A meta-analysis examining clinical test utility for assessing superior labral anterior posterior lesions

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CRD summary
This review concluded that the anterior slide test was poor for detection of labral lesions in the shoulder; active compression, crank and Speed tests were preferred. Criteria additional to those stated were used to select studies for analysis and the review methodology was weak. Data presented were insufficient to support the authors’ conclusions, which are unlikely to be reliable.

Authors' objectives
To assess the diagnostic utility of clinical tests for the identification of superior labral anterior posterior (SLAP) lesions.

Searching
MEDLINE, CINAHL and BIOSIS Previews were searched from inception to June 2007 for articles written in English. Search terms, which included methodological terms for test accuracy studies, were reported. The bibliographies of included studies were screened for additional articles.

Study selection
Studies that assessed the diagnostic accuracy of one or more clinical tests for identifying SLAP lesions and used arthrotomy, arthroscopy or magnetic resonance imaging as reference standards were eligible for inclusion.

Studies that did not report test negatives or used non-diseased controls (diagnostic case-control studies) were excluded. Studies were excluded if they were performed on cadavers only.

Data were excluded from the meta-analysis if tests were evaluated in a single study or where reported sensitivities or specificities were zero or one.

Included studies were all conducted in patients with shoulder pain. Two out of six studies excluded stiffness and two specified that they were conducted in athletes. Mean age of participants ranged from 23 to 46. The clinical tests assessed were active compression, anterior slide, Speed and crank. All studies used arthroscopy as the reference standard.

Studies were assessed for inclusion by one reviewer.

Assessment of study quality
The methodological quality of included studies was assessed using a 16-item checklist from the Cochrane Methods Group on Systematic Review of Screening and Diagnostic Tests. This checklist assessed aspects of reporting quality, internal validity and generalisability.

An overall score from a possible maximum of 37 was assigned to each study. Only studies that scored 19 points or more were included in the meta-analysis.

The authors did not state how many reviewers performed the quality assessment.

Data extraction
Data were extracted on sensitivity and specificity of each test assessed in the included studies.

The authors did not state how many reviewers performed data extraction.
Methods of synthesis
An analysis of covariance (ANCOVA) with logit sensitivity as dependent variable, logit specificity as covariate and diagnostic test as the factor was used to predict logit sensitivities at various logit specificities for each diagnostic test and hence to construct summary receiver operating characteristic (sROC) curves for each test.

Results of the review
Six studies (17 test comparisons) were included in the review and meta-analysis. Quality scores for the six included studies ranged from 25 to 32. The authors stated that they selected tests for analysis for which a small number of studies were distributed as uniformly as possible across the diagnostic tests. They also stated that studies distributed as uniformly as possible across methodological score categories (25 to 27, 28, 30, and 32) when cross-tabulated with diagnostic test were selected. It appeared that some studies that met the stated inclusion criteria were excluded from the review; five tests from six studies were excluded from the review due to the small number of studies available for each test (the authors stated that most had fewer than three).

Estimated sROC curves indicated that the anterior slide test was statistically inferior to the active compression, crank and Speed. No significant differences were found for ROC curves among the active compression, crank and Speed tests. The active compression test was found to have the best ROC curve. Methodological quality and study had no significant effects in the model.

Active compression test: Reported sensitivity estimates ranged from 0.470 to 0.778 and specificity estimates ranged from 0.111 to 0.730 (six studies).

Anterior slide test: Reported sensitivity estimates ranged from 0.05 to 0.100 and specificity estimates ranged from 0.815 to 0.930 (three studies).

Crank test: Reported sensitivity estimates ranged from 0.125 to 0.580 and specificity estimates ranged from 0.560 to 0.826 (five studies).

Speed test: Reported sensitivity estimates ranged from 0.040 to 0.478 and specificity estimates ranged from 0.674 to 0.990. (three studies).

Authors’ conclusions
The anterior slide test was a poor test for detection of a labral lesion in the shoulder. Active compression, crank and Speed tests were preferred.

CRD commentary
The objective of the review was clearly stated and inclusion criteria were defined. The authors stated that tests assessed by a single study would be excluded from the meta-analysis. However, it appeared that studies in this category as well as studies of tests that were assessed by two (pain provocation and posterior jerk), three (Jobe relocation) or four (Yergason’s test) studies were completely excluded from the review; it was unclear whether these studies met all other stated inclusion criteria. It appeared that the authors applied further criteria to select studies of four tests for inclusion in their meta-analysis; it was unclear whether other studies of these tests (which met the original stated inclusion criteria) were excluded. Searches were restricted to English-language studies, which raised the possibility of language bias. The search strategy included terms for test accuracy studies (which were likely to have reduced its sensitivity). Study selection was conducted by one reviewer, which increased potential for error and bias, and it was unclear whether the rest of the review process was also conducted by one reviewer. Methodological quality was assessed and summary scores were used to select studies for inclusion in the meta-analysis. Use of summary quality scores is not generally recommended and a more valid approach would be to include all relevant studies and assess the impact of individual quality criteria upon the results of any analyses. The authors conclusions were a simple comparison of derived sROC curves for three tests and did not reflect the poor diagnostic performance of all three tests. Overall, the review methodology was weak and sensitivity and specificity values reported by the included studies were low. The available data were insufficient to support the authors conclusions, which are unlikely to be reliable.

Implications of the review for practice and research
Practice: The authors stated that clinicians should choose the active compression test first, crank second and Speed test third when a labral lesion was suspected.

Research: The authors stated that more research was warranted on bicep load, passive compression and Kim tests.

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