

AMSER Case of the Month

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HPI: 19 M with chronic left knee pain

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Patient Presentation – Subjective Data

- **HPI:** 19 year old male presenting with new onset left knee pain on terminal extension s/p ACL repair with hamstring graft in prior month. Reports worsening left knee pain, ROM, and function with activity in the month since surgery
- **ROS:** Negative except for HPI
- **PMH:** None
- **Medications:** None
- **Family History:** Positive for diabetes, ADHD in second-degree relatives

Patient Presentation – Objective Data

- **Vitals:** WNL
- **Physical Exam:**
 - General appearance: Healthy, well-nourished without deformities
 - Left knee musculoskeletal:
 - Decreased extension on passive and active range-of-motion
 - Point tenderness in anterior knee
 - Trace swelling/effusion
 - Normal skin, stability, muscle strength, sensation, reflexes, and McMurray's test
 - Right knee musculoskeletal:
 - Normal

What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

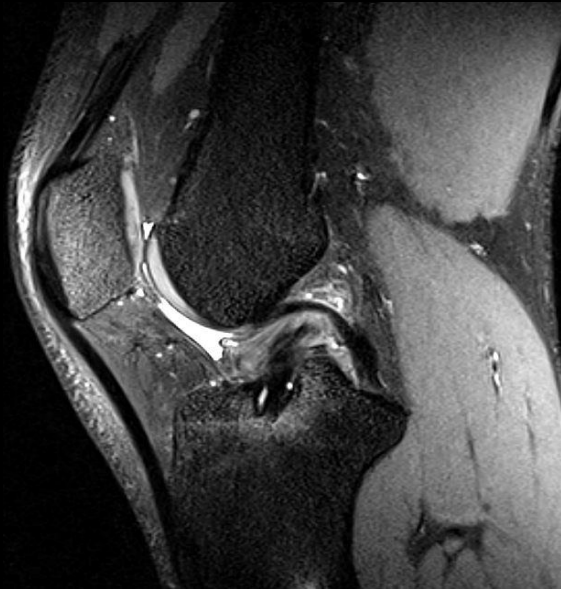
Scenario	Procedure	Adult RRL	Peds RRL	Appropriateness Category
Knee replaced, pain, arthrofibrosis suspected	US knee	0 mSv ○	0 mSv [ped] ○	Usually appropriate ●
	MRI knee without IV contrast	0 mSv ○	0 mSv [ped] ○	Usually appropriate ●
	Radiography knee	<0.1 mSv ☼	<0.03 mSv [ped] ☼	May be appropriate ●
	CT knee without IV contrast	<0.1 mSv ☼	0.03-0.3 mSv [ped]..	Usually not appropriate ●
	Fluoroscopy knee	<0.1 mSv ☼	Null	Usually not appropriate ●
	Radiographic arthrography knee	<0.1 mSv ☼	Null	Usually not appropriate ●
	CT knee with IV contrast	<0.1 mSv ☼	0.03-0.3 mSv [ped]..	Usually not appropriate ●
	MRI knee without and with IV contrast	0 mSv ○	0 mSv [ped] ○	Usually not appropriate ●
	CT knee without and with IV contrast	<0.1 mSv ☼	0.03-0.3 mSv [ped]..	Usually not appropriate ●
	3-phase bone scan knee	1-10 mSv ☼☼☼	Null	Usually not appropriate ●
FDG-PET/CT whole body	10-30 mSv ☼☼☼☼	3-10 mSv [ped] ☼☼☼☼	Usually not appropriate ●	

This imaging modality was ordered by the sports medicine staff member

Findings (unlabeled)



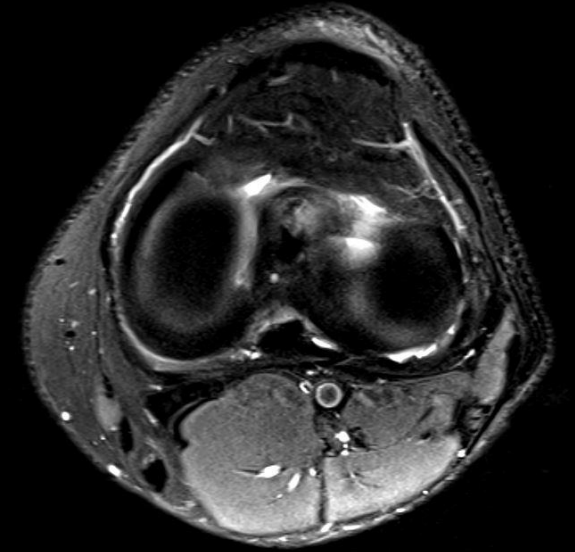
T1



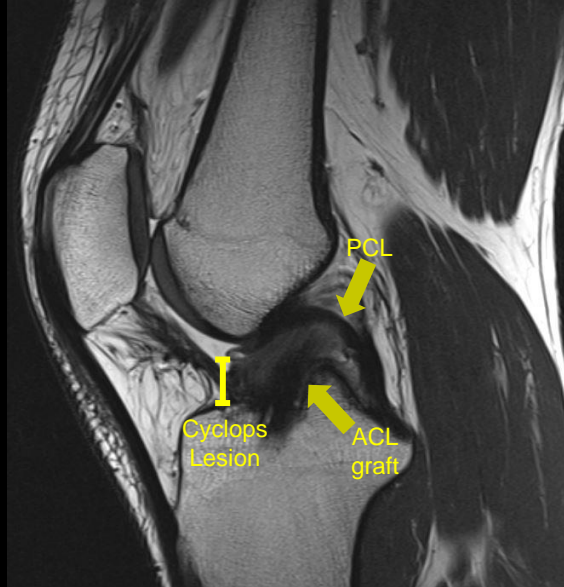
PD



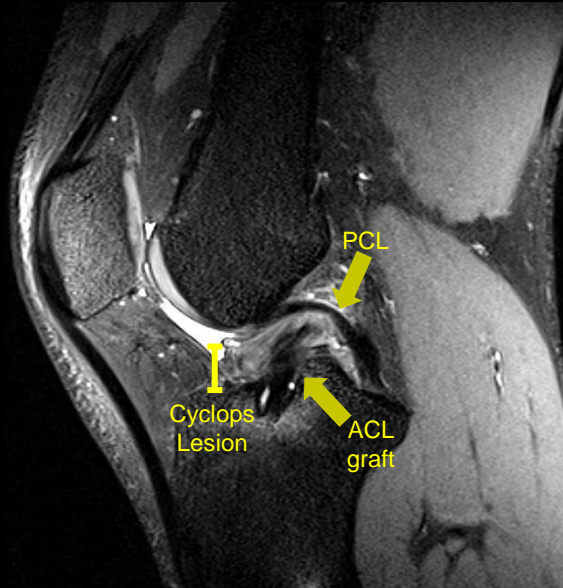
T2/STIR Fat Sat



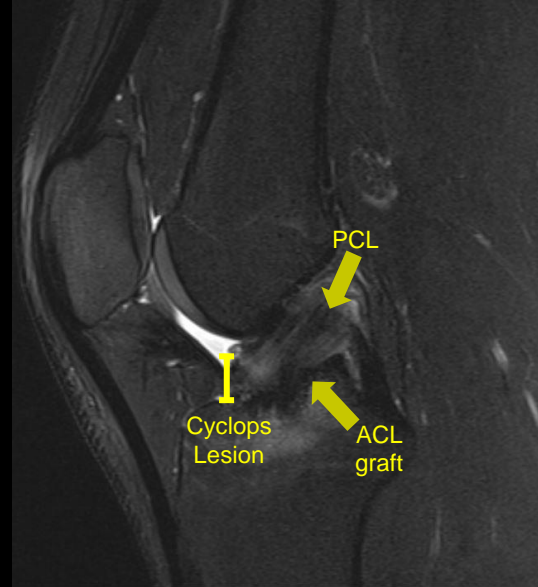
Findings (labeled)



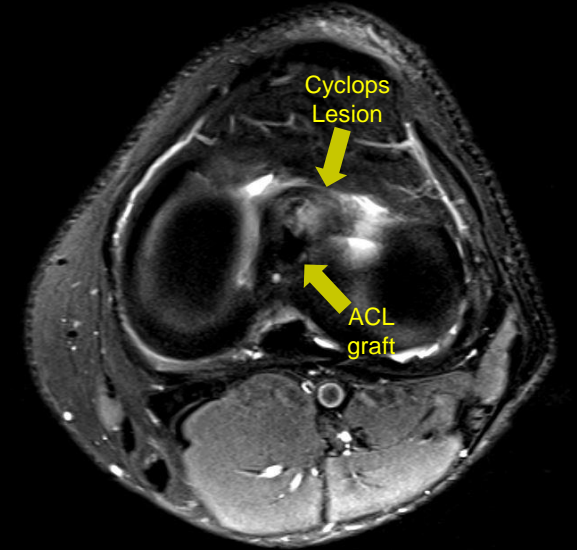
T1



PD



T2/STIR Fat Sat



Final Dx:

Localized Anterior Arthrofibrosis – Cyclops Syndrome
(ACL reconstruction post-operative complication)

Case Discussion

- **Arthrofibrosis:**

- Excess scar tissue within a joint capsule causing swelling, stiffness, and pain
- One of the leading causes of failure of total knee arthroplasty
- It appears as a low signal intensity lesion on T1 and T2 and is often described as mass-like

- **Cyclops Lesion - Presentation:**

- Cyclops lesions are painful anterior knee masses that arise as a complication of ACL reconstruction (1-9.8% of patients)
 - Typically present 8-32 weeks post-operatively
 - Can also rarely occur in patients with ACL injury without reconstruction
- The bulbous, discolored appearance resembles a solitary eye during arthroscopy
- Thought to be due to excessive fibrosis of torn ACL or graft fibers
- Cyclops Syndrome presents as a decrease in knee extension with associated pain in the presence of a cyclops lesion. It can also present with an audible palpable “clunk”.

Case Discussion

- **Imaging Findings:**

- Best assessed with MRI which has ~85% sensitivity
- Presents as a soft-tissue mass that sits in the anterior intercondylar notch near the tibial insertion of the reconstructed ACL
- Low to intermediate signal intensity on all pulse sequences
- Features variable contrast enhancement with heterogeneous signal

- **Differential diagnosis:**

- Intraarticular giant cell tumor of the tendon sheath
- Nodular synovitis
- Pseudo-cyclops lesion due to torn ACL graft

Case Discussion

- **Management:**

- Treated with arthroscopic surgical debridement
 - Good prognosis with fully recovered function and range of motion
 - Recurrence is rare (1/33 cases in one study)
- Physical therapy can achieve symptomatic relief
 - Full knee extension cannot be achieved without arthroscopic removal of scar tissue
 - Exercises for restored function include
 - Standing banded knee extension
 - Calf and hamstring stretch with pressure
 - Supine prolonged low-load stretch



Selected images from an arthroscopic surgical debridement performed on another patient



References:

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5. William Palmer, Laura Bancroft, Fiona Bonar, Jung-Ah Choi, Anne Cotten, James F. Griffith, Philip Robinson, Christian W.A. Pfirrmann. Glossary of terms for musculoskeletal radiology. (2020) *Skeletal Radiology*. doi:10.1007/s00256-020-03465-1 – Pubmed
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7. Singh C, Vellasamy SD, Fiolin J, Rhatomy S. Cyclops lesion - The entity causing loss of knee extension after ACL reconstruction surgery: A case report. *Int J Surg Case Rep*. 2021;88:106554. doi:10.1016/j.ijscr.2021.106554