ECRONICON OPEN ACCESS

EC ANAESTHESIA
Review Article

Athlete's Groin Pain

Saloua Khalfaoui*, AA El Oumri and EM El Abbassi

Department of Physical Medicine and Rehabilitation, Military Instruction Hospital Mohammed V-Rabat, Morocco

***Corresponding Author:** Saloua Khalfaoui, Professor Assistant, Department of Physical Medicine and Rehabilitation, Military Instruction Hospital Mohammed V-Rabat, Morocco.

Received: April 1, 2019; **Published:** June 27, 2019

Abstract

The groin pain is a frequent football players pathology. It needs a suitable and well as therapeutic and preventive care where the rehabilitation along with different components and technics play a relevant role. The aim is to ensure a good return to the football field for the player.

Keywords: *Groin Pain; Diagnostic; Rehabilitation*

Introduction

Definition

This is a pain syndrome at the pubic level, including one or more of the following pathologies [1]:

- Tendinopathy of adductors.
- Problems of insertion of the right muscles.
- Pubic arthropathy of microtraumatic origin.
- Anomalies of the inguinal canal.

The pubalgie was first described by the fencer in 1932 by Spinelli. It frequently affects the young athlete with an incidence of up to 5% for any type of sport [1], with a preferential attack on footballers at the extremes of their career.

The pubic region is reached in 10 to 18% of all injuries to footballers [2]. This does not spare other sports activities such as handball, cross-country skiing, rugby, fencing, tennis, basketball and road racing.

Epidemiology-Pathogenesis

Pubalgia is more common in men, which affects between 5 and 18% of athletes. Its recurrence reaches up to 44%, especially in group sports. The risk of occurrence of this pathological entity is multiplied by two when there is a notion of antecedent pubalgie [3].

The origin of this pathology is not yet well established. However, several authors consider that the muscular imbalance of the stabilizing muscles of the pelvis is at the origin of this pathology [1].

The abnormalities described are represented by a vulnerable groin, an insufficient rectus abdominis insertion surface, a weak inguinal canal, an open external inguinal ring, a deficiency of the external obliquus and transversalis fascia.

During the sports activity, there is a hyperpressure by movements of the peritoneum between the sheath of the rectus abdominis and the inguinal ligament, resulting in the appearance of lateral pain [1].

It is therefore a pathology of sports overwork due mainly to the imbalance found between a power of the adductors and weakness of the abdominals, and also to an asymmetry between the two sides right and left.

Contributing factors

The pubalgia can manifest itself in [4]:

- Change of the training mode
- Modification of the sports technique
- Change of the playground
- Inadequate physical preparation
- Unadapted shoes
- Poorly adapted nutrition
- Insufficient hydration
- Non-recuperative sleep
- Infection of the ENT sphere
- Static disorders (rocker pelvis, inequality of length of the lower limbs) or dynamic (muscular imbalance).

Positive diagnosis

Examination

In search of the characteristics of the pain that is progressive installation, after effort, localized at the level of the pubic region or at the level of the adductors, often interesting only one side and radiating either towards the abdomen or towards the perineum. The factors that accentuate this pain are coughing, sneezing, lifting of heavy objects and some abrupt ones. The pain becomes, by its disabling character, the main sign of pubalgia.

Clinical examination: We are mainly looking for the sign of MALAIGNE, which corresponds to the appearance of an inguinal groove when the patient inflates the belly. Soft, enlarged and painful inguinal orifices in the pubis and proximal insertion of the adductors are noted. At the level of the muscles concerned (iliopsoas, adductors, hamstrings, hip rotator and rectus), we can reveal a pain by performing a contrarian and bilateral muscle testing. We do not forget to analyze the static of the spine, the pelvis and that of the lower limbs [1].

Radiography: The standard radiograph of the pelvis facing, in standing position in monopodal support and barefoot, objectifies an instability of the pubic symphysis. The radiograph of the lumbosacral spine of face and profile allows to look for an intervertebral disturbance, degenerative signs of pelvis type of irregularity +/- microgeodes of the lower rim and opposite the insertion of adductors. In the young athlete, it is imperative to seek a tear of ossification nuclei of the pelvis.

Podological assessment must be performed by a podologist of sport to the detection of static and dynamic disorders affecting the lower limbs.

Ultrasound of the soft parts interesting especially the abdominal muscles, the adductors and their insertions and inguinal orifices.

MRI in case of surgical indication.

Biology look for anemia, iron deficiency.

Differential diagnosis

- Musculotendinous lesions of the adductors,
- Hip pathology, fatigue fracture,
- Intervertebral dysfunction,

- Epiphyseal tearing in children and adolescents,
- Chronic inflammatory rheumatic pathology such as ankylosing spondylitis,
- Acute inflammatory pathology with inguinal lymphadenopathy,
- Neurological pathology [4].

Basic principles

The particularity of the sportsman practitioner resides in his so-called training state, variable according to the phases of training, maintenance or intensification. In general, the analgesic or anti-inflammatory treatment of pain precedes any rehabilitation and functional rehabilitation protocol, without it being used to mask the "lesion marker". It is a sign perceived by the patient, and which must be respected by the physiotherapist and the physical trainer not to go beyond the threshold of intensity of effort. This pain is evaluated regularly by an analog visual EVA scale, to monitor regression or recrudescence and patient tolerance to workloads [5].

The duration of stopping of training and that prior to the trauma must be taken into consideration before the establishment of any fitness program. The goal is to obtain a pelvic girdle, stable, mobile, painless and resistant to external forces. The young and dynamic sportsman is most often in monopodal support and is exposed to strong rotational constraints and to strong decelerations, reasons why, the point of pelvic support or femoral, must be fixed, resistant and durable.

Consequently, the physical fitness program must be of a progressive intensity, aimed at a level adapted to the sport while remaining in infrador [6,7].

Programming of care

Therapeutic management is not limited to medical care, but extends to a well-established re-training protocol, which has now become standard with one [5]:

- Medical phase of diagnostic hypothesis including rest and analgesic physiotherapy (massage, icing, local care and electrotherapy).
- Confirmation or not of this hypothesis by complementary examinations.
- Phase of medical care: the goal is to relieve pain by class 1 analgesic means. The interest of non-steroidal anti-inflammatories has not been demonstrated. Infiltration is indicated in cases of radiologically confirmed enthesitis. While platelet-rich plasma is gradually replacing water-soluble corticosteroids [3].
- Healing phase, in addition to the protocol of maintenance of physical abilities, including work of balance and proprioception, joint and muscle maintenance of the spine and limbs and stretching type Mezieres. The care of the medical phase is maintained (Figure 1-3).
- Physiotherapy and toning phase under the supervision of the physiotherapist containing eccentric Kabat type work, Toronto type exercises, balneotherapy, muscle strengthening of flexors, extensors and rotators, concentric and eccentric sheathing work and proprioception on balloon (Figure 4-6).
- Joint phase of recovery under the supervision of the physiotherapist: exercises like Toronto, work of monopodal support, jumps, speed, juggling are applied after warming up, respecting the threshold pain threshold and monitoring the appearance of the pain the next day.
- Re-training phase with the physical trainer.
- Training restart under weekly supervision of the physiotherapist.
- Free training after healing noted by the attending physician.

Figure 1: *Ultrasound.*

Figure 2: *Work of amplitudes.*

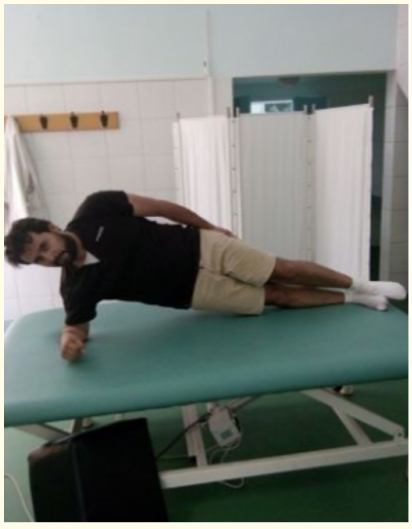

Figure 3: *Reinforcement of the square of the loins.*

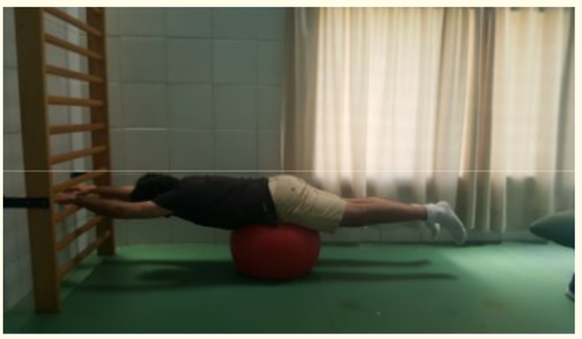

Figure 4: *Proprioception on balloon.*

Figure 5: *Proprioception on balloon.*

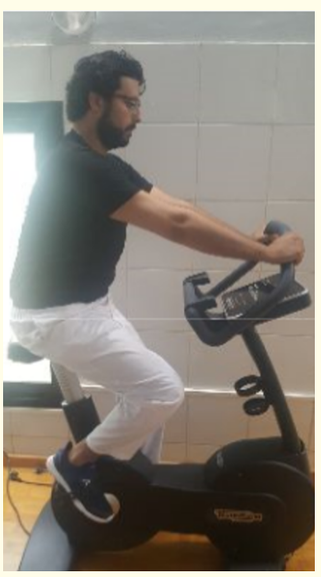

Figure 6: *Cycling training.*

The advantage of this program of physical fitness gradually, is the possibility of returning to the previous stage of rehabilitation if the evolution of the pathology is not favorable. It also makes it possible to question the initial diagnosis.

The different management techniques adapted to pubalgia

Pau Toronto Protocol adapted ASM (Figure 7)

The concept of this protocol described by Bouvard., *et al.* [8] is to take charge of the pelvic-femoral belt in its entirety with gain of the articular amplitudes, muscular strengthening of all the fixing elements of this belt. It includes exercises in charge, resistance and work in the pool. In addition, the concept described by Stanish [9-11] and Kabat [12] is part of this protocol.

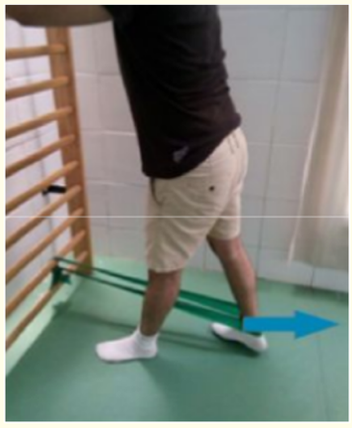

Figure 7: *Protocol Pau Toronto adapted.*

The progression of resistance and speed of exercise and number of repetitions will be applied taking into account the condition of the tissues, the threshold of pain and tolerance of the patient.

To work a tendon according to Jonsson., *et al.* [11], it usually takes 3 sets of 15 repetitions, twice a day for 3 months.

Protocol "mop" (Figure 8)

It consists of concentric and eccentric contraction work with pelvic lock. It is described as a work of sliding in bipodal support, in flexion and extension of the knees, lower limbs apart and then tightened. To reproduce the lateral sliding mechanisms in charge especially for the adductors, the hamstrings, the tensor of the fascia lata and the muscles of the crow's feet, we carry out so-called Mop movements strongly wiping the ground with the other leg stretched and fixed at the rate of five movements [5].

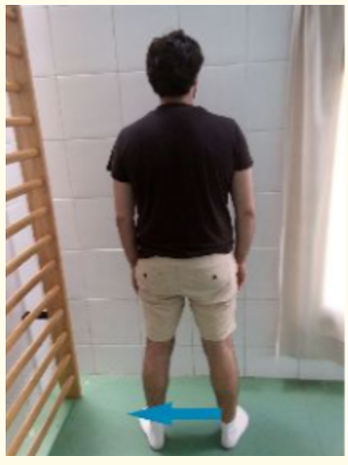

Figure 8: *Mop protocol.*

ASM-MacKenzie Protocol (Figure 9)

Used initially by this author from New Zealand in the management of low back pain [13], its goal is to achieve the stretching and muscle strengthening of all the external stabilizing muscles of the pelvis (tensor fascia lata, square of the loins and glutes). Its principle is to stretch one leg on a wedge of 5 to 10 cm, tilt the pelvis in the frontal plane while keeping the spine focused and realize with the other leg a slow lowering of the heel towards the ground then slow elevation of the pelvis 3 times in 5 series, bilaterally.

Figure 9: *MacKenzie type exercises: lowering and elevating the hemiphonin.*

Kabat Protocol [12] (Figure 10)

This global manual work completes the workload generated by applying a variable resistance concentric, eccentric and rotary. This necessarily implies the mono and biarticular muscles and leads to the motor coordination of the whole limb based on the Kabat method by working the diagonals at the rate of 3 sets of 10 repetitions per diagonal. This remains essential in sensorimotor reprogramming against manual resistance.

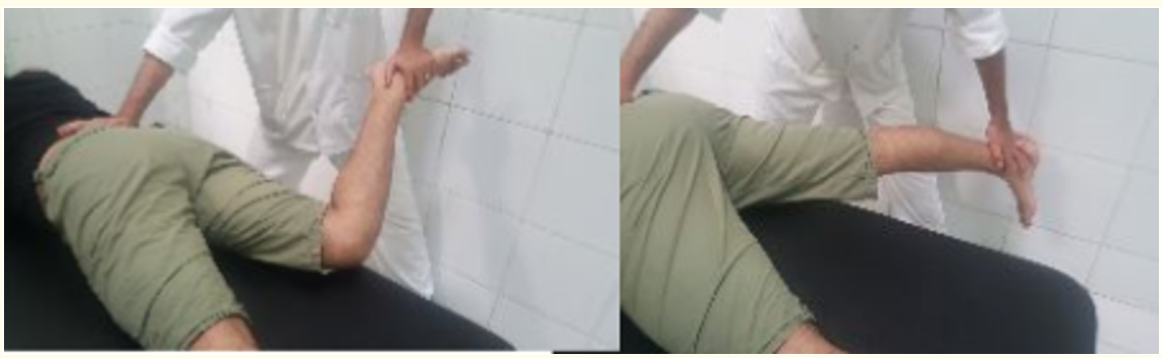

Figure 10: *Exercises of the manual resistance and Kabat type.*

Abdominolumbar sheathing work (Figure 11)

In the field of football, this cladding has been described by Durey [9] and Boeda [14]. It aims at: concentric and eccentric muscular strengthening of the four faces (2 sets of 10 repetitions each), global dynamic empty and balloon exercises, exercises described by Olsen [15] for curative and preventive purposes.

Figure 11: *Sheathing work on ball, axial and rotary.*

This cladding work is particularly necessary to properly maintain the pelvis: during prolonged efforts, if excessive anteversion of the pelvis, whether there is isthmic lysis or if there is intervertebral disturbance of degenerative origin.

Manual techniques, performed by well-trained osteopaths, are an integral part of the therapeutic arsenal [16].

The use of shorty-straps is sometimes interesting for some forms (Figure 12).

Figure 12: *Shorty-straps.*

Certain situations will lead us to achieve an infiltration or injection of growth factors (PRP) at the level of the adductor-gracile long tendon.

In case of failure of the medical treatment, the recourse to the surgery is envisaged. The osteo-tendino-muscular forms of the pubalgia respond favorably to the reeducation, contrary to pure parietal forms.

Surgical treatment

Abdominal wall insufficiency with enlargement of the inguinal opening, are often the indication of the surgical treatment whose results are satisfactory between 70 and 90% of the cases [6,7].

The muscular imbalance of the abdominopelvic region can be corrected:

- By the distension of the strong adductors,
- By the tensioning of the abdominal muscles. This surgical correction must be bilateral, even on the contralateral side. The suites are simple with a pillow placed under the two poplitals for two days. Lifting is allowed on the eighth day postoperatively [6,7]. We do not need specific rehabilitation. The training can be resumed 12 weeks postoperatively and the sporting activity from the 4th month according to the clinical and functional evolution.

Back on the field [17,18]

Example of a pro footballer

The sedation of rest pain is the index that allows the return to the field.

The principle of this step is:

- Work stamina and resistance to prepare for sports recovery.
- Ensure that the painful pubic area will allow activities to resume without pain.

The functional rehabilitation sessions must be continued to ensure a good recovery and a good return to the field (Figure 13).

Figure 13: *Clinical evaluation of follow-up.*

1st week

- **Stamina:** Jogging for 15 minutes then add to each session 5 minutes more by increasing the pace and pace.

2nd week and beyond

- Gradually increase the duration and rhythm of jogging
- Combine unilateral support and not hunted
- Perform plyometric exercises with small jumps bipodal and unipodal, using the hoops or studs
- Extend the duration of exercises raised
- Take back the feeling of the balloon by juggling and heads (Figure 14-17).

From the 3rd week and if the evolution is favorable, the sportsman will be able to resume a normal training.

Figure 14: *Progressive controlled supports.*

Figure 15: *Tonicity maintenance-sheathing.*

Figure 16: *Back in the game.*

Figure 17: *Controlled work technical gesture.*

The feeling of aches is normal after a certain period of muscle inactivity.

Stretches must be performed before training for joint and musculotendinous waking, and after training for better resting musculotendinous (Figure 18).

Figure 18: *Work stretching.*

Isokinetic use is an effective means of rehabilitation, evaluation and objective comparison of evolution (Figure 19). Food hygiene and dietary measures play a major role in the overall management of the athlete's sport. Water intake should reach 1L of water per 1H training, avoiding soft drinks, sugary and acidic.

Figure 19: *Isokinetic work.*

Prevention

Given the complexity of the pathology and the inconstancy of the results of these treatments, it is better to prevent it than to try to cure it. The prevention applied in the big sports clubs allowed the fall of the incidence of the pubalgia. This encourages its application to all sports of different levels of practice [19,20].

It can be done on several levels:

- Relaxation exercises, during training and especially at the end of the race interesting hamstrings, quadriceps and ilio-psoas.
- Muscle reinforcement of abdominals and pelvis stabilizers.
- Sufficient fluid intake.
- The correction of static disorders.

Conclusion

The prevention campaigns conducted by health professionals, educators and club coaches have proven their effectiveness in terms of frequency of pubalgia. However, it is necessary to remain vigilant, because the football centers of the big professional clubs cannot accept the remoteness of the field of more than six months of a young sportsman at the beginning of his career.

The physical trainer, the physiotherapist, the chiropodist, the dietitian or nutritionist, the sports doctor, and the physical and rehabilitation doctor play a big role in preventing the appearance of pubalgia.

Conflict of Interest

None.

Bibliography

1. Sans., *et al*. "Osteoarthropathie du pubis". In: Bassin et Hanche Getroa-Gel Opus XXXIV, Montpellier: Sauramps médical (2007): 185-193.

2. Rodineau J. "À propos de pubalgie". *Journal de Traumatologie du Sport* 21 (2012): 131-132.

3. Bouvard M., *et al*. "Pubalgie du sportif". EMC (Elsevier Masson SAS, Paris), Appareil locomoteur, 14-323-A-10 (2011).

4. Rodineau J., *et al*. "Étude critique du traitement de la pubalgie du sportif". In: Bassin et Hanche Getroa-Gel Opus XXXIV Montpellier: Sauramps médical (2007): 195-204.

5. Vidalin H., *et al*. "Prise en charge thérapeutique des pubalgies de l'adulte sportif". *Journal de Traumatologie du Sport* 26.4 (2009): 229-235.

6. Vidalin H. "Prise en charge chirurgicale des pubalgies du sportif". *Journal de Traumatologie du Sport* 26.4 (2011): 164-173.

7. Vidalin H. "Indication et résultats de la technique chirurgicale de Shouldice". *Journal de Traumatologie du Sport* 17.1 (2000): 9-15.

8. Bouvard P., *et al*. "Pubalgie du sportif". *Journal de Traumatologie du Sport* 21 (2004): 146-163.

9. Durey A. "Aspects cliniques de la pubalgie du sportif". *Journal de Traumatologie du Sport* 2 (1984): 46-50.

10. Stanish WD., *et al*. "Eccentric exercise in chronic tendinitis". *Clinical Orthopaedics and Related Research* 208 (1986): 65-68.

11. Jonsson P., *et al*. "New regimen for eccentric calf-muscle training in patients with chronic insertional Achilles tendinopathy: result of a pilot study". *British Journal of Sports Medicine* 42.9 (2008): 746-749.

12. Viel E. "La méthode de Kabat". Monographies de Bois Larris Paris: Masson (1986).

13. La méthode McKenzie. Revue de Médecine Orthopédique (2000): 60-63.

14. Boeda AG. "À propos de la maladie des adducteurs". *MedSport* 47 (2010): 9-12.

15. Olsen OE., *et al*. "Exercises to prevent lower limb injuries in youth sport: cluster randomised controlled trial". *British Medical Journal* 330.7489 (2004): 499.

16. Guillen Garcia P., *et al*. "Ostéopathie dynamique du pubis". *Sport Medicine* 77 (2003): 12-14.

17. Vidalin H and Neouze G. "Rééducation après cure chirurgicale de pubalgie par Shouldice". *Sport Medicine* 106 (1998): 29-30.

18. Puig., *et al*. "Pubalgie et médecine physique". puig.htm (2009).

19. Dupont P. "La cicatrisation des lésions ligamentaires. Rééducation en pathologie sportive". *Annales de Réadaptation et de Médecine Physique* 48 (2005): 448.

20. Richte P., *et al*. "Points gâchettes et chaînes fonctionnelles musculaires". Paris: Maloine (2008).

Volume 5 Issue 7 July 2019