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First-Time Lateral Patella Dislocation: Which Imaging Method Should We Use CT or MRI?

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Summary:
We advise MRI or CT for all first-time lateral patellar dislocation and secondary imaging if surgical indication was not established from initial imaging results.

Abstract:

Following first-time lateral patellar dislocation (FTLPD), most patients are treated conservatively. However, 50% of patients have recurrent dislocations following a FTLPD. The standard indication for surgery are intra-articular free bodies and significant MPFL tear with lateral displacement of the patella (LDP). Typically, radiograph followed by CT and/or MRI are used to establish treatment strategy. Currently, however, there is no consensus on image use in treatment determination. Therefore, we designed a retrospective study to evaluate CT and MRI use in the surgical intervention decision process for FTLPD.

Methods

Using hospital data between 2012-2017, a senior musculoskeletal radiologist blindly evaluated pathologies found on MRI and CT imaging for 26 FTLPD patients and formatted them into a table.
The data was assessed by a sports medicine fellowship trained orthopedic surgeon for 3 parameters (free bodies on CT, MRI, or significant MPFL tear on MRI with LDP on CT of both knees) indicative for surgical intervention.

Results

The pathologic findings on 26 FTLPD MRI and CT are summarized in table 1. MRI showed significantly better capability in evaluating lateral femoral condyle compression injury and identifying femur free fragments following injury.
Free bodies were determined as surgical indication in 13 and 19 of patients using MRI and CT, respectively. 8 patients were indicated for surgery based on MPFL tear and lateral patellar displacement. When combining MRI and CT image evaluations, 21 of 26 patients were indicated for surgical intervention.

Discussion

33% of MRI and 10% of CT assessments led to misdiagnosis, when either was used alone for surgical indication. Both MRI and CT have flaws; MRI is expensive and time consuming and CT exposes the patient to the potential hazards of radiation. However, based on the current results, we advise MRI or CT for all FTLPD and secondary imaging if surgical indication was not established from initial imaging results.