



Two novel clinical tests for the diagnosis of hip labral tears

Farshad Adib, MD; Jacob Hartline, MD; Skye Donovan, PT, PhD; Kourosh
Kalaghchi, BS; Pegah Dehghan, MD; Derek Ochiai, MD

Nirschl Orthopedic Center and University of Maryland School of
Medicine

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Introduction

- Large differential in diagnosis of hip pain³
- Magnetic resonance arthrogram (MRA) is very accurate in detecting hip labral tears but costly and many tears are not clinically significant^{1,2}
- Variable reported sensitivities and poor specificities in previously studied clinical tests- FADIR/Impingement test most commonly used^{4,5}
- We propose two new clinical tests for detection of hip labral tears and compare sensitivity and specificity to the FADIR/Impingement test

Methods

- Arlington test (**Figure 1**), Twist test (**Figure 2**), and FADIR/Impingement test performed by fellowship-trained sports medicine surgeon specializing in hip arthroscopy on all patients presenting with chief complaint of hip pain
- Exclusion criteria: severe osteoarthritis on x-ray, MRA not performed, all 3 tests not performed
- Diagnostic statistics for each test calculated and compared using MRA finding of labral tear as reference standard
- Subgroup analysis comparing test accuracy in patients with concomitant pain generator findings and those without

Arlington Test



Figure 1. Arlington Test: patient taken from neutral position (a) into flexion, abduction, and external rotation (b), then through range of motion (c) into a final position of flexion, adduction, and internal rotation (d). Throughout range of motion, hip is “bounced” with a small IR and ER motion.

Twist Test



Figure 2. Twist Test: patient asked to slightly flex knees and move both back and forth in “windshield wiper” motion while keeping feet planted (a,b). Patient then asked to repeat while standing only on effected leg with support from examiner (c,d). Repeated on non-effected leg

Results

- 283 total patients with 265 tears detected (93.6%)
- Mean age: 40.7 years, 33.6% male
- 21.6% with concomitant hip pain generator findings including iliopsoas tendonitis, greater trochanteric bursitis, others

Results

Table 1. Diagnostic statistics using MRA as reference standard

	Sens (CI)	Spec (CI)	+LR (CI)	-LR (CI)	PPV (CI)	NPV (CI)
Arlington Test	0.94 (0.90-0.96)*	0.33 (0.16-0.56) #	1.40 (1.01-1.95)	0.26 (0.13-0.46)	0.95 (0.92-0.97)	0.26 (0.13-0.45)
Twist Test	0.68 (0.62-0.73)*^	0.72 (0.49-0.88) #	2.44 (1.16-5.17)	0.44 (0.32-0.62)	0.97 (0.94-0.99)	0.13 (0.08-0.21)
FADIR/ Impingement Test	0.43 (0.37-0.49)*^	0.56 (0.34-0.75)	0.96 (0.56-1.64)	1.03 (0.67-1.58)	0.93 (0.87-0.97)	0.06 (0.03-0.11)

*= Arlington test higher sensitivity than Twist and FADIR/Impingement tests, $p < 0.001$; ^= Twist test higher sensitivity than FADIR/Impingement test, $p < 0.001$; #= Twist test higher specificity than Arlington test, $p = 0.008$

Results

- The diagnostic accuracy for each test was not significantly different in the group with concomitant pain generators compared with the group without ($p>0.05$)

Conclusion

- Arlington test more sensitive than Twist and FADIR/Impingement tests
- Twist test more specific than FADIR/Impingement test although limited by low number of patients without tears on MRA
- FADIR/Impingement test has varying accuracy from author-to-author in the literature and a notably low sensitivity in this study. Future studies calculating accuracy of Arlington and Twist tests in the hands of other clinicians will help to validate our findings.
- The combination of these 3 tests will be useful to guide appropriate use and interpretation of advanced imaging

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