How do you noninvasively diagnose medial plica syndrome (MPS) of the knee?

Evidence-Based Answer
The medial patella plica (MPP) test or knee ultrasound may be more accurate than magnetic resonance imaging (MRI) for diagnosing MPS (SOR: C, meta-analysis of lower quality cross-sectional studies). MPS can be diagnosed noninvasively using a verified, reliable set of clinical diagnostic criteria (SOR: C, cross-sectional study with verification bias).

A 2014 systematic review and meta-analysis of 7 cross-sectional studies (with 492 knees) investigated the accuracy of clinical tests and radiological imaging for diagnosing MPS.1 The gold standard was arthroscopy or open surgery, during which MPS was treated if confirmed. In the MPP test, with the patient supine, the examiner's thumb causes pain when applied to the inferomedial patella with the knee extended and the test is positive when the pain is markedly reduced by knee flexion to 90°.

The MPP test and knee ultrasound appeared more diagnostically useful than MRI, with positive likelihood ratios of more than 5 and negative likelihood ratios less than 0.2, but MRI was the only test studied in more than 1 trial (see TABLE 1). One MRI study (155 knees) was excluded from meta-analysis due to insufficient detail in the reported data (95% sensitivity, 73% specificity). Blinding procedures were not described and statistically significant heterogeneity was present in the MRI results.1

A 2007 cross-sectional study (N=48) investigated the accuracy of pre-established clinical criteria for diagnosing MPS.2 Patients were recruited from an orthopedic surgery clinic and had a mean age of 45 years (range, 16–65 years). Clinical criteria (see TABLE 2)2,3 were used to diagnose MPS and only patients who satisfied all of these criteria were enrolled and underwent the diagnostic gold standard of arthroscopy. Pathologic MPS was confirmed by the presence of abrasions over the medial femoral condyle, snapping over the medial femoral condyle during knee range of motion, or plica thickening.

<table>
<thead>
<tr>
<th>Test</th>
<th>No. of studies</th>
<th>No. of knees</th>
<th>Sensitivity (95% CI)</th>
<th>Specificity (95% CI)</th>
<th>LR+</th>
<th>LR–</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRI</td>
<td>4</td>
<td>229</td>
<td>77% (63–87)</td>
<td>58% (47–70)</td>
<td>1.8</td>
<td>0.29</td>
</tr>
<tr>
<td>MPP test</td>
<td>1</td>
<td>172</td>
<td>90% (not reported)</td>
<td>89% (not reported)</td>
<td>8.2</td>
<td>0.11</td>
</tr>
<tr>
<td>US</td>
<td>1</td>
<td>151</td>
<td>90% (83–97)</td>
<td>83% (67–96)</td>
<td>5.3</td>
<td>0.12</td>
</tr>
</tbody>
</table>

CI, confidence interval; LR+=positive likelihood ratio; LR–=negative likelihood ratio; MPP=medial patella plica; MRI=magnetic resonance imaging; US=ultrasound.

Clinical diagnosis of medial plica syndrome2,3

All 5 of the following criteria are required:
1. Pain in the anteromedial aspect of the knee
2. Pain primarily localized to medial femoral condyle
3. Plica that is visible or palpable
4. Tenderness to palpation over plica
5. Other causes of anteromedial knee pain excluded

The following causes of anteromedial knee pain must be excluded:
1. Overuse
   Examples: Osgood-Schlatter, Sinding-Larsen-Johansson, jumper’s knee, quadriceps tendonitis, bipartite patella, stress fracture
2. Trauma-related lesions
   Examples: Osteochondritis dissecans, bone bruising, posttraumatic degenerative change
3. Syndromes and dysplasias
4. Tumors
   Examples: Dorsal defect of patella, giant-cell tumor, osteosarcoma
5. Miscellaneous
   Examples: Bursae, patellar tendon ossification, posterior cruciate ligament rupture
6. Iatrogenic
   Examples: Hauser procedure, infrapatellar contracture syndrome, neurona
The clinical diagnosis was confirmed by arthroscopy in 44 patients (62 knees) of the 48 with positive clinical criteria, providing a positive predictive value of 92% (95% CI, 80–98) for the clinical criteria. Scientifically valid sensitivity and specificity could not be calculated because patients with a negative clinical examination did not undergo arthroscopy.\(^2\)

**Evidence-Based Answer**

Aspirin is probably less expensive, but not more effective than clopidogrel or ticlopidine. Thienopyridines (ticlopidine or clopidogrel) and aspirin are equally effective in preventing recurrent strokes of all types, while thienopyridines are better for preventing recurrent ischemic strokes (SOR: A, systematic review of RCTs and single retrospective cohort study). Clopidogrel is associated with less mortality than aspirin in patients with a prior stroke (SOR: B, retrospective cohort study).

A 2009 Cochrane review of 10 RCTs (N=26,865) of patients with a high vascular risk evaluated the effectiveness of aspirin versus thienopyridines for the prevention of stroke.\(^1\) Patients were deemed to be at high vascular risk if they had a history of previous cerebral, coronary, or peripheral atherosclerotic disease, including previous stroke.

The occurrence of all types of strokes was analyzed in 7 trials, which encompassed 26,244 (98%) patients receiving aspirin (various doses), ticlopidine 500 mg/d, or clopidogrel 75 mg/d over an average follow-up of 18 months. No difference was noted in stroke rates with a thienopyridine versus aspirin (5.8% vs 6.3%; odds ratio [OR] 0.91; 95% CI, 0.82–1.01).

The occurrence of an ischemic stroke or stroke of unknown type was analyzed in 5 trials, incorporating 22,778 (85%) patients receiving 25 to 1,500 mg/d aspirin, 250 to 500 mg/d ticlopidine, or 75 mg/d clopidogrel over an average follow-up of 22 months. Rate of ischemic stroke was significantly reduced among patients taking a thienopyridine compared with aspirin (5.5% vs. 6.2%; OR 0.89; 95% CI, 0.79–0.99). Aspirin side effects included increased stomach upset and gastrointestinal bleeding. Thienopyridine side effects include diarrhea and rash, while ticlopidine was associated with increased risk of neutropenia.\(^1\)

A 2011 retrospective study of 1,228 patients with a history of an acute ischemic stroke evaluated 5-year survival and recurrence of stroke with aspirin versus clopidogrel.\(^4\) Mean age of patients was 67.6 years in the aspirin group and 66.7 years in the clopidogrel group. Men comprised 73% of the clopidogrel group and 67% of the aspirin group (P=.03). Patients were assigned to a mean dose of 104 mg/d aspirin or 75 mg/d clopidogrel. Comorbidities were matched between both groups with overall rates of 70% hypertension, 30% diabetes, 41% hyperlipidemia, 39% smoking, 19% coronary artery disease, 15% transient ischemic attack, and 6% peripheral artery disease. Stroke occurred in 196 patients over a mean follow-up of 40.9 months.

Stroke recurrence rates did not differ between groups—17.4% in the aspirin group and 13.2% in the clopidogrel group (P=.15). The aspirin group saw higher but nonsignificant rates of bleeding complications (peptic ulcer disease and intracranial hemorrhage)—2.4% vs 0.9% in the clopidogrel group (P=.08). There were 95 deaths from all causes, with 9% in the aspirin group versus 5% in the clopidogrel group (P=.01; NNT=25). Deaths associated with severe bleeding occurred only in the aspirin group and 64% of the cardiovascular-related deaths were in the aspirin group vs 36% in the clopidogrel group.\(^4\)

**In patients with previous stroke or at high vascular risk, is aspirin better than clopidogrel or ticlopidine for preventing recurrent stroke?**