

AN EVALUATION OF THE APPREHENSION, RELOCATION AND SURPRISE TESTS FOR ANTERIOR SHOULDER INSTABILITY

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Introduction

This article was published by Ian Lo, an established Orthopaedic Surgeon based in Canada, with a special interest in shoulders.

Aims and Objectives

The aim of the study was to look at the sensitivity, specificity, and positive and negative predictive values of the apprehension, relocation and surprise tests for the diagnosis of anterior shoulder instability.

Methods

The study was conducted as a retrospective review of 46 shoulder pain patients (numbers too small for a power analysis). No demographics of these patients were supplied eg. age or duration of problem, limiting external validity.

These shoulder patients were identified from the files of 2 orthopaedic surgeons, which may suggest more severe symptoms. Prior to admission to the study, they had been diagnosed with either:

- Traumatic anterior instability (TAI)- 18 patients
- Multidirectional Instability (MDI)- 5 patients
- Rotator cuff disease (RCT)- 17 patients
- Posterior instability (PI)- 2 patients
- Glenohumeral osteoarthritis (OA) -4 patients

The inclusion for each diagnostic category was strict, eg reduction of TAI had to have had physician assistance. For the diagnosis of RCT, positive impingement signs were included for diagnosis : no surgery or imaging was used.

4 blinded examiners carried out the testing (1 consultant, 2 fellows, 1 reg), after completing a training session to standardise procedure.

All 3 tests: apprehension, relocation and surprise, were carried out on all 46 patients. A clear description of all test techniques was provided. A positive apprehension test was reported if the client voiced pain, apprehension or stretch, which was questionable.

Results

Both the apprehension and surprise test had almost 99% specificity for anterior instability, with corresponding high PPVs. The relocation test however had only 54% specificity. When apprehension alone (as opposed to pain +/- apprehension) was

used as the diagnostic factor in the relocation test, specificity and PPV increased to 100%. P- values were presented for all data.

The sensitivities of all three tests were less than 64%.

A relocation test in which pain was experienced and improved with a posteriorly directed force did not accurately predict TAI, no did it differentiate between different conditions: similar amounts of patients with TAI and RCT who had pain on apprehension test had improved pain with relocation.

The tests were combined to establish an overall instability examination. A patient was rated as excellent if all 3 tests were positive, or good if 2/3 test s or the surprise test alone (best sensitivity, specificity, PPV, NPV) were positive.

For those rated as excellent, the specificity and PPVs were both 100%.

For those rated as good, the specificity was 98%, PPVs 96%

The MDI patients had the most variable results.

Overall interrater reliability was high: 0.83.

Conclusions

A positive test on all 3 examinations is highly specific for anterior glenohumeral instability.

Both the apprehension and surprise test had equal specificity (98%) while the relocation test had a specificity of 54%.

The surprise test was the most accurate individual examination maneuver.

A reduction of pain on the relocation test is not specific to instability.

From a clinical point of view it is questionable how useful these tests are since any suggestion of traumatic anterior shoulder instability would be picked up in the subjective examination when looking at mechanism of injury.

Patients used were all on Ortho Surgeon's list: ?more severe. No information regarding demographics, history of injury etc provided.