

CHALLENGES IN MANAGING TYPE II HAWKINS TALAR NECK FRACTURES WITH DISPLACED OSTEOSYNTHESIS MATERIAL: INSIGHTS FROM SUCCESSIVE SURGERIES – CASE PRESENTATION

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ABSTRACT. This article presents a detailed case study of an 18-year-old female who experienced a significant trauma resulting in a Type II Hawkins talar neck fracture after falling from a height. Initial assessments, including a comprehensive CT scan, confirmed the presence of a displaced fracture in the talar neck. Due to the severity and comminutive nature of the fracture, an urgent surgical intervention was deemed necessary. The procedure entailed an open reduction and fixation strategy, utilizing two screws through a minimally invasive surgical approach to stabilize the fracture. In the aftermath of the surgery, the patient's leg was secured in a non-weight-bearing cast, complemented by a regimen of anticoagulants and pain management medications to mitigate the risk of thrombosis and alleviate pain. Unfortunately, the recovery process was complicated by the migration of the fracture fragments within two months post-operation, highlighting a significant challenge in the postoperative management of such fractures. This unforeseen complication necessitated another surgical intervention. The second procedure focused on the removal of the screws and the application of a more stable fixation method. Nails were inserted through the talonavicular and talocalcaneal joints, aiming to offer a more durable solution to the fracture and minimize the risk of further complications. This case underscores the complexities and potential pitfalls in the surgical management of Type II Hawkins talar neck fractures, particularly with respect to hardware migration. It also emphasizes the importance of vigilant postoperative monitoring and the readiness to adapt surgical strategies in response to evolving clinical scenarios.

1. **Keywords:** talar neck fracture, emergency surgery, hardware migration, minimally invasive surgery, postoperative monitoring

INTRODUCTION

Talar neck fractures represent a challenging orthopedic injury, often resulting from high-energy trauma such as falls from a height. Among these, Type II Hawkins fractures are particularly notorious for their potential complications, including avascular necrosis and post-traumatic arthritis, necessitating prompt and effective treatment. This article introduces a case involving an 18-year-old female who sustained a Type II Hawkins talar neck fracture after a significant fall. Initial treatment involved emergency surgery with open reduction and fixation, employing two screws through a minimally invasive surgical approach to stabilize the fracture. However, the case took a complex turn when, two months post-operation, the fracture fragments migrated due to the comminutive aspect of the fracture, leading to a second surgical intervention. The second procedure involved the removal of the screws and the application of nails through the talonavicular and talocalcaneal joints to achieve a more stable fixation. This scenario underscores the intricacies of managing such fractures and highlights the critical need for vigilant postoperative monitoring and adaptability in orthopedic surgery.



Figure 1. CT-scan antero-lateral view reveals a displaced talar neck fracture

CASE PRESENTATION

We report the case of an 18-year-old female patient who presented to the emergency department after sustaining injuries from a fall from a height. The patient complained of severe pain and was unable to bear weight on her affected foot, which was observed to be in a deformed position upon physical examination. Imaging studies, including a computed tomography (CT) scan, confirmed a Type II Hawkins talar neck fracture with significant displacement. Given the severity of the fracture and the displacement, an emergency surgical procedure was indicated to realign and stabilize the fracture. The surgery involved an open reduction and internal fixation (ORIF) approach, using two screws through a minimally invasive surgical method to secure the talar neck. Postoperatively, the patient's leg was immobilized in a cast without weight-bearing, and she was prescribed anticoagulants to prevent thromboembolic events and painkillers to manage discomfort.



Figure 2. CT-scan lateral view reveals a displaced talar neck fracture

Approximately two months after the initial surgical procedure, the patient reported increasing discomfort and reduced mobility in the affected foot. A follow-up examination and imaging studies revealed that the fracture fragments had migrated due to the comminutive aspect of the fracture, a serious complication that can lead to joint instability, increased pain, and potential long-term degenerative changes. This migration not only compromised the initial success of the fracture fixation but also posed a significant risk to the patient's overall joint function and long-term prognosis. Recognizing the urgency of

addressing this complication, the medical team promptly scheduled a second surgical intervention. The goals of this surgery were to remove the initial hardware, which had become a source of pain and dysfunction, and to apply a more stable and lasting solution to the fracture. This time, nails through the talonavicular and talocalcaneal joints were chosen to ensure proper stabilization and facilitate a quicker recovery. During the procedure, the screws were carefully extracted, and the fracture was re-evaluated to determine the optimal fixation strategy.

Ultimately, nails were selected for their superior ability to provide stable fixation and minimize the risk of future migration. These nails were inserted with precision to ensure the proper alignment and stabilization of the talar neck, aiming to restore the foot's structural integrity and function while reducing the potential for further complications. The second surgical intervention was executed without complications, and the patient demonstrated a positive response to the revised fixation method. Postoperative imaging confirmed the correct placement of the nails and the satisfactory alignment of the talar neck fracture. During the subsequent follow-up period, the patient showed significant improvement in pain levels and mobility. A rigorous rehabilitation program was initiated to gradually enhance weight-bearing capacity and restore full function to the affected foot.



Figure 3. Two months follow up post-op x-ray lateral view of displaced talar fragments



Figure 4. Post-op frontal view of the second procedure



Figure 5. Post op lateral view of the second procedure

DISCUSSION

The management of Type II Hawkins talar neck fractures presents significant challenges, particularly when complications such as hardware migration occur. This case of an 18-year-old female with a comminuted talar neck fracture illustrates the complexities involved in treating such injuries. Initially, the use of screws for fixation through a minimally invasive surgical approach seemed appropriate given the need for precise alignment and stabilization. However, the subsequent migration of fracture fragments highlighted the limitations of this method in cases with comminuted fractures.

The migration of the screws into the tibiotalar joint led to increased pain and reduced mobility, underscoring the critical need for vigilant postoperative monitoring. Early identification of hardware complications is essential to prevent further joint damage and ensure timely intervention. The decision to switch from screws to nails in the second surgical intervention was driven by the need for a more stable fixation. Nails, inserted through the talonavicular and talocalcaneal joints, provided enhanced stability and minimized the risk of future migration, addressing the initial shortcomings of screw fixation in comminuted fractures.

This case underscores the importance of adaptability in orthopedic surgery. Surgeons must be prepared to modify their approach based on the evolving clinical scenario. The successful outcome of the second surgery, marked by significant improvement in pain levels and mobility, demonstrates the

effectiveness of a tailored approach in managing complex fractures. Additionally, the use of a rigorous rehabilitation program was crucial in restoring full function to the affected foot, highlighting the role of comprehensive postoperative care.

The case emphasizes the necessity for careful selection of fixation methods based on fracture characteristics and the importance of continuous postoperative assessment. It also showcases the value of a multidisciplinary approach, combining surgical expertise with diligent rehabilitation, to optimize patient outcomes in the management of complicated talar neck fractures. Furthermore, ongoing research and development in surgical techniques and fixation methods will contribute to better outcomes for patients with such complex injuries.

CONCLUSION

In conclusion, the management of Type II Hawkins talar neck fractures, particularly those with comminuted aspects, presents significant challenges. This case of an 18-year-old female highlights the complexities and potential complications associated with initial fixation methods. The migration of fracture fragments following the use of screws underscores the need for careful selection of stabilization techniques. The subsequent switch to nails provided a more stable solution, demonstrating the importance of adaptability in surgical planning. Vigilant postoperative monitoring is crucial to identify and address complications promptly, thereby preventing further joint damage and ensuring optimal recovery. The successful outcome of

the second surgical intervention, combined with a rigorous rehabilitation program, facilitated significant improvements in pain and mobility. This case underscores the critical need for ongoing research and innovation in fixation methods and surgical approaches to enhance patient outcomes. Ultimately, a multidisciplinary approach, incorporating surgical expertise and comprehensive postoperative care, is essential in the effective management of complex talar neck fractures.

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