



Knee Iliotibial Band Friction Syndrome After Total Knee Arthroplasty

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14.1 Introduction

Iliotibial band friction syndrome (ITBFS) is characterized by pain in the lateral aspect of the knee (Fig. 14.1) [1], which appears to be the result of an inflammatory response secondary to excessive friction occurring between the lateral femoral epicondyle and the iliotibial band [2]. The initial treatment must be nonoperative. In recalcitrant cases of ITBFS, surgery should be recommended [1–4].

Some patients suffer ITBFS after total knee arthroplasty (TKA). Manning et al. have analyzed the diagnosis and treatment of extraarticular causes of pain after TKA [5]. Although the source of TKA pain can sometimes be established, making an accurate diagnosis is often difficult. Pain is usually classified as intraarticular or extraarticular, according to the etiology. After ruling out intraarticular causes, such as instability, aseptic loosening, infection, or osteolysis, the possible causes of extraarticular pain should be considered. The physical examination of the rest of the joints can reveal localized pain in the knee due to diseases of the spine, hip, foot, and ankle. Other extraarticular pathologies that can cause

pain after TKA are vascular pathologies, tendinitis, bursitis, and ITBFS [5]. This chapter analyzes the similarities and differences of knee ITBFS in patients after TKA and in runners.

14.2 Epidemiology

ITBFS is rare, is probably due to excessive use of the lateral aspect of the knee, and occurs mostly in runners [3]. According to Richards et al, ITBFS affects between 1.6% and 12% of runners [2]. In men with ITBFS after TKA, Luyk et al. have observed a trend toward a higher percentage: 46% compared with 36% in the general group (not statistically significant). This tendency could be related to a general ligamentous laxity related to sex, level of activity or muscle strength [6].

14.3 Pathogenesis

According to Luyk et al., the ITBFS associated with a guided-motion TKA could be due to the posterior forced translation of the lateral condyle in flexion [6]. The asymmetric cam-post mechanism, which acts as a strong driver of the posterior femoral translation and internal tibial rotation during flexion, does not allow the natural kinematic variability that occurs in native knees. This repetitive and forced stretching of

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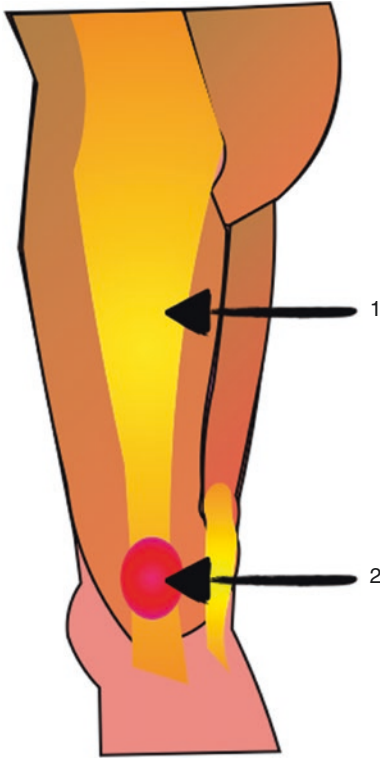


Fig. 14.1 Iliotibial band friction syndrome (ITBFS). Iliotibial band (1) and site of knee iliotibial band pain (2)

the ITBFS could induce a painful traction syndrome in some patients. ITBFS presents in the form of lateral and anterolateral knee pain when moving the joint, making the arc of joint mobility painful. Symptoms usually begin at 6 months on average after TKA, suggesting that the pattern of guided movement imposed by the prosthesis generates pain as patients become more active [6].

It has been reported that ITBFS is not due to friction between the iliotibial band and the lateral femoral epicondyle, but rather to the compression of the iliotibial band against a layer of highly innervated fatty tissue between the iliotibial band and the lateral epicondyle. This compression occurs mainly at 30° of flexion, probably as a result of the internal rotation of the tibia at that point [7, 8].

A study conducted by Halewood et al. on the knees of corpses has supported the hypothesis that excessive rotation and rollback in the TKA

with guided movement cause excessive tension in the soft tissues of the knee [9].

14.4 Nonoperative Treatment

Initial treatment should include rest, physical medicine and rehabilitation, oral nonsteroidal anti-inflammatory drugs (NSAIDs), and corticosteroid injections [1–4].

14.5 Surgical Treatment

There are several surgical options for ITBFS: Z-lengthening of the iliotibial band (Fig. 14.2), surgical release of the iliotibial band, multiple puncture of the iliotibial band (pie-crusting technique) (Fig. 14.3), and arthroscopic resection of the lateral synovial recess.

Richards et al. have described a surgical technique for Z-lengthening of the iliotibial band that they used in runners with pain of the lateral knee located in the iliotibial band, in the lateral femoral epicondyle, and in Gerdy's tubercle after non-surgical treatment had failed [2].

Barber et al have reported a series of 11 runners who underwent a Z-lengthening of the iliotibial band [1]. The inclusion criteria were failure of nonsurgical treatment for at least 3 months, minimum age of 17 years and closed growth plates. Exclusion criteria were a history of major trauma, previous surgery on the knee, pathology of the lateral compartment, and instability of the anterior or posterior cruciate ligament. All the runners presented a total disappearance of lateral knee pain and a complete return to preoperative levels of activity. The improvement was maintained up to 8 years after surgery [1].

Michels et al. analyzed a series of 33 runners with resistant ITBFS operated using a standardized arthroscopic technique limited to the resection of the lateral synovial recess [4]. The mean follow-up was 2 years and 4 months. Thirty-two patients (34 knees) had good or excellent results. All patients returned to sports after 3 months. In two patients, a meniscus lesion was found that required treatment. One patient had a fair result

Fig. 14.2 Z-lengthening of the iliotibial band for the treatment of knee iliotibial band friction syndrome (ITBFS): (a) Just before the Z-lengthening; (b) after the Z-lengthening and suture of the lengthened iliotibial band

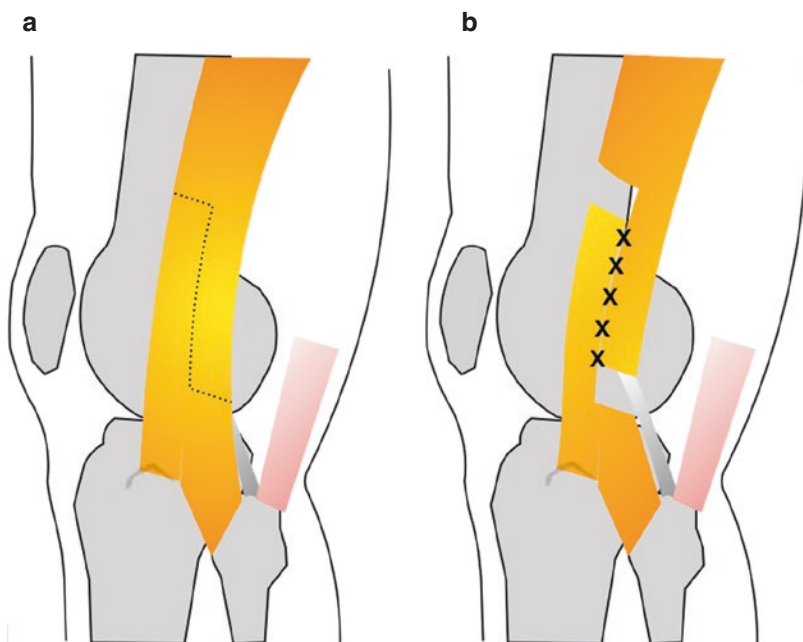
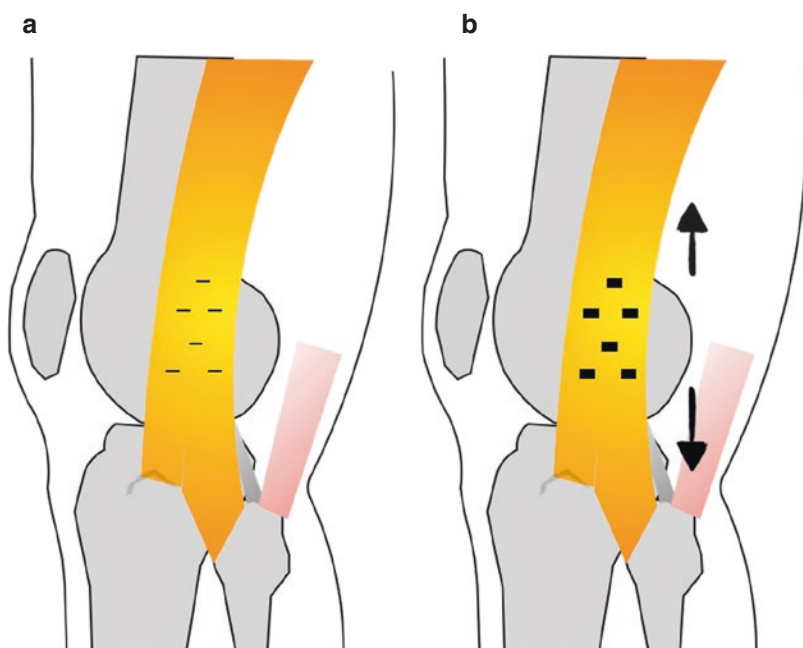


Fig. 14.3 Pie-crusting technique to release iliotibial band for the treatment of knee iliotibial band friction syndrome (ITBFS). A varus stress at the knee joint will “bow-string” the iliotibial band, allowing for a multiple puncture “pie crust” lengthening: (a) Start of surgery; (b) end of surgery (the arrows show the release obtained with this technique)



because he presented associated cartilage lesions in the femoral condyle. The arthroscopic technique allowed the authors to exclude or treat other intraarticular pathologies [4].

Luyk et al. analyzed 1102 cruciate-substituting TKAs (Journey, Smith and Nephew, Memphis,

TN, USA) in 1085 patients with lateral knee pain; 1070 knees were available for the final evaluation [6]. The follow-up time ranged from 1 to 5 years, with an average of 2.5 years. Symptoms of ITBFS were observed in 77 (7.2%) knees. The initial treatment consisted of anti-inflammatory

medication (77 knees) and local injection of steroids (35 knees). The pain persisted in 22 (2%) knees, in which a surgical release of the iliotibial band was ultimately performed [6].

In the Luyk series, patients who presented ITBFS after TKA were initially treated conservatively, using oral medications and local steroid injections [6]. This treatment was significantly useful in 71.4% of the patients. The symptoms persisted in 28.6%, however, and these patients were treated with a surgical release of the iliotibial band. This release was made through a lateral incision in the skin, severing the anterior fibers of the iliotibial band that extend toward the lateral retinaculum [10–12].

In 2018, Yang and Yoon reported a case of click phenomenon after a revision TKA [13]. The clicking was caused by an attached iliotibial band that impacted the lateral part of the femoral component. Fractional elongation of the iliotibial band by puncture resolved the clicking phenomenon. According to these authors, the clicking phenomenon can occur during a revision TKA due to multiple causes: elevation of the joint line, taut iliotibial band or a slight overhang of the femoral component. Surgeons should know that this complication can possibly occur during a revision TKA; if we identify it, multiple punctures of the iliotibial band can alleviate the clicking [13].

14.6 Conclusion

Although the etiopathogenesis of knee iliotibial band friction syndrome (ITBFS) is distinct between patients following total knee arthroplasty (TKA) and runners, the management is fundamentally the same: Treatment should start with relative rest, physical medicine and rehabilitation, NSAIDs, and local corticosteroid injections. For patients who do not respond to at least 3 months of the aforesaid nonsurgical treatment, surgical treatment should be advised. There are a number of surgical alternatives: Z-lengthening of the iliotibial band, surgical release of the iliotibial band, multiple puncture of the iliotibial band,

and arthroscopic resection of the lateral synovial recess. In the majority of patients, all of the aforementioned surgical alternatives lead to a satisfying result: runners can return to their previous sporting activity and patients with TKA can achieve significant or total pain alleviation.

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