



Sonographic and Magnetic Resonance Imaging Examination of a Cyclops Lesion After Anterior Cruciate Ligament Reconstruction: A Case Report

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ABSTRACT

Objective: This case report describes magnetic resonance imaging (MRI) and diagnostic ultrasound (US) findings for a patient with arthrofibrosis related to a complication of anterior cruciate ligament (ACL) reconstruction.

Clinical Features: A 25-year old man presented with right knee pain and loss of extension 5 years after ACL reconstruction. MRI and sonographic examination revealed a soft tissue mass anterolateral to the ACL graft consistent with a cyclops lesion. The lesion was surgically resected and physical therapy was followed postoperatively.

Intervention and Outcome: The patient reported that full range of motion was restored 6 weeks after resection and a course of physical therapy. MRI is the modality of choice for diagnosis, but US may be useful in the diagnosis of this condition.

Conclusion: Cyclops lesions may complicate ACL reconstruction or acute ACL injuries. The patient may present with pain and loss of extension, which can be debilitating. MRI and US can be used to diagnose this condition in a timely manner, ensuring optimal clinical outcomes. (J Chiropr Med 2016;15:214-218)

Key Indexing Terms: *Ultrasonography; Magnetic resonance imaging*

INTRODUCTION

Cyclops lesions are proliferative fibrous nodules with neovascularity that may be a complication of anterior cruciate ligament (ACL) reconstructions or, rarely, acute ACL injury without reconstruction.¹⁻¹² The etiology of these nodules is multifactorial, including iatrogenic bone and cartilage drilling debris or anteriorly positioned graft, ACL stump remnants, partially torn anterior graft fibers, and graft hypertrophy from chronic impingement.^{1,2,4} Patients often present with medial joint line pain and loss of full extension of the knee,^{1,2,4-10} suggesting cyclops syndrome.¹ Magnetic resonance imaging (MRI) has been the modality of choice, with a high sensitivity, specificity, and accuracy of diagnosis.¹¹⁻¹³ Ultrasound (US) may be a helpful and possibly more cost-effective way to image arthrofibrosis because Doppler imaging can assess the

neovascularity not seen on MRI.¹⁴ This is an advantage because of the ability to differentiate postoperative knees with arthrofibrosis from those postoperative knees without complications.¹⁴

This lesion has been described in MRI literature, but no description of the lesion with diagnostic US has been previously reported. In this case, we describe MRI and sonographic examination of a 25-year-old man with a previous ACL reconstruction presenting with pain and loss of extension with arthroscopic confirmation of a cyclops lesion.

CLINICAL FEATURES

A 25-year-old man presented to the chiropractic teaching clinic with a feeling of pressure and instability in the right knee after fishing with waders. His pain was rated 4 out of 10 on a numeric pain scale, with 0 being no pain and 10 being the worst he had experienced. After fishing, as he went to remove his waders, he heard a “pop” with valgus stress and medial rotation of the femur. No unusual swelling was reported.

Five years earlier, the patient had undergone an ACL reconstruction of the right knee. His original ACL injury occurred during a beach volleyball game when another

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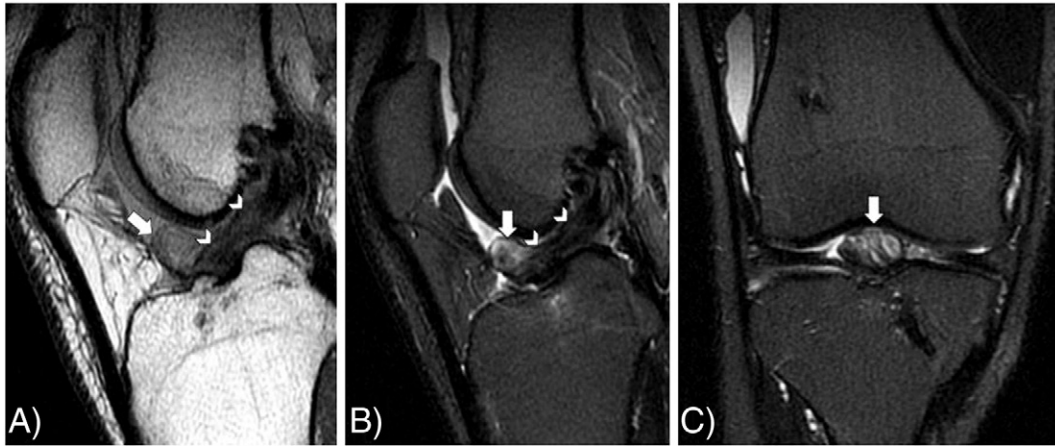


Fig. 1. Sagittal T1-weighted (A), sagittal T2 fat-saturated (B), and coronal T2 fat-saturated (C) magnetic resonance image demonstrating the typical heterogeneous soft tissue mass (arrow) anterolaterally within the intercondylar notch adjacent to anterior cruciate ligament graft (arrowheads), indicating a cyclops lesion.

player jumped on his back, causing hyperextension of the right knee. Arthroscopic examination shortly after the injury confirmed a full-thickness ACL tear associated with a grade 2 medial collateral ligament (MCL) tear and meniscal derangement. His reconstruction took place 3 months after the acute injury, and a contralateral patellar tendon-bone graft was used for the repair. The patient reported that the complications started 2-3 months after the surgery and included the right knee “giving way” under single-leg weight bearing, sporadic circumferential swelling with no specific onset, lack of full extension, and notable laxity with crepitus and clicking, especially with weight-bearing rotation of the tibia.

The McMurray test with valgus stress, lateral pivot shift, and laxity with forced extension were found positive, and the Lachman test was negative. The patient was able to perform all ranges of motion except end-range extension in his right knee. The extension range loss was 10°-15° and there was an audible clunk with forced extension. There was slight circumferential swelling compared with the unaffected knee. The unaffected knee also had a surgical scar overlying the patella where a tendon-bone graft was harvested.

MRI of the right knee without contrast was ordered. The MRI revealed a heterogeneous soft tissue mass anterolaterally within the intercondylar notch adjacent to ACL graft. This finding was consistent with a cyclops lesion (Fig 1). There was also variable high signal intensity on T2-weighted images present within the ACL graft, indicating the presence of a grade 1 sprain. The associated injuries that are commonly found with ACL tears were demonstrated as well, including meniscal and MCL derangement. There was a small amount of fluid present within the MCL, indicating a grade 3 sprain, and high signal intensity within the posterior horn of the

medial and lateral menisci consistent with mucoid degeneration. A small joint effusion and medial plica were also noted (images not shown). A targeted follow-up sonographic examination with a GE LOGIQ E9 system (GE Healthcare, Wauwatosa, WI) was performed for additional evaluation of the location and characteristics of the intra-articular mass using a high-frequency transducer (ML6-15) operating at 9 MHz. The same anterolateral soft tissue mass, noted at MRI, was localized within the intercondylar notch. The sonographic characteristics of the mass included a well-defined, somewhat heterogeneous, hypoechoic nodule, not attached to the cortex, with sparse peripheral hyperemia (neovascularity) demonstrated by Doppler imaging. The nodule was incompletely visualized but measured approximately 1.61 × 1.20 cm (Fig 2).

The patient was referred to an orthopedic surgeon. On arthroscopic examination, the cyclops lesion was confirmed with an intact ACL graft as well as a chronic complete tear of the MCL and minor meniscal derangement. The cyclops lesion was surgically resected, and the MCL was repaired with a semitendinosus allograft.

The patient followed a regimen of postoperative physical therapy. The physical therapy regimen included bracing for 1 week in full extension and bracing in an unlocked brace for full ambulation for weeks 1-4. This was followed by weight bearing to tolerance, with and without crutches; therapeutic exercises, including heel slides, quad strengthening, hamstring strengthening, and gastrocnemius and soleus stretches; plyometric exercises; proprioceptive training; and gradual return to sports-related activities. The patient reported obtaining all full ranges of motion and was able to return to full activities of daily living within 6 weeks after surgery. The patient gave informed consent for this case to be published.

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