

Diagnosis and Treatment of Athletic Pubalgia

Zhengyuan Ji *

China World Academy, Changshu, China

* Corresponding author: kwoods68853@student.napavalley.edu

Abstract. Athletic palagia, frequently termed as sports hernia or core muscle injury, is a prevailing cause of groin discomfort in athletes. Originating from potentially multifaceted interactions in the anterior pelvic region, its diagnosis is convoluted, owing to overlapping symptoms with other conditions and the absence of definitive diagnostic tools. Treatment approaches oscillate between conservative and operative modalities. Conservative treatment typically constitutes rest, physical therapy, and medication, while operative treatment comprises techniques like open, laparoscopic, and endoscopic repairs. Efficacy of treatments can significantly be modulated by personalized rehabilitation protocols. Recent studies indicate that while both treatments can be effective, surgery might facilitate a marginally quicker return to sports. Continued research aims at refining the understanding of athletic palagia, its treatment, and rehabilitation, underscoring the need for standardized measures, randomized trials, exploration of etiological factors, and enhanced preventative strategies. This paper provides an exhaustive overview of current methods, challenges, and prospective avenues in athletic palagia management.

Keywords: Athletic palagia, groin pain, conservative treatment, operative treatment, rehabilitation protocol.

1. Introduction

Athletic pubalgia, also known as sports hernia or core muscle injury, is a prevalent source of groin pain in athletes, particularly in sports demanding sudden direction changes or kicking. It is marked by chronic pain in the lower abdomen or inguinal region, typically intensified by physical activity and alleviated by rest. The exact causes and mechanisms remain unclear, believed to involve an intricate interaction of the anterior pelvic region's various structures. Diagnosing this condition is intricate due to the absence of a conclusive test or imaging modality and the overlap of symptoms with other groin pain-causing conditions. There is a lack of consensus on the best treatment approach, with outcomes varying based on several factors including patient characteristics and injury extent. This report aims to concisely review the contemporary methods and advancements in the diagnosis and treatment of athletic pubalgia and will delve into associated conditions, terminology, definitions, and prospective directions for research and clinical practice [1].

2. History and Current Diagnosis and Treatment

Athletic pubalgia, alternately known as sports hernia or core muscle injury, is a multifaceted and perplexing condition primarily affecting athletes' anterior pelvic region. The term "athletic pubalgia" was coined initially by Gilmore in 1980, denoting a chronic groin pain syndrome arising from a tear or a weakening of the posterior inguinal wall [1]. Nonetheless, the ensuing years have seen the introduction of a myriad of terms like inguinal disruption, reflecting the assortment of hypotheses and treatments addressing its pathophysiology. The proliferation of terms and definitions has induced considerable confusion and debate in both clinical practice and medical literature, impeding the comparative evaluation of the diverse diagnostic and treatment modalities' efficacy [2]. An international panel of experts convened in Doha, Qatar, in 2014, to reach a consensus on the terminology and definitions for groin pain in athletes. The panel agreed to use the term groin pain in athletes as an umbrella term for all types of groin pain that occur in athletes, regardless of the etiology or location [3].

Identifying athletic pubalgia remains a formidable task due to the absence of any definitive diagnostic test or imaging modality that can unambiguously confirm or refute its presence. The diagnostic approach predominantly relies on meticulously acquired patient history and physical examination, while simultaneously considering and excluding other potential sources of groin pain such as osteitis pubis, adductor strain, or inguinal hernia. The patient's medical history should encompass details regarding the beginning, longevity, site, severity, and recurrence of the pain, along with elements that worsen or alleviate it, its repercussions on athletic performance, and any preceding treatments and their results. The physical examination ought to incorporate the evaluation, touch assessment, and listening to the sounds of the groin area, as well as the analysis of the mobility, vigor, and suppleness of the hip and pelvic muscles. Typically, the prevalent findings consist of tenderness over the pubic tubercle, a dilated superficial inguinal ring, evidenced by a positive Valsalva maneuver, and a positive resisted sit-up test. Nonetheless, these manifestations aren't entirely definitive or universally consistent and can fluctuate based on the individuality and severity of the injury [1].

Regarding imaging studies, they serve as pivotal tools in eliminating other contributory conditions to groin pain but do not substantiate the diagnosis of athletic pubalgia conclusively. The most frequented imaging strategies for delineating groin pain in athletes comprise ultrasound, magnetic resonance imaging (MRI), and computed tomography (CT). Ultrasound, being non-invasive and economical, offers dynamic insights into the soft tissue structures within the groin region. Despite its utility, it's operator-dependent and may fail to discern subtle or deep-seated injuries, such as tears of the rectus abdominis or the conjoint tendon [4]. MRI is a technique with higher sensitivity that can yield a comprehensive depiction of both the anatomical and pathological aspects of the groin region. It is an important tool in detecting the existence of edema, inflammation, or fibrosis in muscles, tendons, ligaments, or bones. But the usage of MRI is constrained by its cost, the time it necessitates, and its poor availability in certain regions [1]. Although used less frequently, CT can deliver precise and high-resolution images of the skeletal structures in the groin area. It is proficient in identifying hernias and discerning osteitis pubis, a condition characterized by chronic inflammation of the pubic symphysis and adjoining bone. However, the use of CT does subject the patient to radiation exposure, and it might fall short in detecting injuries to soft tissues, such as tears in the rectus abdominis or the conjoint tendon [5].

The approach to treating athletic pubalgia remains a subject of debate due to the lack of consensus regarding the ideal surgical or non-surgical methods, with outcomes potentially varying based on individual patient characteristics, the nature and severity of the injury, and adherence to rehabilitation protocols. The treatment options for athletic pubalgia can be divided into two main categories: conservative and operative. Conservative treatments include rest, application of ice, administration of anti-inflammatory medications, physical therapy, and various injections. The regimen of physical therapy should incorporate exercises designed to enhance the strength, flexibility, and coordination of the core, pelvic, hip, and lower extremity muscles. Injections may consist of corticosteroids, platelet-rich plasma, or prolotherapy, all aimed at mitigating inflammation and fostering the healing process of the damaged tissues. The conservative treatment is usually the first-line option for athletic pubalgia, as it is less invasive and less risky than the operative treatment. Nevertheless, conservative treatments may not yield success in certain patients, particularly those presenting with severe or longstanding injuries, or those with high athletic requirements [6].

Surgical intervention encompasses a range of techniques intended to mend or fortify the posterior inguinal wall, the anterior abdominal wall, or both. Predominant surgical methods for addressing athletic pubalgia include open repair, laparoscopic repair, and endoscopic repair. Open repair necessitates an incision in the groin area, followed by suturing or the application of mesh to the posterior inguinal and/or anterior abdominal wall. Laparoscopic repair is executed by creating multiple minor incisions in the abdomen to facilitate the insertion of a camera and instruments, enabling suturing or mesh application to the respective walls. Endoscopic repair entails a minimal incision in the pubic area, allowing for the insertion of camera and instruments to conduct suturing or mesh application to the involved walls. The operative treatment is usually the second-line option

for athletic pubalgia, as it is more invasive and riskier than the conservative treatment. However, the operative treatment may be more effective and faster for some patients, especially those who have a severe or chronic injury, or who have a high level of athletic demand [7].

The treatment outcome and effectiveness for athletic pubalgia can be significantly impacted by the rehabilitation protocol employed. It's pivotal that this protocol is meticulously customized to align with the patient's specific needs, aspirations, and preferences, and it should consider the nature and degree of the injury and the categorization and scheduling of the treatment. The rehabilitation protocol ideally incorporates four pivotal phases: acute, subacute, return to sport, and maintenance. The initial or acute phase seeks to alleviate pain and inflammation while shielding the impacted tissues from additional harm. Depending on the injury's severity and treatment response, this phase could span a few days to several weeks and may involve rest, ice, anti-inflammatory medications, injections, and mild range of motion exercises [8]. Following is the subacute phase, an intermediary step focusing on recuperating the strength, flexibility, and coordination of core, pelvic, hip, and lower extremity muscles. This phase, characterized by the inclusion of progressive resistance, stretching, balance, and functional exercises, may last several weeks to months, contingent upon patient progress and tolerance. Subsequently, the return to sport phase aims to equip the patient for athletic activity resumption and recurrence prevention of the injury. This stage could also last from weeks to months, dependent on the athletic activity's intensity and requirements and incorporates sport-specific, agility, plyometric, and speed exercises. Lastly, the maintenance phase is a continuous effort to uphold the patient's peak performance and well-being while overseeing the treatment's outcome and effectiveness. The duration of this phase is indefinite and is modulated by the patient's goals and requirements. It could include routine exercises, warm-up and cool-down sessions, and intermittent assessments [6].

According to a systematic review by, the average return to sport after the conservative treatment for athletic pubalgia was 4.4 months, with a range of 1.5 to 12 months [2]. The average return to sport after the operative treatment for athletic pubalgia was 3.8 months, with a range of 1.5 to 6 months. The findings imply that both conservative and surgical interventions for athletic pubalgia can be efficacious and secure, with surgical intervention possibly offering a marginal benefit in facilitating a quicker return to sports, reduced pain levels, and elevated levels of satisfaction.

The forthcoming pathways for research and clinical application in the domain of athletic pubalgia aim to elevate comprehension and handling of this condition, as well as to refine the coherence and quality of both the evidence obtained and the methodologies employed. Some of the possible future directions are:

- To develop and validate standardized and reliable outcome measures for athletic pubalgia, such as pain scales, functional scales, quality of life scales, and return to sport scales.
- To conduct randomized controlled trials and long-term follow-up studies to compare and evaluate the effectiveness and the safety of the different treatment methods for athletic pubalgia, such as conservative versus operative, open versus laparoscopic versus endoscopic, suture versus mesh, and different types and techniques of surgery [9].
- To investigate the etiology and the pathophysiology of athletic pubalgia, such as the role of biomechanics, genetics, anatomy, physiology, and psychology in the development and the progression of the injury.
- To identify and validate the risk factors and the prognostic factors for athletic pubalgia, such as age, gender, sport, level, duration, frequency, intensity, technique, equipment, and comorbidities.
- To explore and optimize the prevention and the rehabilitation strategies for athletic pubalgia, such as screening, education, training, nutrition, hydration, and recovery [10].

3. Conclusion

Athletic pubalgia is a common and challenging condition that affects the groin region of athletes. The diagnosis and the treatment of athletic pubalgia are based on the history and physical examination

of the patient, as well as the exclusion of other possible causes of groin pain. The treatment options for athletic pubalgia include conservative and operative methods, which may have similar outcomes and effectiveness, but different advantages and disadvantages. The rehabilitation blueprint for managing athletic pubalgia needs to be meticulously customized to align with the patient's distinct requirements, aspirations, and inclinations, along with considering the specific nature and degree of the injury, and the modality and scheduling of the intervention. The progressive trajectories in research and clinical operation within the realm of athletic pubalgia are structured to bolster the insight and governance of this ailment and to augment the consistency and caliber of the substantiations and the procedural approaches.

References

- [1] Cohen B H, Kleinhenz D T, Schiller J R, et al. Understanding Athletic Pubalgia: A Review. PubMed, National Institutes of Health, 2016, 99 (10): 31 – 35.
- [2] Kraeutler M J, Mei-Dan O, Belk J W, et al. A Systematic Review Shows High Variation in Terminology, Surgical Techniques, Preoperative Diagnostic Measures, and Geographic Differences in the Treatment of Athletic Pubalgia/Sports Hernia/Core Muscle Injury/Inguinal Disruption. *Arthroscopy: The Journal of Arthroscopic & Related Surgery*, 2021, 37 (7): 2377 - 2390.e2.
- [3] Weir A, Brukner P, Delahunt E, et al. Doha agreement meeting on terminology and definitions in groin pain in athletes. *British Journal of Sports Medicine*, 2015, 49 (12): 768 – 774.
- [4] Zoga A C, Kavanagh E C, Omar I M, et al. Athletic Pubalgia and the Sports Hernia: MR Imaging Findings. *Radiology*, 2008, 247 (3): 797 – 807.
- [5] Verrall G M, Slavotinek J P, Fon G T, et al. Management of osteitis pubis in athletes: rehabilitation and return to training—a review of the most recent literature. *Open access journal of sports medicine*, 7, 33.
- [6] Massachusetts General Brigham Sports Medicine. Rehabilitation protocol for athletic pubalgia (non-operative). Mass General Brigham | Integrated Health Care System. www.massgeneralbrigham.org. <https://www.massgeneralbrigham.org>.
- [7] Chambers J. Sports Hernia Injury: A Complete Full-Scale Review (Athletic Pubalgia) *Physiqz*. 2021 – 07 - 28/2023 – 10 - 07. <https://physiqz.com/physical-therapy/sports-hernia/orthopedic-clinical-review/>.
- [8] Kuhns B D, Weber A E, Levy D M, et al. The role of hip arthroscopy in the management of athletic pubalgia and femoroacetabular impingement. *Arthroscopy: The Journal of Arthroscopic & Related Surgery*, 35 (8): 2405 - 2413.
- [9] Sinding-Larsen-Johansson Syndrome - Knee & Sports - Orthobullets. www.orthobullets.com. <https://www.orthobullets.com/knee-and-sports/3030/athletic-pubalgia-and-adductor-strain>.
- [10] Knapik D M, Nho S J, Voos J E, et al. Core muscle injury/athletic pubalgia: a review of current diagnostic and treatment strategies. *Journal of hip preservation surgery*, 7 (1), 1 - 9.