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Complications after a surgical lateral approach to Haglund's syndrome: case report of sural nerve traumatic neuroma and review of the literature

Giuseppe Restuccia[1], Andrea Del Chiaro[2], Alessandro Lippi[1], Edoardo Ipponi[2], Federico Sacchetti[2], Maurizio Benifei[1]

[1] Orthopaedic Division, AOU Pisana, Pisa, Italy; [2] Division of Orthopaedics and Trauma Surgery, University of Pisa, Italy

Summary

The most common complication after a surgical lateral approach (LA) for Haglund's syndrome is sural nerve injury. We presented a case of heel pain persistence that remained unclear even after ankle magnetic resonance. The patient underwent radicalisation of the persistent Haglund's prominence and a revision of previous scar. A sural nerve neuroma was found and excised. This case shows the importance of detailed clinical examination in order to identify the cause of pain persistence and plan a new surgery that also includes neuroma excision.

Key words: Haglund's syndrome, lateral approach, sural nerve neuroma

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Correspondence
Edoardo Ipponi
Division of Orthopaedics and Trauma Surgery, University of Pisa, via Paradisa 2, 56124 Pisa, Italy.
E-mail: edward.ippo@gmail.com

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Introduction

Haglund's syndrome is described as a triad of posterosuperior calcaneal prominence (Haglund deformity), retrocalcaneal bursitis and insertional Achilles tendinopathy [1]. Clinical presentation includes localised pain over the posterior heel and Achilles tendon insertion, swelling, burning and stiffness, which are usually worsened by plantar flexion of the ankle. On X-rays there is usually evidence of Haglund's deformity that can be associated with calcifications at the insertion of the Achilles tendon. On magnetic resonance imaging (MRI), oedema and thickening of the insertional area of the tendon are detected [2,3]. Nonoperative treatments, such as activity and footwear modifications, eccentric training and extracorporeal shockwave therapy, constitute first-line treatments [4]. Local infiltration of steroids or Platelet Rich Plasma (PRP) concentrates are being clinically tested as newer approaches to nonoperative management [5,6]. Operative treatments are considered in case of failures of nonoperative treatments [4,7]. Surgery typically includes partial or total detachment of the Achilles tendon, excision of retrocalcaneal bursa, resection of prominent superior calcaneal tuberosity, debridement of the diseased tendon and reattachment of normal tendon tissue [7]. Surgery can be performed with a single longitudinal incision (placed medially or laterally respect to the Achilles tendon)

or with a central tendon-splitting incision [8,9]. To the best of our knowledge, at present, there is no consensus about the optimal surgical approach to Achilles tendinopathy. Lateral and central surgical approaches did not show any significant differences in long-term clinical results. The main differences between these two techniques are complications related to the approach [10]. The main complications associated with an lateral approach are sural nerve injuries due to its manipulation; these injuries can lead to painful scar or to regional anaesthesia or paraesthesia. On the other hand, a central approach may be complicated by delayed wound healing [10,11].

This is a case of development of a sural neuroma that is a rare complication after lateral approach (LA) to Haglund's deformity with insertional Achilles tendinopathy. The patient required new surgical treatment with a central approach (CA) for pain resolution.

Description of the case

A 58-year-old male came to our attention for persistence of pain after being surgically treated for right Achilles tendinopathy 13 months earlier. He works as a lawyer and runs about three times a week. The previous surgery was performed at another centre using a lateral approach. It was described as a classic procedure including: partial detachment of Achilles tendon, debridement of the diseased tendon, excision of retrocalcaneal bursa, resection of prominent superior calcaneal tuberosity and reattachment of the tendon. The patient complained about the persistence of pain on the medial, central and lateral side of the distal Achilles tendon. He was also suffering from the development of a 1 cm mass in correspondence of the previous surgical scar. The mass was responsible of mild local pain when he wore normal shoes because of conflict with the heel. Occasionally, he experienced a mild "electric shock" sensation in correspondence of previous surgical scar. At physical examination, he referred a impairment of sensitivity on the lateral and dorso-lateral side of the foot. The Tinel sign at the level of sural nerve at the ankle joint was negative. Post-operative x-ray (XR) examination was available (Fig. 1). We detected the persistence of a Haglund's deformity on the medial side of the posterior calcaneal tuberosity that could justify the persistence of medial pain. No possible cause of lateral pain persistence was detected on MRI study (Fig. 2). The radiologist described distal Achilles tendinosis with persistent oedema of the tendon and into the Kagher triangle and surrounding tissues. For these reasons, we planned a new surgical correction of the Haglund's deformity and surgical revision of the scar. We chose a central approach to the posterior calcaneal tuberosity in order to better visualise the residual Haglund's deformity and to perform accurate excision. The patient was placed in the prone position. A skin incision medially to the median line of the distal Achilles tendon was performed in order to reduce the risk of wound complication due to conflict with normal closed-back shoes.

Figure 1. Post-operative X-ray examination of the ankle and posterior heel in lateral projection. The white arrow shows the persistence of Haglund's prominence.

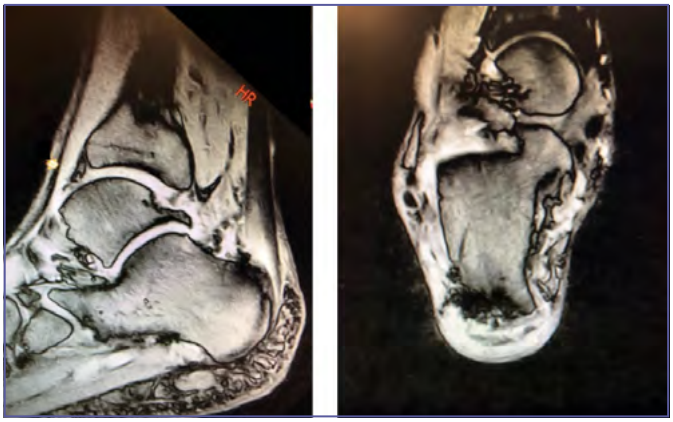

Figure 2. Post-operative MRI of the ankle and posterior heel in lateral and coronal projections. No possible cause of lateral pain persistence was detected. The radiologist described distal Achilles tendinosis with persistent oedema of the tendon and into the Kagher triangle and surrounding tissues.

After the skin incision, the distal Achilles tendon was split to visualise the residual Haglund's prominence that was resected using a surgical chisel. We also applied a PRP membrane in order to increase the local concentration of growth factors [5,6]. In a second step, another surgical incision of almost 3 cm in correspondence of the precedent surgical scar was performed, centred on the mass. The mass was sited behind the small saphenous vein. After accurate dissection (Fig. 3), a sural nerve post-traumatic neuroma was found and excised (Fig. 3). His-

Figure 3. After an accurate dissection (left), a sural nerve post-traumatic neuroma was found and excised (right).

tological examination confirmed our macroscopical hypothesis. After excision, infiltration of the proximal nerve segment with lidocaine [12] was performed and the nerve was buried into the peroneal muscles [13]. We then applied an ankle brace for 3 weeks after surgery. After this period, the use of normal sneakers was allowed and rehabilitation was started. The rehabilitation protocol included Achilles tendon stretching, ankle range of motion recovery and proprioception training. We planned clinical follow-up at 14 days, and at 1, 3 and 6 months. The patient had a complete resolution of pain, is fully weightbearing and is able to wear regular closed-back shoes. The patient experiences permanent numbness of the lateral side of the foot.

Discussion

The presented case highlights the existence of a rare complication after a LA to Haglund's deformity that can be confused for a Haglund's persistence after surgical treatment. A traumatic neuroma can result from surgical damage of the sural nerve or one of its little branches to the lateral calcaneous surface [13,14]. An interesting study from Lans et al. [13] reported a series of 49 sural nerve neuromas with their aetiopathogenesis. Prior surgery was the main cause of sural neuromas (90% of cases). The most important surgical procedure involved in development of sural neuroma was lateral ankle ligaments reconstruction (30% of cases). A distal Achilles tendon surgical procedure (Achilles tendon repair, Achilles tendon release) was involved in 9% of cases. Surgical correction of Haglund's deformity was not mentioned as a common cause of sural neuromas. From this point of view, our case report highlights a rare but important complication of this common orthopaedic surgical procedure.
At the best of our knowledge, the literature does not provide strong evidence about the optimal approach for surgical treatment of Achilles tendinopathy. Only a few articles with small number of patients have compared clinical outcomes in relation to the two main approaches: the lateral approach (LA) and the central approach (CA) [10]. Palmer described the lateral approach (LA) to the posterior heel [15] and the use of this approach is very common for surgical treatment of Achilles tendinopathy. Using this approach, the surgeon can directly expose the posterolateral heel and can reach the superolateral calcaneal exostosis that is often present. The main disadvantage of the LA approach is the risk of sural nerve injury with consequent impairment of skin sensitivity in the dorsolateral foot [13,14,16]. The incidence of that complication varies: Yodlowski et al. [17] reported 34.1% of skin sensation impairment, Xia et al. [10] reported 7% of painful scar and 7% of wound sensation impairment after LA. In 2002, McGarvey et al. firstly introduced CA for Achilles tendinopathy [18]. This approach has reached good popularity in the past few years because it offers a wide and detailed view of the posterior heel and it reduces the incidence of sural nerve injury [19,20]. It also allows treating intra-tendinous lesions and insertional calcifications [21,22]. However, the most important disadvantage of CA is the inevitable tension over the wound after skin closure that may lead to delayed wound healing and wound dehiscence [18-20,23,24]. To our knowledge, no study in literature has shown a clear superiority of LA or CA in terms of clinical outcomes.
In conclusion, when approaching a revision surgery for Haglund's deformity, it is important to remember that the most common complications after a LA for the distal Achilles tendon are linked to various grades of sural nerve injury. In this case report we describe sural neuroma, which is a rare neurological complication after LA. As highlighted before, even advanced instrumental diagnosis with MRI can be ineffective in detecting a sural nerve neuroma surrounded by post-surgical oedema and surgical scar tissues. This stresses the importance of detailed clinical examination in order to correctly identify the cause of pain persistence and correctly plan a new surgery that includes exploration of the lateral margin of the Achilles tendon where a post-traumatic sural neuroma can develop.

Ethical consideration

This study was performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments.

Authors' contributions

All Authors collaborated equally to the work.

Acknowledgements

All Authors declare they have no potential conflict of interests. The patients described in this case report signed an informed consent to participate to our research. The patients described in this case report signed an informed consent for the publication of this research with the respect of his right to privacy.

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Conflict of interest
The Authors declare no conflict of interest.

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