

ANOTHER TECHNIQUE FOR RESECTION OF POSTERIOR CALCANEAL SPURS

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Posterior heel pain is a common painful entity within the podiatric practice. Included in the family of retrocalcaneal pathology is Haglund's deformity and insertional retrocalcaneal exostosis. Many times conservative care is not sufficient in treating these disorders and surgical intervention is warranted. Over the past decades, many incisional approaches as well as Achilles tendon reflection and reattachment techniques have been described. The authors will review common techniques used to expose posterior calcaneal spurs and describe their preferred approach in retrocalcaneal surgery.

INCISIONAL APPROACHES

Historically, the most common approach for posterior calcaneal spur resection is a straight linear midline, or just medial to midline incision over the Achilles tendon insertion. A variation of this incision

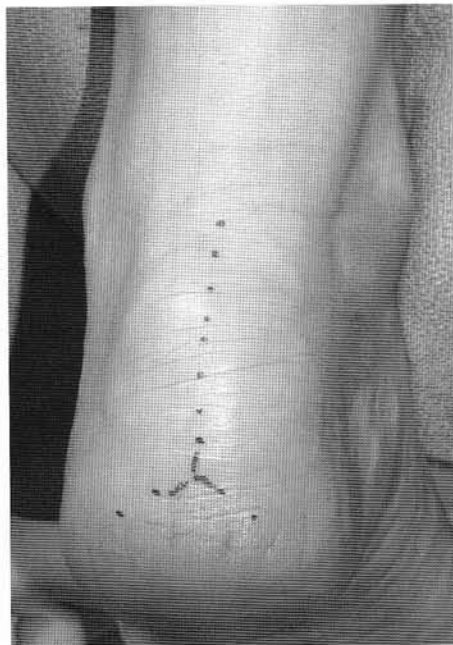


Figure 1. A modification to the standard linear skin incision is an inverted "Y" incision for additional exposure in removing posterior calcaneal spurs.

is a curvilinear or "lazy S" approach. Good visualization for the central tendon and posterior exostosis can be achieved with these approaches. There is a risk for limited exposure to any medial and/or lateral extensions of a retrocalcaneal exostosis that commonly exists. Extending to a longer incision can achieve additional exposure, yet there remains limited visualization of the distal calcaneus by soft tissue restraints.

Cicchinelli recently described his lateral technique for retrocalcaneal exostosis and/or Haglund's deformity.¹ The lateral approach to the posterior calcaneus attempts to preserve the need for Achilles detachment. The incision is placed just lateral to the Achilles tendon and the exostosis can be removed by retracting the Achilles dorsally. Advantages include a lateral scar which may not irritate in a shoe such as the posterior approach. The disadvantage in using the lateral approach is lack of full visualization of an exostosis that extends medially.

Boberg and Carter support a transverse skin approach at the level of the exostosis.^{2,3} The incision follows the relaxed skin tension lines across the posterior calcaneus. The theory behind this approach is that the exostosis is superficial to the Achilles insertion. Calcifications could be removed without disrupting fibers of the Achilles tendon due to its location behind the tendon. This approach is best utilized for retrocalcaneal pathology that does not involve diseased or calcified tendon.

The authors advocate using the inverted "Y" or "Mercedes" skin incision for the retrocalcaneal exostosis (Figure 1). In 1945, Fowler and Philip first described the inverted "Y" approach through the Achilles tendon to expose posterior spurs.⁴ Within the past five years, the authors modified the linear skin incision to the inverted "Y" incision in order to increase exposure to the entire distal posterior calcaneus. This approach is especially good for exposing medial and lateral extensions of a retrocalcaneal exostosis. A central linear incision

which spans the length of the posterior calcaneus serves as the long arm. Two additional arms are then added distally measuring approximately 1 to 1.5 centimeters. The entire incision resembles an inverted “Y” or “Mercedes” symbol. The authors have not found any soft tissue restraints in retraction to visualize the entire posterior aspect of the calcaneus.

ACHILLES REFLECTION

An imperative component to Achilles reflection for posterior calcaneal pathology is maintaining post-operative Achilles strength. Chao et al found that the majority of the Achilles insertional strength depended on the preservation of the medial and lateral expansions.⁵ Utilizing the lateral approach, an advantage is the elimination of need for total Achilles detachment. Unfortunately, the lateral expansions of the tendon are directly violated. Kolokzedj and Nunley found that the strength of the Achilles tendon after reattachment is greatly weakened with violation of the expansions.⁶ When using the transverse skin approach for removing a superficial posterior heel spur, there is no need for any reflection of the Achilles tendon. When there is an insertional component within the tendon, the transverse approach is difficult to use when exposing the entire distal tendon.

Linear or “inverted T” splitting of the Achilles tendon preserves the medial and lateral expansions attached to the calcaneus. These approaches are probably most commonly used to expose the posterior heel spur. The disadvantage to these approaches, especially linear, is the probable lack of

exposure for any medial and/or lateral extension to the retrocalcaneal exostosis.

The authors recommend a “U” shaped Achilles reflection approach (Figures 2, 3). The medial and lateral arms of the “U” flap follow the Achilles tendon’s medial and lateral borders. This allows preservation of the tendon extensions attached to the calcaneus. The horizontal arm is placed directly over the spur to allow proper dissection of the tendon fibers which lie anterior to it. In addition, the “U” reflection provides suitable exposure for an exostosis that extends medially and/or laterally without tendon restraints in soft tissue retraction. When the retrocalcaneal exostosis is fully visualized, hand instrumentation is used to resect and recontour the posterior calcaneus (Figure 4).

REATTACHMENT

Bone anchors to reattach the Achilles tendon are optional if the medial and lateral tendon expansions are preserved. If there is lack of or attenuated tendon distally utilizing the “U” or “inverted T” approach in reflection, a bone screw/anchor or plate can be used. A variety of bone anchors are available for tendon reattachment such as Mitek™ anchors, absorbable or non-absorbable bone screws/anchors and plates. Yu advocated the use of the Depuy Ace Spider Plate™ for securing the Achilles tendon back to the calcaneus even with preserved medial and lateral tendon expansions.⁷

The authors recommend the use of Arthrex 2.0 Fiberwire™ for reattachment of the Achilles tendon to the medial and lateral expansions in a side-to-side fashion (Figure 5). Fiberwire™ can also

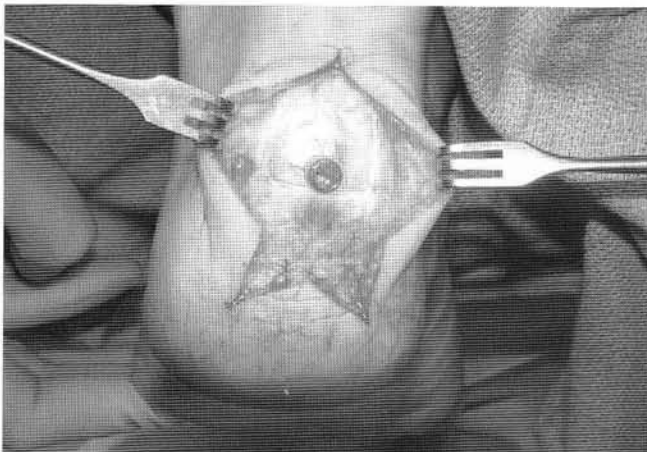


Figure 2. A needle can be used to find the top leading edge of a retrocalcaneal exostosis. A “U” shaped Achilles tendon flap preserves the medial and lateral expansions for reattachment.



Figure 3. The “U” Achilles tendon flap is placed distally over the spur to allow dissection of tendon fibers anterior to the spur.

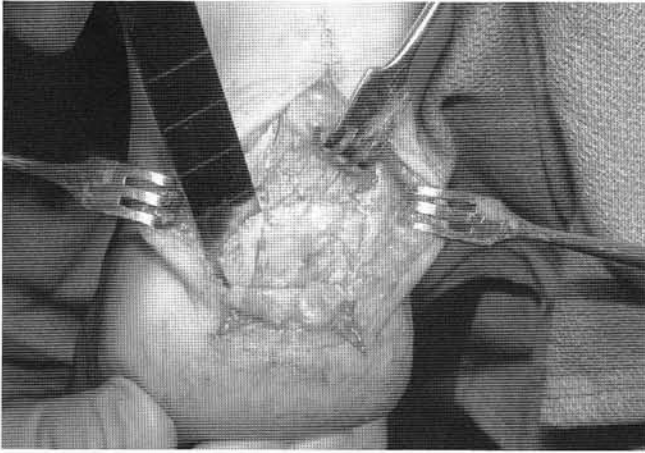


Figure 4. The spur is removed with hand instrumentation.

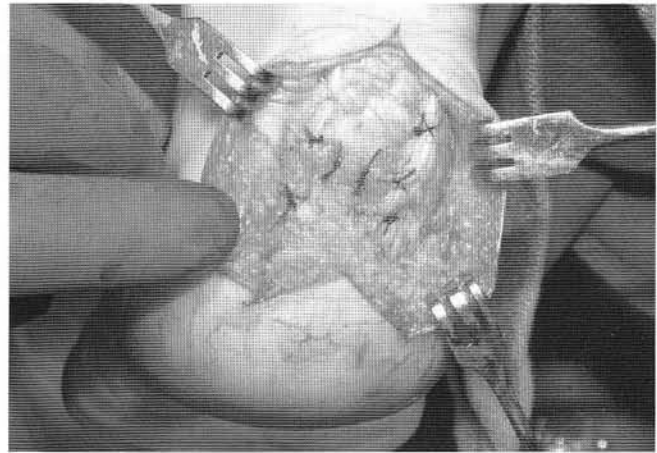


Figure 5. The tendon is reattached using 2.0 Fiverwire™ and reinforced with 2.0 absorbable suture.

be utilized distally if tendon is available or through drill holes in the distal calcaneus. 2.0 absorbable suture is then employed to reinforce attachment. If there is significant equinus present, the distal tendon can be reattached proximal to the original insertion using drill holes and Fiberwire™.

In conclusion, there are various approaches to skin incision and Achilles reflection when exposing the posterior calcaneal spur. The authors advocate a simple technique utilizing an inverted “Y” skin incision and a “U” shaped Achilles reflection flap to expose the entire distal posterior calcaneus. The authors have found the exposure to have no soft tissue restraints in retraction and therefore is less traumatic when compared to other approaches. Most important, the insertional Achilles strength is theoretically maintained by preserving the medial and lateral tendon expansions. Reattachment is performed with side-to-side suturing to the tendon expansions using a combination of absorbable and non-absorbable suture. Drill holes are utilized distally if the tendon is weakened and can be reattached more proximally to compensate for equinus.

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