Iliopsoas Grade 2 Myotendinous Junction Injury in an Elite Football Player: Return to Play Process

Lesão Grau 2 da Junção Miotendinosa do Iliopsoas num Jogador Profissional de Futebol

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ABSTRACT

Groin pain is a common injury in professional footbal and widely acknowledged as a complex medical issue. Iliopsoas pathology stands as the second-most common cause of athletic groin injury, yet iliopsoas traumatic muscle injuries are infrequent and inadequately documented in the literature. This case report outlines a grade 2 myotendinous junction injury of the iliopsoas in a football player competing in the Portuguese First League, combining an early rehabilitation protocol with ultrasound-guided hematoma evacuation and LP-PRP injection, enabling return to play 23 days after injury with no reported re-injury over a period exceeding 12 months.

Keywords: Athletic Injuries/rehabilitation; Pain; Psoas Muscles/injuries; Soccer; Sports Medicine; Return to Sport

RESUMO

O síndrome pubálgico trata-se de uma entidade nosológica comum no futebol profissional e globalmente reconhecida como uma lesão de gestão complexa. A patologia do iliopsoas é a segunda causa mais comum de síndrome pubálgico em atletas, mas as lesões musculares traumáticas do iliopsoas são raras e insuficientemente documentadas na literatura. Este caso clínico descreve uma lesão grau 2 da junção miotendinosa do iliopsoas num jogador de futebol de elite a competir na Primeira Liga Portuguesa de Futebol, em que foi submetido a um plano de reabilitação associado a evacuação de hematoma ecoguiado e posterior infiltração com PRP desleucocitado, permitindo o *return to play* 23 dias após a lesão e sem recidiva durante um período superior a 12 meses.

Palavras-chave: Lesões em Atletas/reabilitação; Futebol; Medicina Desportiva; Músculos Psoas/lesões; Volta ao Desporto

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INTRODUCTION

Professional football is a physically demanding contact sport and players are exposed to high risk of injury.[1,2]

Injuries pose a significant financial burden to football clubs and there is a strong correlation in the literature between a player's match availability and team's overall performance as indicated by factors such as ranking position, games won, goals scored, and total points.[3,4] Considering the economic and competitive implications associated with player availability, the time to return to play is of utmost importance and is pivotal in football medicine at professional level.[4,5]

Groin pain in athletes is a hot topic and widely recognized as a complex medical issue.[6,7] Groin injury can stem from a diverse range of acute and chronic pathological conditions, leading to overlapping clinical symptoms.[8] It represents a common injury in football but clinical practice is challenging with clinicians using diverse terms and classification systems to report groin injuries, where even the same diagnostic term can have multiple interpretations.[6,9,10] Recently the Doha Consensus Meeting standardized taxonomy and terminology for hip and groin pain, and was the result of an agreement among 24 international groin experts, providing a guideline that has been used internationally by many clinicians and researchers.[6,9,10] The classification system is divided into three main sections: 1. Defined clinical entities for groin pain (Adductor-related, iliopsoas-related, inguinal-related and pubic-related groin pain); 2. Hip–related groin pain; 3. Other causes of groin pain in athletes.[6]

Iliopsoas pathology is the second-most common cause of athletic groin injury and is the primary cause of chronic groin pain in athletes.[1,10] Despite this, Iliopsoas traumatic muscle injuries during sports practice are rare and barely described in the literature.[11–15]

The iliopsoas is the major flexor of the hip, but also acts as an external hip rotator and contributes to the lateral flexion of the trunk.[1,11,12,14]

From a biomechanical standpoint, the iliopsoas plays a fundamental role in maintaining the erect position of human beings and is actively recruited in various motor patterns of many athletic movements, with significant contribution in the initial swing phase of running and throughout the entire kicking movement.[1,11,12]

The singularity of traumatic lesions of the iliopsoas is characterized by the challenge of early diagnosis as it is often overlooked in the diagnostic process.[12,14]

In the adult athletic population, iliopsoas injury typically occur without a bony avulsion injury.[12,15] The most common injury location is the at the myotendinous junction, the most vulnerable area of the iliopsoas, but lesions can occur throughout the entire course of the long muscle causing very different clinical symptoms.[11,12,14,16]

In this case report we describe an iliopsoas grade 2 myotendinous junction injury in an elite football player playing in Portuguese First League, highlighting the return to play (RTP) process.

CASE REPORT

A 24-year-old male, right-footed defensive professional football player, sustained an injury in training Match Day – 2 of the microcyle, during a tackle, where he was exposed to trunk extension and sudden internal hip rotation of the right dominant lower limb. The athlete experienced mild pain in the anterior aspect of his right thigh during the training session but managed to continue. Following the conclusion of the practice session, he reported to our medical staff that he had felt a slight discomfort on his right upper thigh after a tackle.

On physical examination, he presented with diffuse symptoms on the anterior aspect of his right proximal thigh, with no tenderness on palpation, no palpable hernia, with negative tests for intra-articular hip pathology, no restriction of hip range-of-motion (ROM), no pain in resisted knee extension, nor pain with quadriceps stretch. Resisted hip flexion elicited only mild pain (rated 2/10 on the Numerical Rating Scale) when the knee was in full extension. Additionally, the patient reported discomfort in the right groin during the Thomas Test. Ultrasound and magnetic resonance imaging (MRI) were performed 24 hours later, revealing a grade 2b iliopsoas myotendinous junction muscle injury, according to the British Athletics Muscle Injury Classification (BAMIC) proposed by Pollock *et al* (Fig. 1).

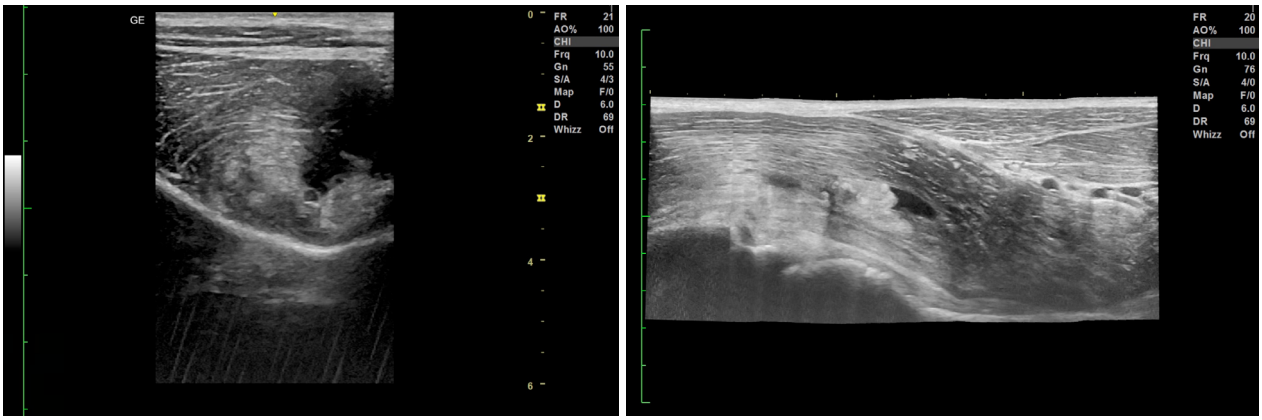

Figure 1. Ultrasound images compatible with an iliopsoas grade 2 myotendinous junction muscle injury. A – Transverse Plane; B – Longitudinal Plane;

A specific and functional rehabilitation program was designed based on the athlete's symptoms and respecting the chronobiological stages of muscle repair. It was performed an ultrasound-guided evacuation-puncture of 5 mL of the hematoma and a single injection of 4 mL of leucocyte-poor platelet-rich plasma (LP-PRP) after an autologous blood sample of the athlete was taken (Hy-tissue® PRP 20), 72 hours after the injury.

In the initial stages of rehabilitation, the approach involved passive physiotherapy strategies, selective rest of the anatomical area to limit the extent of the injury and the hematoma, while maintaining the player overall physical condition with the strength and conditioning coach. Bearing in mind, that hematoma formation may predispose to development of a primary psoas abscess, as reported in a case involving a Division I American Football Collegiate athlete who developed an abscess following an iliopsoas muscle injury.[17] Given that psoas abscesses may have significant morbimortality, as about 20% progress to septic shock, a cautious approach in rehabilitation advancements relied on monitoring athlete's symptoms and serial ultrasound imaging.[17]

An active strengthening program respecting the isometric - concentric - eccentric order was carried 5 days after the injury with special focus on the dynamic stabilizers of the lumbopelvic-hip complex chain. Functional movement patterns were first introduced with aquatic therapy in the club pool 8 days after injury, gradually decreasing the depth of immersion and increasing weight-bearing in a controlled manner. We gradually increased plyometric work intensity and the athlete started jogging 10 days after injury (5.5-8 km/h). After progression through the intensity levels of plyometric exercises and running speed, we were able to introduce football-specific training on the field, respecting the Control-Chaos Continuum (CCC) proposed by Taberner *et al.*

Following 15 days of rehabilitation, a control MRI was conducted, revealing a substantial reduction of the muscle oedema, with residual hematoma (Fig. 2). However, as supported by the existing literature, incomplete resolution of oedema does not seem to hinder successful RTP.[18]

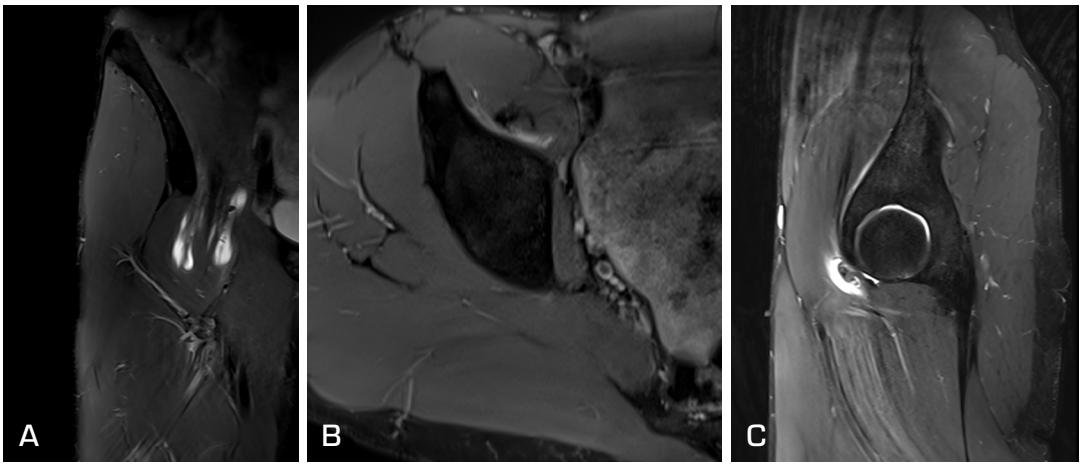

Figure 2. Control MRI 15 days post-grade 2b iliopsoas muscle injury. T2-weighted sequence. (A) Coronal plane. (B) Axial plane. (C) Sagittal plane.

After matching the clinical and functional criteria, the athlete was able to return to training (RTT) 17 days after injury, including: Absence of clinical symptoms with no pain in the activities exerted; Completion of the rehabilitation program; MRI imaging assessment with reduction of muscle oedema and hematoma; Muscle strength quantified by hand-held dynamometry including hip flexion, extension, adduction, abduction, internal and external rotation, with Limb Symmetry Index > 90% and respecting the CCC throughout the entire process.

The athlete was first introduced in RTT in closed and controlled situations advancing to open-field and uncontrolled situations enabling full integration without any reported clinical complaints. After 7 days of training with the team, RTP clearance was possible after the athlete matched >90% pre-injury global positioning systems (GPS) metrics and was psychologically ready, 23 days after injury as illustrated in Fig. 3.

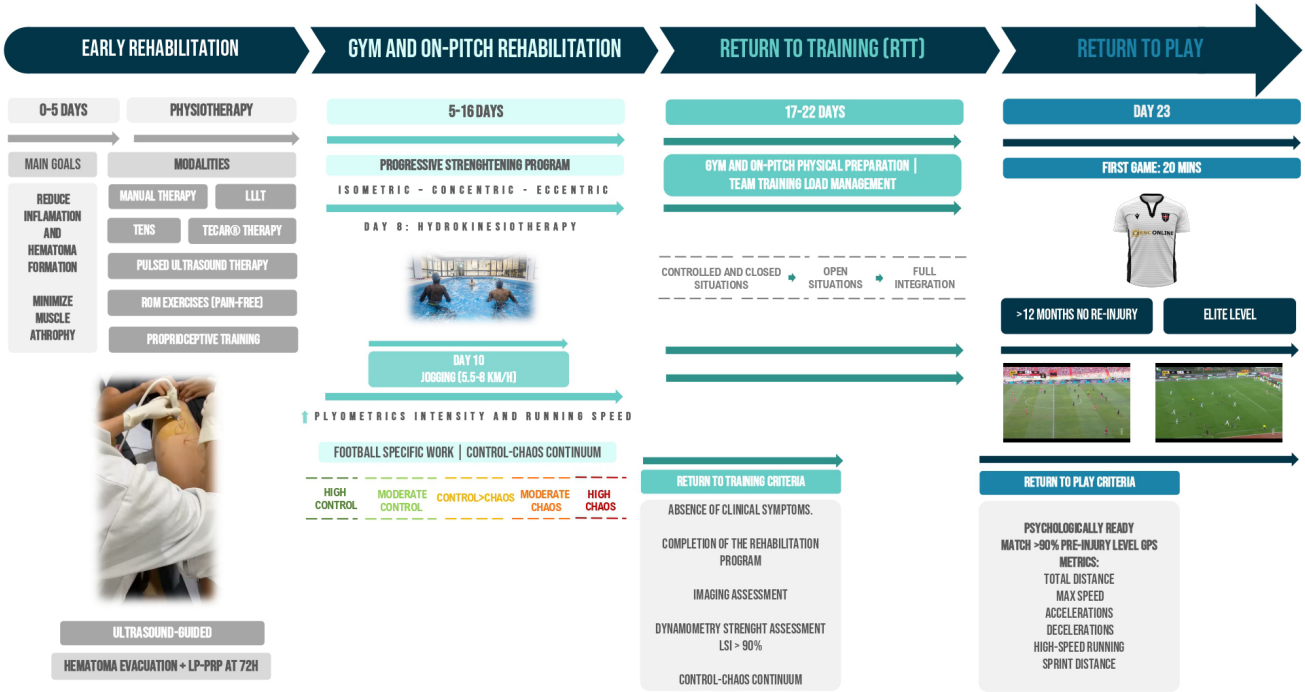

Figure 3. Return to play process infographic.

LLLT – low level laser therapy; TENS - transcutaneous electrical nerve stimulation; ROM – range of motion; LP-PRP – leucocyte poor platelet rich plasma; LSI - Limb Symmetry Index.

DISCUSSION

Groin pain is still a challenge in Football Medicine, marked by diagnostic complexities and a notable absence of evidence-based treatment options.[6,9] The broad spectrum of possible injuries and the common occurrence of abnormal findings in imaging studies in asymptomatic athletes make it difficult to precisely identify the nosological entity responsible for groin pain.[6]

Groin pain may arise from muscle injuries of the Iliopsoas complex, albeit being uncommon, little known and insufficiently documented, specially at elite level football.[11,12,14] To date, only a limited number of reports have been published on this matter and to the best of our knowledge, there are no documented clinical cases of this particular injury within the realm of elite football that outline precisely the athlete-specific RTP criteria.

In this clinical case, we presented a successful conservative treatment after a BAMIC grade 2b iliopsoas injury in the dominant limb, combining an early rehabilitation protocol with ultrasound-guided hematoma evacuation and LP-PRP injection.

Advancements in the rehabilitation program were guided by clinical and analytical criteria, allowing for a systematic and tailored progression in the RTP process. The player was able to return to play 23 days after injury, had no reported re-injury following a period exceeding 12 months and is fully asymptomatic.

Early diagnosis is key to ensure proper treatment that favors optimal muscle healing. Neglecting appropriate recovery before resumption of sports activity, commonly results in recurrence and can lead towards chronic symptomatology, making imaging assessment and treatment more challenging.[14] Complicating factors in the diagnosis include the rarity of these disorders, the complex anatomical environment, and the potentially misleading benign evolution of the initial presentation.[1,14] The psychological impact, including concerns about reinjury and the pressure to RTP, adds another layer to the complexity of management in this athletic population.[1,5,19]

If correctly diagnosed and treated, the iliopsoas injury does not entail particular problems for the RTP in football and present good overall prognosis.[19,20]

Clear communication and team decision-making within Football Health and Performance departments is paramount, especially in situations where the scientific landscape may lack clarity, prioritizing player safety through well-informed decision-making.[1] Evidence supporting rehabilitation progression and the RTP decision-making process in professional football is currently insufficient and the gap in research highlights the need for more comprehensive studies to better inform players and practitioners.[1,19]

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All authors contributed to the article to the same extent and are in agreement on all aspects of the work. All authors approved the final version to be published.

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