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Case Report

Loss of Extension after Anterior Cruciate Ligament Reconstruction Treated with Arthroscopic Posteromedial Capsulotomy

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- Fibrosis
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Abstract

A case of loss of range of motion after anterior cruciate ligament reconstruction in a 26 year old man with 2 years of surgery is reported. He has been already submitted to an arthroscopic arthrolisis three months after the prime surgery with no benefit. We did an arthroscopic posteromedial capsulotomy associated to manipulation, followed by a strong rehabilitation program and reestablished a full range of motion.

ABBREVIATIONS

ACL: Anterior Cruciate Ligament; LOE: Loss of Extension; ROM: Range of Motion

INTRODUCTION

The loss of motion is a common and debilitating problem following anterior cruciate ligament (ACL) reconstruction, with most authors reporting a 7% to 17% loss of motion. Loss of motion may involve loss of extension and/or loss of flexion of the knee joint.

Loss of extension (LOE) is more commonly associated with ACL reconstruction and usually results in greater functional deficits. Patients with LOE may walk with a bent-knee gait, which places increased strain on the quadriceps and increases contact forces in the patellofemoral joint. Patients with LOE may experience quadriceps weakness, patellofemoral pain, and fatigue.

Previous studies have identified several risk factors that are associated with LOE following ACL reconstruction. Individuals with multiple ligament injuries and those undergoing concomitant ligament procedures are at higher risk for LOE postoperatively. Numerous studies have shown an association between acute ACL reconstruction (usually defined as surgery within 3 weeks of injury) and LOE, although this association has been controversial. Preoperative motion has been shown to predict postoperative LOE. Surgical factors, including the use of autograft and graft malposition have been associated with postoperative LOE. In addition, poor or delayed rehabilitation postoperatively may lead to LOE. The etiology of LOE is multifactorial, but may be the result of diffuse joint inflammation and scarring, as with capsulitis and fibrosis, or impingement caused by intercondylar notch scarring, a cyclops lesion, or an interiorly placed ACL graft [1].

The objective of this paper is to report an alternative to treat the loss of knee extension followed a ACL reconstruction through an arthroscopic poster medial capsulotomy.

CASE PRESENTATION

26-year-old patient, male, subjected to an arthroscopic single bundle patellar reconstruction of the ACL 22 months ago. Evolved with limited range of motion gain postoperatively during rehabilitation and been submitted to arthroscopy in the 3rd postoperative month with no improvement of the range of motion.

During the physical examination, the patient presented a limping gait, range of motion of 25 to 100 degrees (Figure 1), and the knee was in a stable condition. The MRI showed the graft to be intact and an image of fibrotic tissue formation anterior to the graft, suggestive of CYCLOPS (Figure 2).

Taking into consideration the late postoperative period in which the patient found himself, we indicated new arthroscopic arthrolisis and posterior capsulotomy. During the intra operative

procedure, after the arthroscopic resection of the fibrotic tissue anterior to the graft, we obtained a satisfactory gain in flexion.

However, since we did not obtain a gain in extension, we concluded that a posterior capsule retraction should be the reason of the remaining loss of the extension and then we opted for the posteromedial capsulotomy. By introducing the arthroscope via the antero medial portal, we arrived at the posteromedial compartment of the knee, passing between the posterior cruciate ligament and the medial femoral condyle. With a needle, under direct vision, we created a postero medial portal (Figure 3) and through this portal we executed the postero medial capsulotomy using an arthroscopic basket forceps (Figure 4), along the lines of a "lateral retinacular release", in the medial-lateral direction, having as a limit the posterior cruciate ligament (Figure 5). At this moment, we perform an articular manipulation to gain complete extension. We kept the knee in a dynamic Orthoses of the Dynasplint® variety (Figure 6) for four weeks, concomitantly to physical therapy program. Two months after the arthroscopic

Figure 1 Preoperative range of motion: A- knee extension. B-knee flexion.

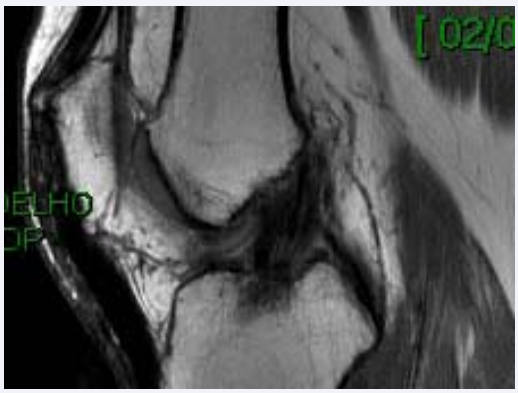

Figure 2 MRI showing image suggesting Cyclops syndrome.

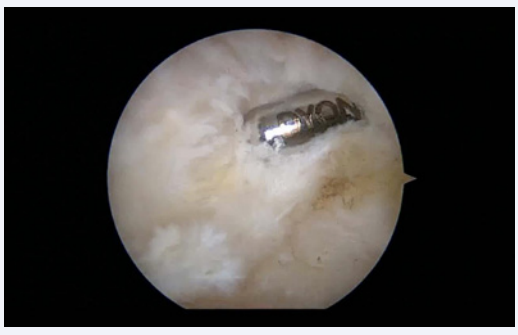

Figure 3 Posteromedial portal showing entrance of the shaver.

Figure 4 Technique of arthroscopic posteromedial capsulotomy with the basket forceps.

Figure 5 Final aspect of posteromedial capsulotomy (see detail of medial head of gastrocnemius muscle on the bottom).

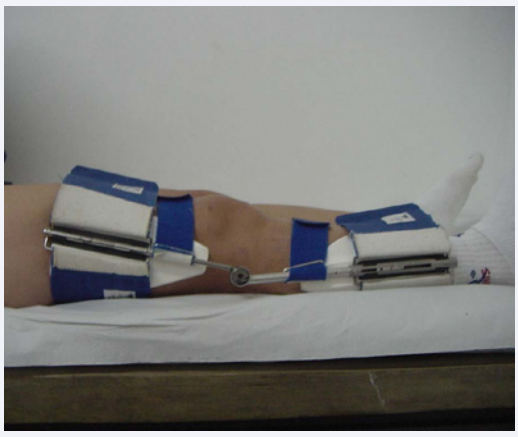

Figure 6 Brace applied on the postoperative period.

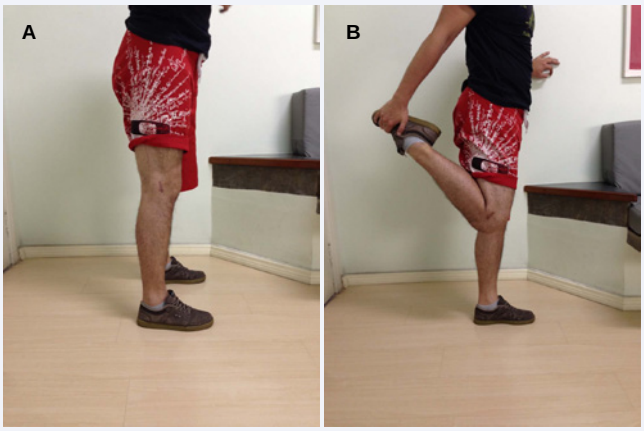

Figure 7 Final range of motion: A- knee extension; B-knee flexion.

procedure, the patient presented a range of motion of 0-125 degrees (Figure 7).

DISCUSSION

The loss of knee extension after an injury or surgery can be treated initially with noninvasive techniques such as physiotherapy, serial extension casting and articular manipulation [1].

Once nonsurgical treatment fails, is necessary to perform a surgical procedure to avoid a permanent deficit [2,3].

Among the surgical options, we have intra articular arthroscopic debridement associated with a joint manipulation, open posterior capsular release, and arthroscopic capsular release.

We believe that the arthroscopic release for being a less invasive procedure has advantages over the open release due to the benefits documented in arthroscopic surgeries in terms of time of surgery, recovery time, pain control and postoperative function [4-7].

La Prade *et al.* [8] performed the arthroscopic capsular release poster medial in 15 patients. These patients had a mean preoperative extension loss of 14.7º. After an average 24.1 months of follow-up the knee extension averaged 0.7º. These results encouraged us to opt for the arthroscopic procedure.

In our experience, the arthroscopic treatment was safe and effective when the parameters described by La Prade *et al.* [8] were used and is an important alternative for the treatment of knee extension loss.

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