



Key Considerations When Targeting a Heel Spur

Masood Mohseni ¹, Elham Mousavi ² and Mahmood-Reza Alebouyeh ^{1,*}

¹Pain Research Center, Department of Anesthesiology and Pain Medicine, Iran University of Medical Sciences, Tehran, Iran

²M.D., Sports Medicine Specialist

*Corresponding author: Pain Research Center, Department of Anesthesiology and Pain Medicine, Iran University of Medical Sciences, Tehran, Iran. Email: dr.alebouyeh@gmail.com

Received 2023 August 12; Revised 2023 August 29; Accepted 2023 September 02.

Abstract

Heel spur is a common medical condition that can cause substantial discomfort and reduce the quality of life of the affected patients. When seeking treatment for a heel spur, it is important to consider the differential diagnoses and underlying medical conditions that may contribute to the symptoms. This manuscript aims to explore several distinctive diagnostic possibilities, essential factors to consider, and practical strategies for managing heel spurs. This paper explains the common differential diagnoses and addresses medical conditions related to heel spurs. The importance of accurate diagnosis in planning treatment protocol is highlighted. In addition, we explain treatment strategies, including preventive measures, conservative treatments, and more advanced procedures. Physicians can help relieve pain and improve the quality of life of the affected individuals by considering the diverse aspects of managing heel spurs.

Keywords: Pain, Heel Spur, Calcaneus, Treatment, Corticosteroid

1. Context

Addressing a heel spur requires careful consideration of various factors to ensure effective treatment and alleviate discomfort. Exploring potential differential diagnoses and related concerns that may contribute to the symptoms is crucial. This article provides insight into essential considerations and differential diagnoses when managing a heel spur.

1.1. Understanding Heel Spurs

A heel spur is an osseous growth that develops under the calcaneus bone. It typically arises from a prolonged strain on the plantar fascia and a thick connective tissue band linking the calcaneus bone to the toes (1). Heel spurs often coexist with plantar fasciitis, an inflammatory condition affecting the plantar fascia.

1.2. Differential Diagnoses for Heel Pain

When experiencing heel pain, examining other potential causes besides heel spurs is essential. Here are several common differential diagnoses to be aware of:

1.2.1. Plantar Fasciitis

Plantar fasciitis is the leading cause of heel pain, involving the inflammation or strain of the plantar fascia, resulting in a sharp or stabbing pain in the heel region (2). Although heel spurs can coexist with plantar fasciitis, they may not always be the primary source of pain.

1.2.2. Achilles Tendinitis

Achilles tendinitis refers to the inflammation of the Achilles tendon, which connects the calf muscles to the heel bone. This condition leads to pain and stiffness at the back of the heel (3). It is important to differentiate Achilles tendinitis from heel spurs as their treatment approaches are different.

1.2.3. Tarsal Tunnel Syndrome

Tarsal tunnel syndrome occurs when the tibial nerve undergoes compression within a narrow tunnel in the ankle. It causes pain, numbness, and tingling sensations in the heel and foot (4). Although not directly associated with heel spurs, tarsal tunnel syndrome may exhibit overlapping symptoms.

1.2.4. Stress Fractures

Stress fractures result from repetitive stress or overuse, leading to minor cracks in the bone. They cause localized pain and tenderness in the heel area (5). Considering stress fractures as a potential cause of heel pain is crucial, particularly for athletes or individuals engaging in high-impact activities.

1.2.5. Bursitis

Bursitis refers to the inflammation of the bursae, which are small fluid-filled sacs that cushion and lubricate the joints. In the heel area, bursitis can result in pain and swelling (6). Although heel spurs are not a direct cause of bursitis, they may contribute to its development.

2. Medical Conditions Associated with Heel Spurs

In addition to the aforementioned differential diagnoses, certain medical conditions may increase the likelihood of developing heel spurs. Awareness of these conditions is essential for a comprehensive treatment approach:

2.1. Rheumatoid Arthritis

Rheumatoid arthritis is an autoimmune disorder primarily affecting the joints. It causes inflammation and damage to the surrounding tissues, including the heels (7). Individuals with rheumatoid arthritis may be more susceptible to developing heel spurs.

2.2. Ankylosing Spondylitis

Ankylosing spondylitis is a chronic inflammatory disease affecting the spine and sacroiliac joints. However, it can also lead to inflammation and pain in other areas, including the heels (8). Long-term inflammation associated with ankylosing spondylitis can contribute to the development of heel spurs.

2.3. Gout

Gout is a form of arthritis caused by the accumulation of uric acid crystals in the joints. Although it commonly affects the big toe, it can also result in pain and inflammation in the heel (9). Considering gout as a potential cause of heel pain is crucial, particularly for individuals with a history of this condition.

3. Importance of Accurate Diagnosis

Accurate diagnosis plays a vital role in the effective treatment of heel spurs. Proper identification of the underlying cause of heel pain ensures the implementation of appropriate treatment measures. Seeking medical advice and undergoing diagnostic tests, such as X-ray or ultrasound, aids in making an accurate diagnosis.

4. Management of Heel Spurs

Effectively managing heel spurs necessitates a holistic approach that addresses the underlying causes and symptoms experienced by individuals. Adopting a comprehensive management strategy enables healthcare providers to optimize treatment effectiveness and improve patient outcomes.

4.1. Understanding the Underlying Causes

It is important to fully understand the underlying causes contributing to their development to manage heel spurs and several possible comorbidities effectively. While repetitive strain on the plantar fascia is a common cause, other factors, such as biomechanical abnormalities, improper footwear, and excessive weight, can also play a role. Identifying and addressing these contributing factors allows healthcare professionals to target the root causes of heel spurs and provide long-term relief.

4.2. Conservative Treatment Options

In many cases, conservative treatment approaches can effectively manage heel spurs and alleviate associated symptoms. These non-invasive methods focus on reducing pain, inflammation, and strain on the affected area. Here are some commonly employed conservative treatment options:

- Rest and Cryotherapy: Resting the foot and applying cold therapy to the affected area help reduce pain and inflammation (10).

- Orthotic Devices: Tailor-made orthotic devices, such as shoe inserts or heel cups, provide support, cushioning, and proper alignment to alleviate strain on the plantar fascia (11).

- Stretching and Strengthening Exercises: Physical therapy exercises targeting the calf muscles and plantar fascia can enhance flexibility, tension, and overall foot function (12). The commonly recommended exercises include calf stretch, plantar fascia stretch, toe curls, marble pick-up, and resistance band exercises.

- Nonsteroidal Anti-inflammatory Drugs: Medications, such as ibuprofen or naproxen, can alleviate pain and reduce inflammation in the affected area (6).

- Footwear Alterations: Wearing shoes offering adequate arch support, cushioning, and an appropriate fit can alleviate pressure on the heel, mitigating symptoms (13).

These conservative treatment options often constitute the primary line of defense and can confer substantial relief to individuals grappling with heel spurs. Nonetheless, more severe cases may necessitate the integration of other interventions.

5. Advanced Treatment Approaches

In cases where conservative measures fail to provide adequate relief, consideration of more advanced treatment approaches becomes imperative. Typically reserved for individuals with persistent or severe symptoms, these options encompass:

5.1. Extracorporeal Shockwave Therapy (ESWT)

ESWT entails applying shockwaves to the affected area, fostering tissue regeneration and mitigating pain (14).

5.2. Corticosteroid Injections

In some cases, corticosteroids may be directly injected into the affected region to alleviate pain and inflammation (15). Nonetheless, caution should be exercised regarding repeated injections due to the potential risk of tissue damage. Repeated steroid injections can destroy the heel's fat pad and make the plantar fascia tendon prone to tearing (16). There is no substantial evidence that ultrasound-guided or fluoroscopy-guided injection is more effective than blind injection at the tender point (17).

5.3. Platelet-Rich Plasma (PRP) Therapy

Platelet-rich plasma therapy leverages the concentrated platelets from the patient's blood to stimulate healing and reduce inflammation in the affected area. The results of studies are conflicting, and there is consensus on its superiority over steroid injection up to the time of preparing this manuscript (18).

5.4. Pulsed and Conventional Radiofrequency

Recent studies have suggested the role of pulsed and conventional radiofrequency in treating heel pain due to heel spur. These are relatively noninvasive methods with promising outcomes in short- (0 - 3 months) and intermediate-term (3 - 6 months), that could be considered in patients resistant to corticosteroid injections (19, 20).

5.5. Minimally Invasive Procedures

Certain minimally invasive procedures, such as percutaneous plantar fasciotomy, endoscopic plantar fasciotomy, or fascia debridement, can be undertaken to release tension on the plantar fascia and alleviate symptoms (21, 22).

6. Surgical Intervention

Surgical intervention for heel spurs is generally considered a last resort when all other treatment options have failed, and symptoms persist. The surgical objective is to remove the bony protrusion and address any accompanying soft tissue damage (23). The choice of surgical technique may vary depending on the condition's severity and the individual's unique circumstances.

6.1. Post-treatment Care and Rehabilitation

Following any form of treatment for heel spurs, adherence to proper post-treatment care and rehabilitation becomes indispensable for optimal recovery. This care may encompass physical therapy exercises, a gradual resumption of weight-bearing activities, and ongoing monitoring to prevent the recurrence of the condition (10).

In conclusion, the effective management of heel spurs entails a comprehensive understanding of the underlying causes, precise diagnosis, and an individualized treatment approach. By integrating conservative measures, advanced treatment options, and surgical interventions when warranted, healthcare professionals can alleviate pain and improve the quality of life for individuals enduring the ordeal of heel spurs.

Footnotes

Authors' Contribution: M.M. and E.M. drafted the manuscript; M.R.A. revised the manuscript.

Conflict of Interests: The authors declare no conflict of interest. M.M. and M.R.A. are the editorial board members of this journal.

Funding/Support: No funding or financial support was received for this study.

References

1. Kirkpatrick J, Yassaie O, Mirjalili SA. The plantar calcaneal spur: a review of anatomy, histology, etiology and key associations. *J Anat.* 2017;230(6):743-51. [PubMed ID: 28369929]. [PubMed Central ID: PMC5442149]. <https://doi.org/10.1111/joa.12607>.

2. Agyekum EK, Ma K. Heel pain: A systematic review. *Chin J Traumatol.* 2015;**18**(3):164–9. [PubMed ID: [26643244](#)]. <https://doi.org/10.1016/j.cjtee.2015.03.002>.
3. Maffulli N, Longo UG, Kadakia A, Spiezia F. Achilles tendinopathy. *Foot Ankle Surg.* 2020;**26**(3):240–9. [PubMed ID: [31031150](#)]. <https://doi.org/10.1016/j.fas.2019.03.009>.
4. Nelson SC. Tarsal Tunnel Syndrome. *Clin Podiatr Med Surg.* 2021;**38**(2):131–41. [PubMed ID: [33745647](#)]. <https://doi.org/10.1016/j.cpm.2020.12.001>.
5. Italiano J, Bitterman AD. Diagnosis and Management of Calcaneal Stress Fractures. *Radiol Technol.* 2021;**93**(2):177–94. [PubMed ID: [34728579](#)].
6. Bhaty UN, Khan SH, Zubairy AI. Managing the patient with heel pain. *Br J Hosp Med (Lond).* 2019;**80**(4):196–200. [PubMed ID: [30951414](#)]. <https://doi.org/10.12968/hmed.2019.80.4.196>.
7. Macarron Perez P, Morales Lozano MDR, Vadillo Font C, Abasolo Alcazar L, Martinez Rincon C, Fernandez Gutierrez B, et al. Multidisciplinary approach in the treatment of tendinous foot involvement in rheumatoid arthritis. *Clin Rheumatol.* 2021;**40**(12):4889–97. [PubMed ID: [34228223](#)]. [PubMed Central ID: [PMC8599255](#)]. <https://doi.org/10.1007/s10067-021-05848-8>.
8. Kim TH, Lee JK, Sung HK, Kim BH, Song YS, Sung IH. Radiologic features in symptomatic/asymptomatic heels of patients with ankylosing spondylitis. *Int J Rheum Dis.* 2019;**22**(2):222–7. [PubMed ID: [30187686](#)]. <https://doi.org/10.1111/1756-185X.13379>.
9. Velagala VR, Velagala NR, Kumar T, Singh A, Mehendale AM. Calcaneal Spurs: A Potentially Debilitating Disorder. *Cureus.* 2022;**14**(8). e28497. [PubMed ID: [36185871](#)]. [PubMed Central ID: [PMC9514376](#)]. <https://doi.org/10.7759/cureus.28497>.
10. Rosenbaum AJ, DiPreta JA, Misener D. Plantar heel pain. *Med Clin North Am.* 2014;**98**(2):339–52. [PubMed ID: [24559879](#)]. <https://doi.org/10.1016/j.mcna.2013.10.009>.
11. Gulle H, Morrissey D, Tan XL, Cotchett M, Miller SC, Jeffrey AB, et al. Predicting the outcome of plantar heel pain in adults: a systematic review of prognostic factors. *J Foot Ankle Res.* 2023;**16**(1):28. [PubMed ID: [37173686](#)]. [PubMed Central ID: [PMC10176769](#)]. <https://doi.org/10.1186/s13047-023-00626-y>.
12. Arif MA, Hafeez S. Effectiveness of Gastrocnemius-Soleus Stretching Program as a Therapeutic Treatment of Plantar Fasciitis. *Cureus.* 2022;**14**(2). e22532. [PubMed ID: [35345689](#)]. [PubMed Central ID: [PMC8956500](#)]. <https://doi.org/10.7759/cureus.22532>.
13. Umar H, Idrees W, Umar W, Khalil A, Rizvi ZA. Impact of routine footwear on foot health: A study on plantar fasciitis. *J Family Med Prim Care.* 2022;**11**(7):3851–5. [PubMed ID: [36387720](#)]. [PubMed Central ID: [PMC9648311](#)]. https://doi.org/10.4103/jfmpc.jfmpc_637_21.
14. Nazim BYT, Seow D, Vig KS. Extracorporeal Shockwave Therapy for Foot and Ankle Disorders: A Systematic Review and Meta-Analysis. *J Am Podiatr Med Assoc.* 2022;**112**(3). [PubMed ID: [34878537](#)]. <https://doi.org/10.7547/18-191>.
15. Salvi AE. Targeting the Plantar Fascia for Corticosteroid Injection. *J Foot Ankle Surg.* 2015;**54**(4):683–5. [PubMed ID: [25432461](#)]. <https://doi.org/10.1053/j.jfas.2014.10.011>.
16. Ang TW. The effectiveness of corticosteroid injection in the treatment of plantar fasciitis. *Singapore Med J.* 2015;**56**(8):423–32. [PubMed ID: [26311907](#)]. [PubMed Central ID: [PMC4545130](#)]. <https://doi.org/10.11622/smedj.2015118>.
17. Drake C, Whittaker GA, Kaminski MR, Chen J, Keenan AM, Rathleff MS, et al. Medical imaging for plantar heel pain: a systematic review and meta-analysis. *J Foot Ankle Res.* 2022;**15**(1):4. [PubMed ID: [35065676](#)]. [PubMed Central ID: [PMC8783477](#)]. <https://doi.org/10.1186/s13047-021-00507-2>.
18. Jain K, Murphy PN, Clough TM. Platelet rich plasma versus corticosteroid injection for plantar fasciitis: A comparative study. *Foot (Edinb).* 2015;**25**(4):235–7. [PubMed ID: [26362235](#)]. <https://doi.org/10.1016/j.foot.2015.08.006>.
19. Eke I, Akcal MA, Sayrac AV, Iyettin Y. Effects of intralesional pulsed radiofrequency treatment on pain in patients with calcaneal spur: results of 460 patients. *BMC Musculoskelet Disord.* 2021;**22**(1):1033. [PubMed ID: [34893055](#)]. [PubMed Central ID: [PMC8665537](#)]. <https://doi.org/10.1186/s12891-021-04926-x>.
20. Yuruk D, Aykurt Karlibel I, Kasapoglu Aksoy M. The effectiveness of conventional radiofrequency ablation for chronic plantar heel pain due to heel spur. *Agri.* 2022;**34**(2):131–8. [PubMed ID: [35848814](#)]. <https://doi.org/10.14744/agri.2021.82542>.
21. Johannsen F, Konradsen L, Herzog R, Rindom Krogsgaard M. Plantar fasciitis treated with endoscopic partial plantar fasciotomy-One-year clinical and ultrasonographic follow-up. *Foot (Edinb).* 2019;**39**:50–4. [PubMed ID: [30974340](#)]. <https://doi.org/10.1016/j.foot.2019.02.002>.
22. Cottom JM, Wolf JR, Sisovsky CA. Midterm Outcomes of Endoscopic Plantar Fascia Debridement in 125 Patients: A 5-Year Follow-Up. *J Foot Ankle Surg.* 2023;**62**(3):444–7. [PubMed ID: [36443168](#)]. <https://doi.org/10.1053/j.jfas.2022.11.001>.
23. Saylik M, Fidan F, Lapcin O. Comparison of Isolated Calcaneal Spur Excision and Plantar Fasciotomy in Addition to Spur Excision in Patients With Plantar Heel Pain Accompanied by Calcaneal Spur. *Cureus.* 2022;**14**(11). e31768. [PubMed ID: [36569683](#)]. [PubMed Central ID: [PMC9772710](#)]. <https://doi.org/10.7759/cureus.31768>.