Case Report: Cyclops Lesion of the Knee

A 30-year old male presented with knee pain to his orthopedic surgeon 9 months post-arthroscopic autograft repair of a ruptured anterior cruciate ligament.

Clinically there was an effusion and tenderness over the lateral joint line. Knee extension was also limited. An MRI of the left knee was requested which showed a PD (proton density) iso-intense, T2 mildly hyperintense, non-enhancing well-circumscribed soft tissue mass protruding anteriorly between the femero-tibial jointspace. The reconstructed graft was intact. No meniscal tear was present. A moderately-sized effusion was present.

Fig. 1. Sagittal MRI knee proton-density Cyclops lesion
The patient proceeded to arthroscopy. A large Cyclops lesion was removed arthroscopically and tissue was sent for histology. Additionally a loose intra-articular chondral fragment was removed. Synovitis was also present in the lateral gutter and the anterior compartment. The ACL graft was revascularised and appeared within normal limits. Routine postoperative mobilization was prescribed.
Fig. 3. Arthroscopic findings of Cyclops lesion (black arrow) and cartilaginous loose body (white arrow).

Histology of the specimen showed fibrocartilaginous tissue consistent with a Cyclops lesion.

Follow-up showed significant improvement.

Discussion:

Clinical findings suggestive of roof impingement are knee joint effusion, extension deficit, recurrent instability, anterior knee pain, or a combination of these findings. When loss of full extension persists for 2 months after anterior cruciate ligament disruption despite aggressive rehabilitation, the presence of a cyclops lesion should be considered. (4)
Arthroscopic patterns of graft injury associated with roof impingement include the development of a fibrocartilaginous nodule or Cyclops lesion anterior to the distal third of the ACL graft, fractured bundles of the graft, guillotined fibers at the entrance into the notch, parallel fragmentation of graft fibers (lax bundles), and the extrusion or molding of the graft by the distal end of the notch. (8, 10)

MRI allows the assessment of 1) tunnel position and alignment, 2) graft integrity, 3) the menisci for possible re-tear or extension of previous tears, and 4) joint for scar tissue and cartilaginous bodies either loose or fixed. (6)

The localised fibrocartilaginous nodule or Cyclops lesion may limit knee extension after ACL reconstruction. The lesion shows low to intermediate signal intensity on T1, T2 and fast spin echo images and is best visualised in the sagittal plane, between the leading edge of the distal ACL graft and Hoffa’s fat pad. (3, 5, 7, 8) The sensitivity, specificity, and accuracy of revealing a cyclops lesion on MR imaging were 85.0%, 84.6%, and 84.8%, respectively. (1)

A Cyclops lesion may develop from the residual ACL stump left at arthroscopic reconstruction or may develop from a minor, primarily torn, non-operated ACL tear. (4, 9)
At arthroscopy, a large amount of thick, immobile scar tissue may be found immediately anterior to the ACL, which is consistent with a cyclops lesion. (5)

In patients presenting a loss of extension, the notch frequently has to be enlarged. A multifactorial pathogenesis is likely: the nodule is a natural fibroproliferative tissue process originating either from drilling debris from the tibial tunnel or from remnants of the ACL stump and, more rarely, from broken graft fibers. Sometimes, when the graft is malpositioned, the scar tissue can result from repeated graft impingement on the notch at terminal extension.(2)

Histologic examination of the excised nodules show a fibroelastic connective tissue proliferation, thromboangiitis, and areas of necrotic bone and foreign body giant cell granulomas.(9)

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References: