The Relationship Between Hip Physical Examination Findings and Intra-articular Pathology Seen at the Time of Hip Arthroscopy

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Disclosures

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Hip Arthroscopy

- Increasingly common
- Clinical success in treating intra-articular hip pathology
- Labral tears, removal of loose or foreign bodies, pigmented villonodular synovitis, osteonecrosis, joint sepsis, degenerative disease, adhesive capsulitis, ruptured ligamentum teres, and femoro-acetabular impingement (FAI)
- Necessary to appropriately indicate patients for surgical intervention, and recent attention has been given to the utility of the preoperative physical examination

Martin RL et al, Arthroscopy (2008)
Diagnostic Challenges

• Current modalities: limitations in detecting intra-articular disease
  - Magnetic resonance arthrography
    • High sensitivity for detecting labral pathology
    • Limited ability to visualize both femoral and acetabular articular cartilage degeneration

  
  

• Intra-articular injection has been used to distinguish intra from extra-articular sources of hip pain
  • Crawford et al: 97% of patients that had a successful hip replacement reported complete pain relief with intra-articular injection
  • Martin RL et al: Patients with labral tears on MRI arthrogram had varied responses to intra-articular injection

  
  
Physical Examination Limitations

- No gold standard for clinical hip assessment
- Martin HD et al: Battery of tests for a standard hip physical exam
  - Prospectively evaluated the clinical examinations of 6 hip specialists finding that 10 tests were performed greater than 50% of the time
- Lack of formal validation of many of the tests used to detect intra-articular pathology
- Lack of data correlating the physical examination of the hip to intra-articular pathology
- The ability of hip physical examination maneuvers in predicting intra-articular pathology has not been elucidated in prior investigations

*Martin HD et al, Arthroscopy, 2010 / Martin RL et al, JOSPT, 2006*
Study Purpose

• To examine the relationship between seven preoperative physical examination maneuvers of the hip and intra-articular pathology seen at the time of hip arthroscopy.

• Seven clinical exams used in this study:
  • Anterior impingement test
  • Posterior impingement test
  • Stinchfield test
  • Logroll test
  • McCarthy test
  • Modified McCarthy test
  • FABER test

• Goal: Determine the usefulness of the clinical exam in the challenging setting of appropriately indicating patients for surgical intervention
Study Methods

- Forty consecutive patients (16 male, 24 female, aged 17-56)
- Seven physical examination maneuvers performed by senior author, a sports-fellowship trained hip specialist
- Patients were indicated for hip arthroscopy based on clinical history, physical examination findings, response to intra-articular injection, advanced imaging, and failure to respond to non-operative treatment
- Intra-operative pathology was recorded as presence of (dependent variables):
  - Labral damage (tear or fraying)
  - Femoral arthrosis
  - Acetabular arthrosis
  - FAI
- Chi square analysis and Fisher’s exact test were performed to assess the predictive value of each physical examination maneuver with respect to differentiating between the dependent variables.
Physical Exam Maneuvers

1. Anterior impingement test
   Supine position, flexing and adducting the hip with internal rotation.

2. Posterior impingement test
   Patient supine and hanging the affected leg off the side of the exam table while the hip is brought into extension and external rotation.

3. Stinchfield test
   Patient performs a straight leg raise against resistance by the examiner.

4. Logroll test
   Passive supine rotation test, the examiner internally and externally rotates the relaxed leg and attempts to reproduce pain or guarding.

5. McCarthy test
   Dynamic External Rotatory Impingement test (DEXRIT); performed by flexing both hips, pt holds the contralateral hip in the flexed position, extend the affected hip in abduction and external rotation.

6. Modified McCarthy test
   Senior author (BRN) modified the McCarthy test; the unaffected limb remains extended while the same maneuvers are performed on the symptomatic side.

7. FABER test
   Flexion, Abduction, External Rotation (FABER); patient supine, affected leg is in figure four position, then knee is abducted.
Results

• Anterior impingement test
  • Able to predict presence of labral pathology in 90% (36/40 pts)
• Posterior impingement test
  • Negative test correlated with the absence of a posterior labral tear in 88% (35/40) of patients, while a positive posterior impingement test was associated with the presence of both femoral and acetabular cartilage pathology
• Logroll test: Not able to predict the presence of labral pathology, femoral cartilage damage, or acetabular cartilage damage
• Labral pathology
  • Predicted by the Stinchfield test in 75% (30/40) patients, modified McCarthy in 78% (31/40) of patients, and FABER in 73% (29/40) of patients.
• Stinchfield, McCarthy, modified McCarthy and FABER tests:
  • Could not reliably predict the presence of femoral cartilage damage, acetabular cartilage damage, or FAI.
Conclusions

- Anterior impingement test – remains the most helpful in detecting patients with labral pathology
- Posterior impingement test – best for identifying patients with both femoral and acetabular cartilage pathology while a negative test correlated with the absence of a posterior labral tear.
- Logroll testing, Stinchfield, McCarthy, modified McCarthy and FABER tests failed to show utility in predicting intra-articular pathology
Recommendations

• The anterior and posterior impingement tests remain the most useful in predicting intra-articular pathology

• Multiple diagnostic modalities should be performed before proceeding with hip arthroscopy as physical examination maneuvers alone cannot predict intra-articular pathology