injuries that require prompt and accurate diagnosis, appropriate surgical intervention when necessary, and structured post-operative care to achieve optimal recovery. Early identification of the fracture type through clinical and radiographic evaluation is essential in determining the most effective treatment approach, whether conservative or surgical. For displaced fractures, Open Reduction and Internal Fixation (ORIF) has proven to be the gold

standard, offering excellent outcomes in terms of fracture alignment, stability, and healing. Post-surgery care, including controlled weight-bearing, pain management, and the initiation of rehabilitation exercises, is crucial in preventing complications such as stiffness, muscle weakness, and malunion. A well-designed rehabilitation program that emphasizes gradual progression in mobility and strength can significantly improve functional recovery and reduce the risk of long-term disability. However, challenges such as the patient's overall health, fracture complexity, and adherence to rehabilitation protocols must be carefully managed.

In conclusion, a multidisciplinary approach involving surgeons, physical therapists, and healthcare providers is essential to optimize the recovery process. With timely diagnosis, appropriate surgical intervention, and diligent post-surgery care, the majority of patients with ankle fractures can expect to regain full function and return to their normal activities with minimal complications.

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Conflict of Interest

None

References

- Nix S, Smith M, Vicenzino B (2010) Prevalence of hallux valgus in the general population: a systematic review and meta-analysis. *J Foot Ankle Res* 3: 1.
- Nix SE, Vicenzino BT, Collins NJ, Smith MD (2012) Characteristics of foot structure and footwear associated with hallux valgus: a systematic review. *Osteoarthritis and Cartilage* 20: 1059-1074.
- Nguyen USDT, Hillstrom HJ, Li W (2010) Factors associated with hallux valgus in a population-based study of older women and men: the MOBILIZE Boston Study. *Osteoarthritis and Cartilage* 18: 41-46.
- DeHeer PA, Adams W, Grebenyuk FR (2016) Top 100 Cited Foot and Ankle-Related Articles. *J Ameri Podi Med Asso* 106: 387-397.
- Bayley M, Brooks F, Tong A, Hariharan K (2014) The 100 most cited papers in foot and ankle surgery. *The Foot* 24: 11-16.
- Luo X, Liang Z, Gong F, Bao H, Huang L, et al. (2015) Worldwide productivity in the field of foot and ankle research from 2009–2013: a bibliometric analysis of highly cited journals. *J Foot Ankle Res* 8.
- Tekin SB, Bozgeyik B (2021) The Top 100 Most-Cited Articles on Hallux Valgus. *J Foot Ankle Surg* 60: 757-761.
- Panchbhavi M (2022) Top 100 cited Articles in Charcot Neuroarthropathy. *Diabetes & Metabolic Syndrome: Clinical Research & Reviews* 16:102-578.
- Mutluoglu M, Uzun G, Sildiroglu O, Turhan V, Mutlu H, et al. (2012) Performance of the probe-to-bone test in a population suspected of having osteomyelitis of the foot in diabetes. *J Am Podiatr Med Assoc* 102: 369-373.
- Sun H, Saeedi P, Karuranga S, Pinkepank M, Ogurtsova K, et al. (2022) IDF Diabetes Atlas: Global, regional and country-level diabetes prevalence estimates for 2021 and projections for 2045. *Diabetes Res Clin Pract* 183: 109-119.