

# Hemorrhagic Cyclops Syndrome after Anterior Cruciate Ligament Reconstruction – A Rare Cause of Recurrent Hemarthrosis: About Two Cases and Review of the Literature

Pierre Laboudie<sup>1</sup>, Nicolas Bouguennec<sup>1</sup>, Nicolas Graveleau<sup>1</sup>

## Learning Point of the Article:

Hemarthrosis after ACL reconstruction may be due to a cyclops lesion that must be treated by resection and coagulation.

## Abstract

**Introduction:** Cyclops syndrome is a classic complication after anterior cruciate ligament (ACL) reconstruction and usually manifests as an extension deficit. A presentation dominated by recurrent hemarthrosis has never been reported.

**Case Report:** We report the cases of two patients who underwent ACL hamstring reconstruction and whose post-operative recurrent hemarthrosis revealed the presence of a cyclops syndrome typical lesion.

**Conclusion:** These atypical presentations of cyclops syndrome should alert surgeons that post-operative hemarthrosis after ACL reconstruction may reveal fibrous nodule at the tibial insertion of the graft by a cyclops lesion and that a puncture should be performed to bring back hemorrhagic fluid. It is imperative that treatment should include coagulation of this hypervascularization to avoid any recurrence.

**Keyword:** Anterior cruciate ligament, cyclops lesion, hemarthrosis.

## Introduction

Cyclops lesions are an anterior arthrofibrosis at the tibial insertion of the anterior cruciate ligament (ACL) graft.

According to Noailles et al. [1], its incidence varies between 1.9% and 10.9% and its causes are multifactorial.

This lesion, which was first described by Jackson and Schaefer in 1990 [2], is generally suspected by an early post-operative extension deficit, but other symptoms may be present such as anterior pain, painful cracking, blockage, stiffness, instability, or an audible clunk near full extension [3,4,5].

However, recurrent hemarthrosis has never been reported as a consequence of a cyclops lesion.

We report the cases of two patients who presented recurrent postoperative hemarthrosis after ACL reconstruction whose cause was a cyclops lesion.

## Case Report

Both patients gave their informed consent for their case report to be published.

### Case 1

A healthy 16-year-old patient underwent combined ACL and anterolateral ligament reconstruction with a hamstring graft on April 2015, 3 months after an ACL rupture during a basketball game.

During the procedure, the patient underwent a medial meniscectomy and a suture of the lateral meniscus (bucket handle).

There was no cartilage damage and the ACL remnant was preserved as much as possible.

Post-operative X-rays were correct (Fig. 1). The early post-operative follow-up was good and the patient quickly

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### Author's Photo Gallery



Dr. Pierre Laboudie



Dr. Nicolas Bouguennec

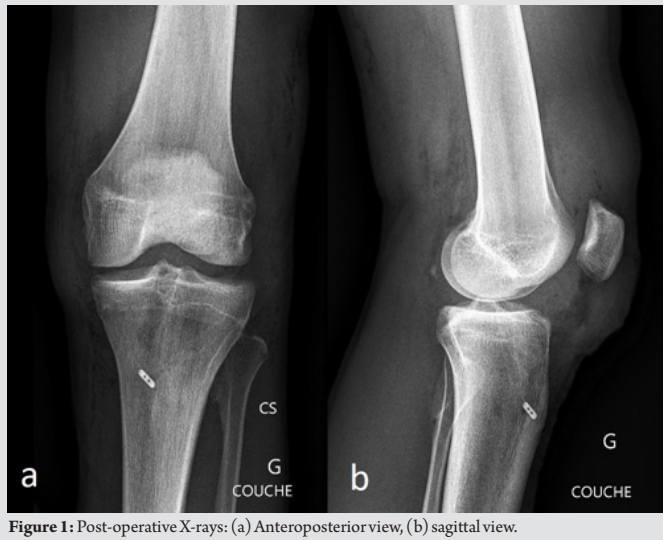


Dr. Nicolas Graveleau

<sup>1</sup>Department of Orthopaedics, Sports Clinic Bordeaux-Mérignac, Mérignac, France, 4 Rue Georges Negrevergne 33700, Mérignac, France.

#### Address of Correspondence:

Dr. Pierre Laboudie,  
Sports Clinic Bordeaux Merignac, 4 Rue Georges Negrevergne 33700, Mérignac, France.  
E-mail: pierre.laboudie@gmail.com



**Figure 1:** Post-operative X-rays: (a) Anteroposterior view, (b) sagittal view.

recovered full extension.

Five months after, the patient returned to the emergency unit for a major knee effusion following a descent of stairs without any trauma.

There was an important swollen of the knee with pain, no laxity, and a full extension despite the swollen.

It was decided to start a first medical treatment with anti-inflammatory, ice application, and rest. The swollen decreased. However, 10 days later, the patient came back for a recurrence with a major effusion. The patient was hospitalized and a complete check-up for hemostasis was done, which was normal.

A joint puncture was done and went back sterile with hemorrhagic fluid.

He had an angio-computed tomography (CT) that found no arteriovenous malformations, no active bleeding, and no sign of atypical hypervascularization in the knee.

He had a magnetic resonance imaging (MRI) (Fig. 2) that showed that the graft was continuous with an aspect of anterior thickening like a cyclops lesion without any lack of extension.

However, complete examination of the patient noted a



**Figure 2:** Sagittal magnetic resonance imaging 2015 at 5 months postoperatively showing hemarthrosis and cyclops lesion at the tibial insertion of the anterior cruciate ligament graft that was continuous.



**Figure 3:** T2 magnetic resonance imaging in 2016 showing recurrent hemarthrosis and cyclops lesion.

hemarthrosis triggered by a rather sudden extension of the knee. At 7 months postoperatively, the patient underwent an arthroscopy for an anterior synovectomy of the cyclops lesion associated with an echancruoplasty.

The hemarthrosis was evacuated, the cyclops lesion was sent to anatomopathology, and the graft was continuous.

The post-operative follow-up was simple, but the patient returned 3 months later with a major hemarthrosis and a new MRI (Fig. 3) showed a recurrence of the aspect of hypercatrization at the tibial insertion of the ACL and an hemorrhagic effusion.

The patient was, therefore, reoperated on February 2016 by arthroscopy, the hypervascularized cyclops lesion was found, this time it was resected with the shaver and above all coagulated with the monopolar electric scalpel, hemostasis was carefully treated (Fig. 4).

This time, the post-operative course was simple, the patient was able to resume basketball and had no episode of hemarthrosis 5 years later.

## Case 2

A healthy 14-year-old female handball patient underwent ACL reconstruction surgery with a short, semitendinosus graft on November 2018, 2 months after rupturing her ACL during a match.

There were no meniscal or chondral lesions. Post-operative X-rays were satisfying (Fig. 5).

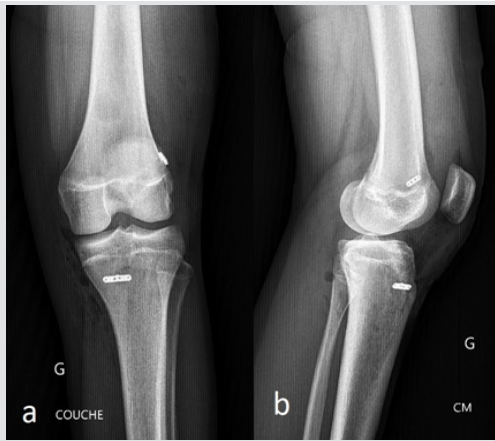
The initial post-operative course was simple, including a complete recovery of the extension. Two months after the surgery, she had a trauma of the operated knee with swollen of the knee. The clinical examination and MRI revealed no injury of the ACL graft without any pathological laxity. She continued the rehabilitation and recovered complete mobility of the knee despite a recurrent swollen. At 13 months, the examination showed complete mobility and no knee instability but a persistent swollen. An MRI (Fig. 6) showed a cyclops lesion at the tibial insertion of the ACL graft that was continuous.

A joint puncture was sterile, with hemorrhagic fluid.

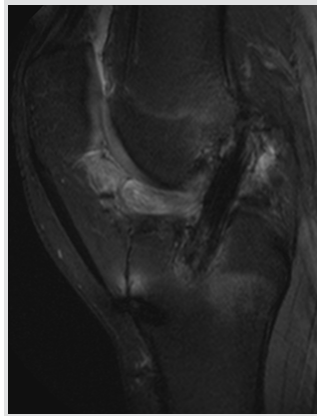
At 18 months of follow-up, the patient underwent arthroscopic surgery for an anterior synovectomy with resection of the cyclops lesion with careful hemostasis



**Figure 4:** Intraoperative images of the cyclops lesion before (a and b) and after resection and hemostasis (c).



**Figure 5:** Post-operative X-ray: (a) Anteroposterior view, (b) sagittal view.



**Figure 6:** Sagittal T2 magnetic resonance imaging in January 2020 with hemarthrosis and cyclops lesion.

using an electric scalpel.

The post-operative follow-up was simple and 6 months after the arthrolysis, the patient was able to return to sport and never had an effusion again.

### Discussion

ACL surgery is a surgery that classically gives good functional results, Salmon et al. [6] having reported that 96% of patients had knee function noted as normal after more than 10 years of follow-up.

However, there are some specific complications, which are according to Rousseau et al. [7] 16% of anterior knee pain, 8.8% of stiffness, 7.2% of secondary meniscal lesions, 9.7% of pain attributed to fixation, 5.7% of ACL rerupture, 3% of contralateral ACL ruptures, 1% of infections, and 0.6% of thromboembolic complications.

They report that half of the stiffness in extension are due to a cyclops lesion, which would, therefore, represent 4.5% of complications, in agreement with Noailles et al. [1] who reported a rate of symptomatic cyclops lesions between 1.9% and 10.9% in this systematic review.

They also report an incidence of cyclops lesions visible arthroscopically as a fibrous nodule in the intercondylar notch ranged from 15.0% to 35.0% and an incidence of cyclops lesions seen by MRI from 33.0% to 46.8%.

The risk factors for cyclops lesions are not clear, but according to Pinto et al. and Delaloye et al. [8, 9], the conservation of remnant would not be involved unlike hamstring contraction combined with poor recovery of quadriceps contraction that would be prejudicial.

Classically, these cyclops lesions are clinically expressed by an early post-operative extension defect [1, 2, 10] which can, however, be unmasked 4 years after the surgery as reported by Nuccion et al. [11].

However, according to Wang et al. [12], some cyclops lesions

would not lead to extension deficit.

They could be manifested by other symptoms such as anterior pain in extension, snapping, instability, loss of hyperextension, audible clunk near terminal extension...

Our study is, to the best of our knowledge, the first to report recurrent hemarthrosis as an isolated symptom of cyclops lesion.

The specificity of these lesions was that they were hypervascularized, which resulted in abnormal bleeding. However, the origin of this hypervascularization, which is atypical in cyclopses, is unknown to us, since the injected imaging and biopsy came back without particularity.

It is a research to be carried out to be able to prevent this type of lesion.

Post-operative hemarthrosis can occur in up to 4.4% of operated patients [13].

Nevertheless, a recurrent post-operative effusion should suggest a post-operative infection to eliminate by articular puncture.

It is the first cause to be eliminated in view of its seriousness and the risk of potential functional and vital complications [14].

The other causes are generally chondral or meniscal lesions that need to be investigated by MRI or arthro-CT imaging.

The two cases we report had recurrent effusions with sterile joint fluid and a cyclops lesion at the tibial insertion of the ACL graft; without any lack of extension.

In our opinion, it is, therefore, essential, when faced with this type of clinical presentation, to first perform a puncture to eliminate an infection, confirm the hemorrhagic character, and then perform an MRI to look for a cyclops lesion.

### Conclusion

Cyclops syndrome is a classic complication after ACL reconstruction.

We report the cases of two patients with hemorrhagic cyclops lesions without loss of extension, but only recurrent hemarthrosis.

### Clinical Message

Cyclops syndrome can manifest itself as recurrent hemarthrosis without loss of extension. Puncture guides the diagnosis and treatment must include careful hemostasis of the lesion to prevent any recurrence.

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**Source of Support:** Nil

**Consent:** The authors confirm that informed consent was obtained from the patient for publication of this case report

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