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Long segment hamstrings calcific tendinopathy: A masters athlete and response to extracorporeal shockwave therapy – Case Report

CASE REPORT

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Introduction: Calcific tendinopathy most commonly affects the rotator cuff and typically presents as small, focal deposits. Involvement of the hamstring tendons is rare, and long-segment intratendinous calcifications have not been well described to our knowledge.

Case Presentation: We report the case of a 47-year-old male Masters athlete who presented with posterior thigh pain following a fall during a sprinting activity. Imaging revealed an unusually extensive 9.66 cm linear calcification within the proximal semimembranosus tendon. Initial conservative management (such as rest and icing) failed to provide symptomatic relief. The patient subsequently underwent a course of focused extracorporeal shockwave therapy (ESWT). Pain scores decreased from a visual analogue scale (VAS) of 3 to 1 at one month, with corresponding improvements in functional outcomes (LEFS, EQ-5D-5L, and Roles and Maudsley score). At six months, the patient achieved complete symptom resolution (VAS 0) and returned to full competitive activity.

Discussion: This case represents a rare presentation of long-segment semimembranosus calcific tendinopathy with a morphology distinct from the focal deposits typically described in the literature. The favourable clinical response to ESWT suggests that treatment principles established for rotator cuff calcific tendinopathy may be applicable to atypical anatomical locations. It also expands the spectrum of imaging appearances and clinical presentations of calcific tendinopathy affecting the hamstring tendons.

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Conclusion: Long-segment calcific tendinopathy of the semimembranosus tendon is an uncommon entity that should be considered in patients with persistent posterior thigh pain. Focused ESWT may provide an effective non-operative treatment option, resulting in significant symptom improvement and successful return to sport.

Keywords: *Hamstring calcific tendinopathy*, *Extracorporeal shockwave therapy*, *Semimembranosus tendon*, *Calcific tendinopathy*, *Calcification*

Introduction

Calcific tendinopathy is characterised by the deposition of calcium hydroxyapatite crystals within the tendon, typically presenting as small deposits in the shoulder. While it most frequently affects the rotator cuff, particularly the supraspinatus tendon, involvement of the hamstring tendons is exceedingly rare, with only sporadic cases reported in the literature.[1]

The hamstring tendons, primarily those of the semimembranosus, semitendinosus, and biceps femoris, play a pivotal role in hip extension and knee flexion. These tendons are subject to significant tensile forces during athletic activity and may undergo repetitive microtrauma at their origins or insertions, potentially leading to hamstring tendinopathy, presenting as pain on the posterior thigh.[2] Pathologies arising from the semimembranosus tendon include tendinopathy, partial or complete tears and avulsion injuries, bursitis, and, rarely, chronic traction lesions at its distal insertion or proximal hamstring tendinopathy with sciatic nerve entrapment. These conditions have been described as potential causes of posteromedial knee or posterior thigh pain, particularly in athletic or endurance populations.[3–5]

We report a case of an atypically long segment calcification of the hamstring tendon of a middle-aged athlete presenting with pain. This is among the longest reported hamstring tendon calcification described to date, contrasting sharply with the small, focal calcification typically reported in the literature. This case describes the presentation, investigation and management of such a unique case and the progress of recovery.

Case presentation

A 47-year-old male prison officer and active middle distance hurdles Masters Athlete first presented to the outpatient clinic in July 2025 with complaints of left posterior thigh pain of 2 weeks. He reported onset of pain following a fall sustained during hurdle training. At the time of injury, the left leg was functioning as the trail leg. The pain was worse as he continued sprinting but he was able to complete the session. Subsequently he reported significant hip soreness and tightness. There was no significant medical or surgical history.

On the initial physical examination, tenderness was noted over his left ischial tuberosity and pain that was reproduced on resisted knee flexion and resisted hip flexion. His gait was non-antalgic and there was no evidence of bruising, swelling, palpable cords or induration noted over the left posterior thigh. Initial radiographs showed a linear, thickened opacity in the mid-thigh muscular substance. (Figure 1 and Figure 2)

Figure 1. Pelvic X-ray demonstrating a linear, thickened opacity in the mid-thigh muscular substance.

Figure 2. X-ray of left thigh showing a linear, thickened opacity in the mid-thigh muscular substance.

Calcification was also noted at the musculotendinous junction of the hamstring tendons on the bedside ultrasound in clinic, in keeping with the X-ray findings. Subsequent T2-weighted Magnetic Resonance Imaging (MRI) of his left hip demonstrated an abnormal signal intensity seen in the proximal semimembranosus tendon, and was thus reported as a 9.66 cm long segment calcification of the left semimembranosus tendon upon correlation with X-ray and clinical findings. (Figure 3) Although Computed Tomography is the imaging modality of choice for accurately characterizing the morphology and extent of calcific deposits, MRI was performed in this case primarily to evaluate for possible concomitant soft tissue injury such as hamstring tendon or muscle tears.

Figure 3. T2-weighted magnetic resonance imaging (MRI) of his left hip demonstrated an abnormal signal intensity seen in the proximal semimembranosus tendon, reported as a 9.66 cm long segment calcification of the left semimembranosus tendon.

On the subsequent follow up one month later, the patient reported the pain was unchanged with running, at a Visual Analogue Scale (VAS) of 3. Initial conservative management over the preceding month, such as rest, icing and physiotherapy, had failed to provide symptomatic relief. There was no significant symptomatic improvement since his initial presentation. He was unable to return to sports adequately and expressed strong interest for further intervention to facilitate the recovery of symptoms, in light of aiming to compete in World Masters in the next six months. He was offered Extracorporeal Shockwave Therapy (ESWT) to the left proximal hamstring to which he agreed.

The patient's baseline functional status was captured via several validated outcome measures. The Roles and Maudsley score is a 4-point patient-reported outcome measure used to evaluate pain and activity limitations and has been used to measure effectiveness of ESWT for other pathologies such as plantar fasciitis and lateral epicondylitis.[6,7] His Roles and Maudsley score was 3, suggesting some discomfort after prolonged activity. EQ-5D-5L score from the patient was (1,1,3,3,3) + 90. EQ-5D-5L is a concise measure of self-reported health in five different aspects of Mobility, Usual Activities, Self-care, Pain & Discomfort and Anxiety & Depression with scores in each domain ranging from 1, no disability to 5, inability or extreme disability and the overall score reflecting the patient's perception of his or her overall health (maximum 100).[8] Finally, the Lower Extremity Functional Scale (LEFS) which is also a patient-rated outcome measure for the measurement of lower extremity function.[9] LEFS assesses the impact of musculoskeletal conditions on lower extremity function.[10] The patient's LEFS score was 69 out of 80 indicating no functional limitations.

The ESWT device used was the Dornier Aries 2, a focused shockwave device that generates electromagnetic focused extracorporeal shock waves. The minimum treatment course as recommended by the manufacturer for lower limb tendinopathies was two sessions of 2000 shockwaves per session. Weighing this alongside the monetary cost of each ESWT session, it was decided two sessions of ESWT, spaced two weeks apart, to be sufficient to observe the patient's response with further sessions to be scheduled should symptom improvement be unsatisfactory. For the first session, the maximum energy flux density (mJ/mm2) was 0.084 (intensity level 6) with a maximum trigger frequency of 5Hz and a total of 2500 shockwaves were administered. During the second session, the maximum energy flux density (mJ/mm2) was 0.13 (intensity level 9) with a maximum trigger frequency of 4Hz and a total of 2000 shockwaves were administered. The total energy delivered

to the proximal hamstring was 11300 millijoules for each session.

The patient was reviewed in the outpatient clinic one month after treatment. VAS had decreased to 1 and the patient was largely asymptomatic and back to running and racing. The LEFS score increased from 69/80 before treatment to 80/80 and the Roles and Maudsley score was a 2 which indicates occasional discomfort, full movement and full activity. EQ-5D score was (1,1,2,1,1) +95.

On the patient's final review 6 months after presentation, the patient had returned to pre-morbid function, resuming training and racing in the 100m and 110m hurdles. His functional score improved to 80/80, indicating complete restoration of physical performance. There was symptomatic improvement as well, as he reported there was a complete resolution of pain, with VAS dropping to 0, and a resolution of previously reported issues such as discomfort while running. His Roles and Maudsley score improved to 1, indicating no pain with full movement and full activity which is consistent with an excellent outcome with full return to sport. His EQ-5D-5L score also continued to improve to (1,1,1,1,1) + 95, indicating return to his previous baseline activity level, resolution of pain symptoms from his first presentation. On repeat pelvic radiographs, there was minimal interval change in the calcific deposit, with the length of the calcification decreasing to 9.52 cm (Figure 4). Despite the persistent radiographic appearance of the calcification, the patient achieved complete symptomatic and functional recovery, suggesting that clinical improvement may not necessarily correlate with radiographic resolution in calcific tendinopathy.

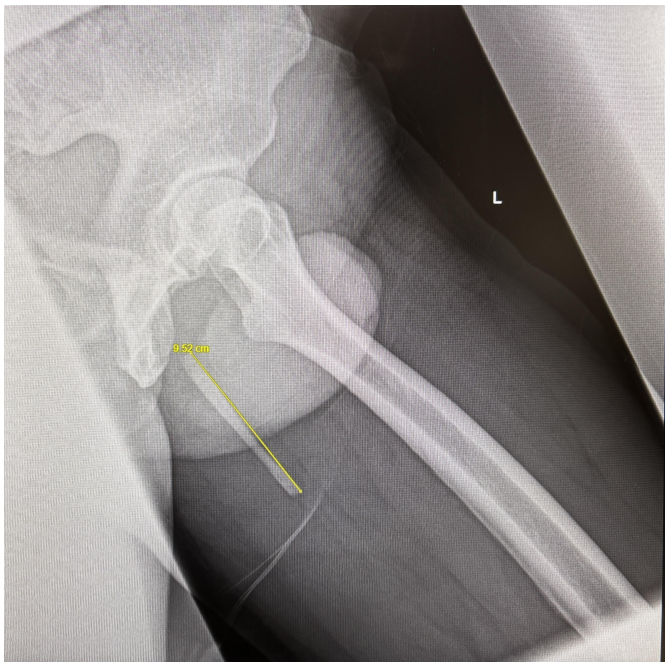

Figure 4. Repeat pelvic radiograph at six-month follow-up demonstrating minimal interval change in the linear calcific deposit within the proximal semimembranosus tendon, now measuring 9.52 cm.

Discussion

The specific etiology of calcific tendinopathy remains largely unknown despite being extensively covered in literature.[4] However, there has been discussion about how chronic degeneration may cause subsequent dystrophic calcification at sites of prior partial tears or chronic overload. Whereafter, pain may be associated with the inflammatory reaction occurring during the reabsorption phase as described by Sansone et al.[5] In this case, the microtrauma secondary to the chronic use and overload of his hamstrings in repetitive sprinting and hurdle loading may have caused the chronic insult at the musculotendinous junction, leading to the calcification along the greater length of the tendon.

Most published literature describes calcific tendinopathy as focal and ovoid deposits and imaging descriptions emphasising dense well-circumscribed focal radiographic opacities predominantly in the shoulder and rotator cuff.[11] By contrast, hamstring deposits are much less frequently reported, and when reported they are usually smaller and more focal.[12,13] This case report highlights two noteworthy features. Firstly, the calcification occurred in the proximal semimembranosus tendon, an anatomical location that we believe has not been described in previous literature before. Secondly, and more importantly, the MRI demonstrated a significant longitudinal 9.66 cm intratendinous streak, an unusually extensive pattern of calcification which has not

been previously reported in literature with respect to its length and morphology.

The patient demonstrated complete resolution of symptoms and functional recovery, despite having minimal resolution of calcification of the hamstrings. This suggests that radiographic resolution of calcification may not always be necessary for clinical improvement in calcific tendinopathy. Previous studies on rotator cuff calcific tendinopathy have similarly demonstrated improvements in pain and function following ESWT even when complete resorption of the calcific deposit was not achieved.[14] The relationship between calcific deposits and pain is complex, as symptoms may be influenced by the inflammatory response, mechanical irritation, and the activity of the resorptive phase rather than solely by the presence or size of the deposit. Therefore, reduction in pain and restoration of function may occur even in the absence of complete radiological resolution.

The observed clinical improvement despite persistent calcification is supported by the broader literature on ESWT for calcific tendinopathy. Among the non-invasive options, Extracorporeal Shockwave Therapy has proven to be potentially very effective. While the evidence is strongest for the rotator cuff, successful use of Extracorporeal Shockwave Therapy (ESWT) has also been reported in calcific tendinopathy at extra-shoulder sites, including the rectus femoris tendon.[15] These findings indicate the therapeutic principles of ESWT may be applicable to other tendons affected by calcific deposits, including the hamstring.

ESWT has been associated with promoting re-absorption of calcification and the reduction of pain. Angileri et al. showed the mean differences in the Constant Murley Shoulder Outcome score, which was used as a measurement for functional improvement and pain post-treatment, for ESWT was 18.30 pretreatment and posttreatment.[16] Other studies like Louwerens et al. reported that 34% of their participants treated with ESWT showed full resorption of the calcified deposits after 6 months.[17]

Hence, extrapolating this to the hamstring, in the context of a long-segment calcific semimembranosus tendinopathy, a rapid clinical improvement was observed following ESWT to complete normalization of functional scores and successful return to running and racing, despite the atypical size and location of the deposit. This favourable clinical response is consistent with these reported biological and mechanical benefits of ESWT in calcific tendinopathy. By focusing the high amplitude shock waves on the hamstring, ESWT may help alleviate the symptoms of calcific tendinopathy of the proximal hamstring and may dissolve some of the calcification, facilitating its gradual resorption. Simultaneously, ESWT may help to stimulate angiogenesis and improve microcirculation within the tendon, which can promote tissue healing and remodeling. These processes have been proposed to help to reduce the inflammation as well as mechanical irritation from the calcification and thereby alleviating our patient's chronic pain. This case reinforces the potential effectiveness of ESWT as a non-invasive and biologically plausible therapy even for atypical tendon calcific tendinopathy, demonstrating successful return to competitive sport in a Masters athlete.

Limitations

As a single-patient case report, the findings may not be generalisable to other patients with calcific tendinopathy. The absence of a comparator also limits our ability to determine the relative efficacy of extracorporeal shock wave therapy (ESWT) compared with other treatment modalities. Therefore, further studies are required to establish its efficacy in similar atypical presentations.

Conclusion

In conclusion, this case report highlights a distinct and extended calcific tendinopathy within the proximal semimembranosus tendon. To our knowledge, the lesion's length (9.66 cm), anatomical location and morphology represent a rarely reported presentation that may broaden current understanding of the spectrum of calcific tendinopathy. Importantly, our case also suggests that extracorporeal shock wave therapy (ESWT) may be an effective and non-invasive treatment option even in atypical cases with large or elongated calcifications. Further documentation of similar cases may further refine our understanding of the pathogenesis, presentation as well as effective treatments for calcific tendinopathy in less common tendon sites.

Statements

Conflict of interest: The authors declare that they have no conflicts of interest related to this work.

Consent to participate: Verbal informed consent was obtained from the patient. Data was collected from operating theatre records and hospital electronic medical records by a member of the research team not involved in data analysis and anonymised prior to analysis.

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Patient Consent: Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the consent form is available on request.

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References

1. Chen H, Cheng J, Tsai J, Rothman RD, Bonanno J, Mintz DN, Kirschner JS, Wyss JF. Correlation between aspiration of calcific rotator cuff tendinopathy and morphology on imaging. PM&R 2025;17:782–92 https://doi.org/10.1002/pmrj.13347.
2. Chu SK, Rho ME. Hamstring Injuries in the Athlete: Diagnosis, Treatment, and Return to Play. Curr Sports Med Rep 2016;15:184–90 https://doi.org/10.1249/JSR.0000000000000264.
3. Mattiussi G, Moreno C. Treatment of proximal hamstring tendinopathy-related sciatic nerve entrapment: presentation of an ultrasound-guided "Intratissue Percutaneous Electrolysis" application. Muscle Ligaments Tendons J 2019;06:248. https://doi.org/10.32098/mltj.02.2016.13.%20
4. Maier J, Read J, Philippon M, Banffy M, Laskovski J. Endoscopic Debridement and Repair of Proximal Hamstring Calcific Tendinopathy. Arthrosc Tech 2025;14:103913. https://doi.org/10.1016/j.eats.2025.103913
5. Sansone V, Maiorano E, Galluzzo A, Pascale V. Calcific tendinopathy of the shoulder: clinical perspectives into the mechanisms, pathogenesis, and treatment. Orthop Res Rev 2018;Volume 10:63–72. https://doi.org/10.2147/ORR.S138225
6. Lee SS, Kang S, Park NK, Lee CW, Song HS, Sohn MK, Cho KH, Kim JH. Effectiveness of Initial Extracorporeal Shock Wave Therapy on the Newly Diagnosed Lateral or Medial Epicondylitis. Ann Rehabil Med 2012;36:681. https://doi.org/10.5535/arm.2012.36.5.681
7. Gollwitzer H, Saxena A, DiDomenico LA, Galli L, Bouché RT, Caminear DS, Fullem B, Vester JC, Horn C, Banke IJ, Burgkart R, Gerdesmeyer L. Clinically Relevant Effectiveness of Focused Extracorporeal Shock Wave Therapy in the Treatment of Chronic Plantar Fasciitis: A Randomized, Controlled Multicenter Study. J Bone Jt Surg-Am Vol 2015;97:701–8. https://doi.org/10.2106/JBJS.M.01331
8. Devlin N, Parkin D, Janssen B. An Introduction to EQ-5D Instruments and Their Applications. Methods Anal. Report. EQ-5D Data, Cham: Springer International Publishing; 2020, p. 1–22. https://doi.org/10.1007/978-3-030-47622-9_1
9. The Lower Extremity Functional Scale (LEFS): Scale Development, Measurement Properties, and Clinical Application. Phys Ther 1999. https://doi.org/10.1093/ptj/79.4.371
10. Mehta SP, Fulton A, Quach C, Thistle M, Toledo C, Evans NA. Measurement Properties of the Lower Extremity Functional Scale: A Systematic Review. J Orthop Sports Phys Ther 2016;46:200–16. https://doi.org/10.2519/jospt.2016.6165
11. Albano D, Coppola A, Gitto S, Rapisarda S, Messina C, Sconfienza LM. Imaging of calcific tendinopathy around the shoulder: usual and unusual presentations and common pitfalls. Radiol Med (Torino) 2021;126:608–19. https://doi.org/10.1007/s11547-020-01300-0
12. Chan W, Chase HE, Cahir JG, Walton NP. Calcific tendinitis of biceps femoris: an unusual site and cause for lateral knee pain. BMJ Case Rep 2016;2016:bcr2016215745. https://doi.org/10.1136/bcr-2016-215745
13. Mohan R, Dhotare SV, Unnikrishnan PN, Jakaraddi C. Bilateral hamstring origin calcification: rare presentation of Gitelman syndrome. BMJ Case Rep 2020;13:e227992 https://doi.org/10.1136/bcr-2018-227992.
14. Chou, W.-Y., Wu, K.-T., Chen, P.-C., Jhan, S.-W., Wu, C.-F., & Cheng, J.-H. (2024). Clinical, sonographic, and molecular changes in calcific tendinitis of the shoulder following extracorporeal shockwave therapy: A prospective case–control study. *International Journal of Surgery*, *110*(12), 7447–7455. https://doi.org/10.1097/js9.0000000000002078
15. Lee, C. H., Oh, M.-K., & Yoo, J.-I. (2019). Ultrasonographic evaluation of the effect of extracorporeal shock wave therapy on calcific tendinopathy of the rectus femoris tendon: A case report. *World Journal of Clinical Cases*, *7*(22), 3772–3777 https://doi.org/10.12998/wjcc.v7.i22.3772
16. Angileri HS, Gohal C, Comeau-Gauthier M, Owen MM, Shanmugaraj A, Terry MA, Tjong VK, Khan M. Chronic calcific tendonitis of the rotator cuff: a systematic review and meta-analysis of randomized controlled trials comparing operative and nonoperative interventions. J Shoulder Elbow Surg 2023;32:1746–60. https://doi.org/10.1016/j.jse.2023.03.017
17. Louwerens JKG, Sierevelt IN, Kramer ET, Boonstra R, Van Den Bekerom MPJ, Van Royen BJ, Eygendaal D, Van Noort A. Comparing Ultrasound-Guided Needling Combined With a Subacromial Corticosteroid Injection Versus High-Energy Extracorporeal Shockwave Therapy for Calcific Tendinitis of the Rotator Cuff: A Randomized Controlled Trial. Arthrosc J Arthrosc Relat Surg 2020;36:1823-1833.e1. https://doi.org/10.1016/j.arthro.2020.02.027

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