Sports Medicine and Rehabilitation Journal

Case Report
Published: 25 Jun, 2018

Pain Relief after Mobilization of the Symphysis Pubis in a 22-Year Old Male Football Player with Remaining Groin Pain after Conventional Care

Stina Lilje[1], Jón Karlsson[2] and Hamid Behzadmehr[3]*

[1]*Institute of Environmental Medicine, Karolinska Institutet, Stockholm, Sweden*

[2]*Sahlgrenska University Hospital, Göteborg, Sweden*

[3]*Scandinavian College of Naprapathic Manual Medicine, Stockholm, Sweden*

Abstract

The incidence of athletic groin pain is 3-25% of all sports-related injuries. A complex anatomy, overlapping diagnoses, heterogenous terminology, and lack of clinical guidelines complicate the treatment.

The 22-year old male football player described in this study had suffered from groin pain for almost a year. Per oral analgesics had no effect, plain radiography was negative, and physical therapy according to the diagnosis "adductor tendinitis" did not improve his condition. Movement restriction test of the adductor muscles was negative, why treatment was focused on the focal pain area; the symphysis pubis. Manual mobilization of the right pubic bone yielded a distinct and stable improvement in pain and physical function, which leaded the working diagnosis. After four treatments the patient's night pain and ability to run, climb stairs, and play football were restored, his locking/clicking sensations and medication ceased, and he was able to return to football. At follow-up 8 years later, he was still symptom-free.

The etiology and symptoms of the common diagnosis 'adductor tendinitis' and dysfunctions of the pubic bones are similar, yet the lack of clarity around the diagnosis adductor tendinitis -thus the basis for treatment - has been highlighted in earlier research. According to a thorough literature search "symphysis pubis dysfunction" guided the care of the patient. The present study suggests that the described manual diagnostic and treatment approach may provide quick, significant and non-expensive benefits for certain patients with groin pain.

Level of Evidence: Level IV.

Keywords: Athletic groin pain; Orthopedic outpatient; Muscle energy technique

OPEN ACCESS

Correspondence:
Stina Lilje, Institute of Environmental Medicine, Karolinska Institutet, Box 210, S-171 77 Stockholm, Sweden.
Tel: +46-708-233 332;
E-mail: stina.lilje@ki.se

Received Date: *21 May 2018*
Accepted Date: *18 Jun 2018*
Published Date: *25 Jun 2018*

Citation:
Lilje S, Karlsson J, Behzadmehr H. Pain Relief after Mobilization of the Symphysis Pubis in a 22-Year Old Male Football Player with Remaining Groin Pain after Conventional Care. Sports Med Rehabil J. 2018; 3(2): 1035.

Introduction

Groin pain is common in sports that involve movements such as kicking, turning, twisting, acceleration and a sudden change of direction [1,2]. The literature reports an incidence between 3% to 25% of all sport-related injuries [3], and in male football players the incidence is approximately 13% per season [4]. Athletic groin pain has several different possible underlying etiologies, like trauma, repetitive overloading and pathology, and its treatment is often challenging and long lasting, with long absence from sport for the athlete [5,6]. One reason for this is the lack of a uniform terminology among clinicians referring to the same musculoskeletal conditions with different definitions [7,8]. Another reason is the numerous differential diagnoses with overlapping and similar symptoms [5,9], and frequently found asymptomatic radiological findings [10-13]. Often the patient is unable to precisely identify the site of his or her pain or to recall any mechanism of injury, rather they complain of pain with gradual onset [14,15]. It appears that the main etiology to various groin injuries is an increased tension across the pubic bone caused by imbalances between adductor-abdominal muscles, which may result in injury/pain from differing structures, such as bones, muscles, tendons and ligaments [6,7,14,16-20]. The best evidence-supported modality is exercise therapy, but the available evidence lacks a standard protocol regime and the rehabilitation takes time [21-23]. Adductor tendinitis is a common diagnosis in athletic groin pain, but there is a lack of clarity related to the diagnosis, with only few studies of high quality, and the basis for treatment

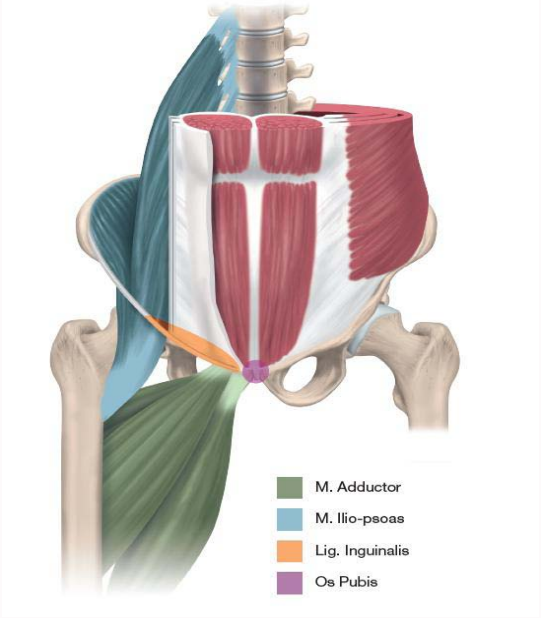

Figure 1: Four musculoskeletal structures where athletic groin pain may occur. Retrieved from Weir A et al. [7].

has been highlighted [24]. Positive outcomes from a few studies on manual therapy for pain in the symphysis pubis in pregnant women have been published previously [25], yet biomechanical dysfunctions need standardization of terminology, an agreed definition and reliable assessments of the conditions [26], and it appears that a biomechanical dysfunction of the symphysis pubis has attended limited knowledge in the medical literature [27,28].

Materials and Methods

Patient history

The case of the present study is a healthy, male 22-year old football player who practiced 6 days a week, and suffered from groin pain since almost a year. The pain had an insidious onset with no known trigger or trauma, and increased during-or after-football exercising. Shifting from one side to the other and particularly shooting a "broadside" was the movement that most of all provoked the pain, which could also be experienced if he was sitting his legs crossed. His pain was unilateral (right side), localized to the groin, and occasionally it radiated down into the inner thigh. It could also be experienced when climbing stairs, up- or downwards, running on uneven ground and when stretching the adductor muscles. The first diagnosis was "adductor tendinitis" and the patient was prescribed pain relieving drugs and NSAID and referred to radiography and physiotherapy. Since the pain persisted, the patient had to quit football and finally had a referral to a hospital's orthopedic outpatient clinic.

Findings

The patient's adductor muscles on the right side were stiffer than on the left, the insertion in the pubic bone was painful upon palpation and several myofascial trigger points were found there. Resistance testing of the adductor muscles was negative. The focal pain area was in the surrounding of the right pubic tubercle, superiorly to the attachment of the adductor muscles, and there was a palpatory notion of mal alignment in the symphysis pubis (the right pubic bone more superior than the left).

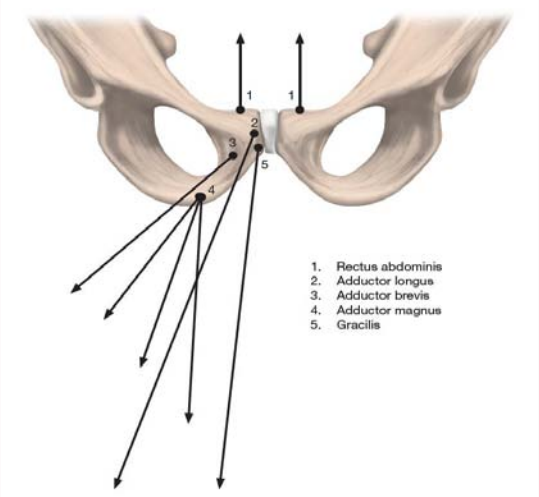

Figure 2: Directions of the forces of the adductor and abdominal muscles acting on the symphysis pubis. Retrieved from Meyers W et al. [16].

Diagnostic process

The patient suffered neither from any neurological or urological signs, nor pain at rest. Plain radiography was negative, and since resistance testing of the adductor muscles was negative, any skeletal injury, rupture or tendinitis was not deemed plausible. The fact that the patient was more or less pain-free except from when performing a shear movement, the pain being very distinct, and sometimes accompanied by a painful locking sensation and a clicking sound, resembled the clinical experience of a dysfunctional joint. The hypothesis of a symphysis pubis dysfunction was confirmed when the patient's identical pain was found upon palpation, and increased with inferior provocation of the basis of his right pubic bone [29].

Treatment

The right pubic bone was mobilized in an inferior direction, with the patient supine, and the leg of the affected side off the bench. The therapist supported the opposite side of the pelvis, and pressed the patient's right leg (hip extension) until an anterior motion was felt at the opposite side. Then, the patient was instructed to gently elevate his right leg towards the ceiling, as the therapist offered resistance with her hand placed on the patient's affected thigh (i.e. a light isometric contraction). The contraction was maintained for 3-5 seconds, then, the patient was asked to fully relax so that the affected side slided towards the floor, and the therapist pressed it into further leg extension. There was a distinct improvement in pain in conjunction with this mobilization. The patient had altogether four treatment sessions during three weeks, and was advised to continue with stretching exercises (contract-release of the adductor muscles in their most prolonged position).

Results and Discussion

On the fourth (final) treatment session no pain was experienced on palpation of the right tubercle, and the patient experienced that the locking sensations and clicking sound had disappeared. Four weeks after the last treatment session he was significantly improved. He could run, play football and climb stairs without pain or discomfort or pain at night; he did not consume any pain relieving drugs, and was able to return to pre-injury sport activity after a total of five weeks. At follow-up 12, 24 and 52 weeks later the patient was still free from symptoms, and after 8 years he stated that he had not experienced any

Table 1: The patient's improvement from baseline to the 8 year follow-up. Visual Analogue Scale [47]; Perceived recovery [48].

Measurement	Baseline	3 w.	5 w.	12 w.	24 w.	52 w.	416 w.
VAS (worst pain)	95	40	0	0	0	0	0
Medication	Pronaxén	None	None	None	None	None	None
Physical function (locking feeling/clicking sound)	Yes	Some	No	No	No	No	No
Perceived recovery	N.a.	A little	Very much	Very much	Very much	Very much	Very much
Night pain	Yes	No	No	No	No	No	No
Physical activity(running, climbing stairs)	Very restricted	A little restricted	Not restricted	Not restricted	Not restricted	Not restricted	Not restricted
Playing football	N.a.	N.a.	Not restricted	Not restricted	Not restricted	Not restricted	Not restricted

pain or movement restriction (Table 1).

Literature review

The most common source of athletic groin pain is musculotendinous strain of the hip adductor muscles that insert in the musculotendinous pubic bone [18], and groin pain is usually not the only symptom in medical conditions [30,31]. Several structures in the groin are in close proximity to each other, and may refer pain to overlapping areas in a complex anatomy (Figure 1), and there are numerous differential diagnoses for athletic groin pain [7,13,25,32,33]. Four broad categories of clinical "entities" for groin pain in athletes have been defined in a classification system, though: adductor-related groin pain, iliopsoas-related groin pain, inguinal-related groin pain and pubic-related groin pain [7]. Discomfort and/or pain when the intended structure is palpated, resistance testing and stretching, are recognizable of the athlete to be his or her injury-specific pain, and locate athletes into one of the four categories.

Adductor-related symptoms with an insidious onset and palpation tenderness over the origin of the adductor muscles in the pubic bone or throughout the muscle belly, pain on resisted thigh adduction and passive stretching [6,7,16] resemble those of our patient's symptoms. Yet, our case only occasionally experienced pain on resisted thigh adduction, and no pain on passive stretching. The 'usual care' for long-lasting athletic groin pain (exercises or physical therapy) [23,34] did not have any effect though, why an injury confined to the hip adductors could be excluded.

Iliopsoas-related groin pain like muscle and tendon strain/tear and iliopsoas bursitis is commonly elicited on resisted hip flexion and/or stretching of the hip flexors [35-37]. In the present case, iliopsoas-related tendinopathy could be excluded, based on the location of his subjective and palpatory pain, which was located far medially.

Inguinal-related groin pain is commonly linked to overuse injuries, resulting in partial tears of the abdominal walls [18]. No pain was found when palpating the inguinal ligament. The patient's pain did not aggravate with abdominal sit up, or when coughing and sneezing, and it was not dull or diffuse, as in inguinal-related groin pain [18-20], why that was also excluded.

Pubic bones functionally serve as a fulcrum around which many forces are exerted, and some of those forces actually oppose each other [14,16]. A disturbance of the agonist/antagonist relation between adductor versus the rectus abdominal muscles (Figure 2) may lead to an unopposed pulling of one or the other muscle groups, resulting in an unstable symphysis pubis joint [38]. This unstability may be maintained due to muscle imbalances between adductor-abdominal muscles [29].

The symptoms of a symphysis pubis dysfunction (distinct pain provoked by shear forces) are similar to pubic-related athletic groin pain [29,39], and to the symptoms exhibited by the subject presented in the present study [40], and accordingly a biomechanical treatment was applied. A combined clinical picture of osteitis pubis and symphysis pubis dysfunction is common, and it is suggested that the may actually be one and the same condition. In chronic cases an osteitis pubis may depict degenerative changes visible on plain radiography, though only the groin and the hip joint were visible on the radiography performed prior to the appointment in the orthopedic clinic, not the symphysis pubis. Thus, clinical examination alone confirmed the diagnosis.

If pubic misalignment can explain and reflect a "fixed dysfunction" through a pathomechanic model, utilizing Muscle Energy Technique (MET) and treatment of myofascial trigger points would aid in restoring the pubic bones alignment and influence pain mechanisms and abnormal muscle tension across the pubic bones [29,38,41-43]. Previous studies have examined non-surgical treatment like exercise therapy, which is mainly a progressive strengthening program addressing adductor-abdominal musculatures, and improving the core/pelvic stability [23]. However, exercises are usually prescribed based on the therapist's experience [21], and addressing muscle imbalances alone is an unspecific treatment strategy, where a biomechanical dysfunction may be missed [1,44]. Depending on the main underlying pathology, it appears plausible that treating in a general manner may delay the time to return to play for some athletes. Reports on positive outcomes of manual therapy for musculoskeletal disorders in general [28], and for symphysis pubis dysfunction in particular [41,42,45,46] have been documented before, but the research basis is insufficient. One cannot draw any conclusions or generalize findings on the basis of a single case, but the findings and positive results from this study are in line with earlier research. Given the lack of clinical guidelines for evidence based treatments in athletic groin pain overall, the results indicate that the manual diagnostic and treatment approach conducted in this study may provide quick, significant and non-expensive benefits for certain patients with athletic groin pain.

Acknowledgments

The authors thank the County Council of Blekinge and the Swedish Naprapathic Association for grants that financially supported the study. We also want to thank the patient that gave us permission to use his medical records and to describe his case, and the manager of the Orthopedic Department, at the Region hospital of Blekinge in southern Sweden.

References

1. Angoules AG. Osteitis pubis in elite athletes: Diagnostic and therapeutic

approach. World J Orthop. 2015;6(9):672-9.

2. Orchard JW. Men at higher risk of groin injuries in elite team sports: A systematic review. Br J Sports Med. 2015;49(12):798-802.
3. Junge A, Dvorak J. Injury surveillance in the world football tournaments 1998-2012. Br J Sports Med. 2013;47(12):782-8.
4. Waldén M, Hägglund M, Ekstrand J. The epidemiology of groin injury in senior football: A systematic review of prospective studies. Br J Sports Med. 2015;49(12):792-79.
5. Alomar AZ. Groin pain in athletes: Differential diagnosis, assessment, and management. SJSM. 2015;15(1):3-8.
6. Crockett M, Sugrue G, Aherne E, O'Reilly M, Cashman J, Kavanagh E. Groin pain in athletes: A review of diagnosis and management. Surg Technol Int. 2015;26:275-82.
7. Weir A, Brukner P, Delahunt E, Ekstrand J, Griffin D, Khan KM. Doha agreement meeting on Study quality on groin injury in groin pain in athletes. Br J Sports Med. 2015;49(12):768-74.
8. Weir A, Hölmich P, Schache AG, Delahunt E, de Vos RJ. Terminology and definitions on groin pain in athletes: Building agreement using a short Delphi method. Br J Sports Med. 2015;49(12): 825-27.
9. Morelli V, Espinoza L. Groin injuries and groin pain in athletes: part 2. Prim Care. 2005;32(1): 185-200.
10. Koulouris G. Imaging review of groin pain in elite athletes: An anatomic approach to imaging findings. AJR Am J Roentgenol. 2008;191(4):962-72.
11. Verrall GM, Slavotinek JP, Barnes PG, Fon GT. Description of pain provocation tests used for the diagnosis of sports-related chronic groin pain: relationship of tests to defined clinical (pain and tenderness) and MRI (pubic bone marrow oedema) criteria. Scand J Med Sci Sports. 2005; 15(1):36-42.
12. Robinson P, Grainger AJ, Hensor EM, Batt ME, O'Connor PJ. Do MRI and ultrasound of the anterior pelvis correlate with, or predict, young football players' clinical findings? A 4-year prospective study of elite academy soccer players. Br J Sports Med. 2015:49(3);176-82.
13. Branci S, Thorborg K, Nielsen MB, Hölmich P. Radiological findings in symphyseal and adductor-related groin pain in athletes: a critical review of the literature. Br J Sports Med. 2013; 47(10):611-9.
14. Omar IM, Zoga AC, Kavanagh EC, Koulouris G, Bergin D, Gopez AG. Athletic pubalgia and the "sports hernia": Optimal MR imaging technique and findings. Radiographics. 2008;28(5): 1415-38.
15. Hölmich P. Adductor-Related Groin Pain in Athletes. Sports Med Arthrosc. 1997;5:285-91.
16. Myers WC, Greenleaf R, Saad A. Anatomic basis for evaluation of abdominal and groin pain in athletes. Oper Tech Sports Med. 2005;13(1):55-61.
17. Sheen AJ, Stephenson BM, Lloyd DM, Robinson P, Fevre D, Paajanen H. et al.Treatment of the sportsman's groin': British Hernia Society's 2014 position statement based on the Manchester Consensus Conference. Br J Sports Med. 2014;48(14):1079-87.
18. Unverzagt CA, Schuemann T, Mathisen J. Differential diagnosis of a sports hernia in a high-school athlete. J Orthop Sports Phys Ther. 2008;38(2):63-70.
19. Minnich JM, Hanks JB, Muschaweck U, Brunt LM, Diduch DR. Sports Hernia: Diagnosis and treatment highlighting a minimal repair surgical technique. Am J Sports Med. 2011;39(6): 1341-9.
20. Garvey JF, Read JW, Turner A. Sportsman hernia: what can we do? Hernia. 2010;14(1):17-25.
21. Machotka Z, Kumar S, Perraton LG. A systematic review of the literature on the effectiveness of exercise therapy for groin pain in athletes. Sports Med Arthrosc Rehabil Ther Technol. 2009; 1(1):5.
22. Almeida MO, Silva BN, Andriolo RB, Atallah AN, Peccin MS. Conservative interventions for treating exercise-related musculotendinous, ligamentous and osseous groin pain. Cochrane Database Syst Rev. 2013;6.
23. Hölmich P, Uhrskou P, Ulnits L, Kanstrup IL, Nielsen MB, Bjerg AM,et al. Effectiveness of active physical training as treatment for long-standing adductor-related groin pain in athletes: Randomised trial. Lancet. 1999;353(9151):439-43.
24. Serner A, Eijck van CH, Beumer BR, Hölmich P,Weir A, de Vos RJ. Study quality on groin injury management remains low: A systematic review on treatment of groin pain in athletes. Br J Sports Med. 2015;49(12):813.
25. Liddle SD, Pennick V. Interventions for preventing and treating low-back and pelvic pain during pregnancy. Cochrane Database of Syst Rev. 2015;9.
26. Leadbetter RE, Mawer D, Lindow SW. Symphysis pubis dysfunction: A review of the literature. J Matern Fetal Neonatal Med. 2004;16(6):349-54.
27. World health organization. International Statistical Classification of Diseases and Related Health Problems, 10th ed. 2018.
28. Lilje S. Friberg H, Wykman A, Skillgate. Naprapathic manual therapy or conventional orthopedic care for outpatients on orthopedic waiting lists? A pragmatic randomized controlled trial. Clin J Pain. 2010;26(7): 602-10.
29. Isaacs ER, Bookhout MR. Detailed examination of the pelvis and Treatment of the joints of the pelvis. In: Bourdillon's Spinal Manipulation 6th ed. Massachusetts: Butterworth-Heinemann; 2002. 65-68, 99-103.
30. Gibbon WW. Groin pain in athletes. Lancet. 1999;353(9162):1444-5.
31. Lynch SA, Renström PA. Groin injuries in sport: Treatment strategies. Sports Med. 1999;28:2: 137-44.
32. Branci S, Thorborg K, Bech BH, Boesen M, Nielsen MB, Hölmich P. MRI findings in soccer players with long-standing adductor-related groin pain and asymptomatic controls. Br J Sports Med. 2015;49(10):681-91.
33. Chopra A, Robinson P. Imaging Athletic Groin Pain. Radiol Clin North Am. 2016;54(5):865-73.
34. Weir A, Jansen JA, van de Port IG, Van de Sande HB, Tol JL, Backx FJ. Manual or exercise therapy for long-standing adductor-related groin pain: a randomised controlled clinical trial. Man Ther. 2011;16(2):148-54.
35. Anderson CN. Iliopsoas pathology, diagnosis, and treatment. Clin Sports Med. 2016;35(3):419-33.
36. Johnston CA, Wiley JP, Lindsay DM, Wiseman DA. Iliopsoas bursitis and tendinitis. Sports Med. 1998;25(4):271-83.
37. Tyler TF,Fukunaga T, Gellert J. Rehabilitation of soft tissue injuries of the hip and pelvis. Int J Sports Phys Ther. 2014;9(6):785-97.
38. Zoga AC, Mullens FE, Meyers WC. The spectrum of MR imaging in athletic pubalgia. Radiol Clin North Am. 2010;48(6):1179-97.
39. Jain S, Eedarapalli P, Jamjute P, Sawdy R. Symphysis pubis dysfunction: a practical approach to management. Obstet Gynecol. 2006;8:153-8.
40. Fryer G. Muscle energy technique: An evidence-informed approach. Int J Osteopath Med. 2011: 14(1)3-9.
41. Cassidy IT, Jones CG. A retrospective case report of symphysis pubis dysfunction in a pregnant woman. J Osteopath Med. 2002;5(2):83-86.
42. Cooperstein R, Lisi A, Burd A. Chiropractic management of pubic symphysis shear dysfunction in a patient with overactive bladder. J Chiropr Med. 2014;13(2):81-88.
43. Kapandji IA. In: Physiology of the joints. 6th ed. London: Churchill Livingstone; 2010.
44. Jansen JA, Mens JM, Backx FJ, Kolfschoten N, Stam HJ. Treatment of longstanding groin pain in athletes: A systematic review. Scand J Med Sci Sports. 2008;18(3):263-74.
45. Wollin M, Lovell G. Osteitis pubis in four young football players: A case series demonstrating successful rehabilitation. Phys Ther Sport.

2006;7(3):153-160.

46. Jarosz BS. Individualized multi-modal management of osteitis pubis in an australian rules footballer. J Chiropr Med. 2011;10(2):105-110.

47. Lundeberg T, Lund I, Dahlin L, Borg E, Gustafsson C, Sandin L, et al. Reliability and responsiveness of three different pain assessments. J Rehabil Med. 2001; 33(6):279-83.

48. Fischer D, Stewart AL, Bloch DA, Lorig K, Laurent D, Holman H. Capturing the patient's view of change as a clinical outcome measure. JAMA. 1999; 282(12):1157-62.