Reinterpretation of O’Brien test in posterior labral tears of the shoulder

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ABSTRACT

Background: Injuries to the posterior labrum are less common and more difficult to diagnose compared to anterior labral pathology. This may be in part due to difficulties in preoperative diagnosis. Posterior labral injuries cause abnormal loading of the rotator cuff with subsequent weakness. Examination using the O’Briens test tightens the posterior capsule and posteriorly translates the humeral head, stressing the labrum resulting in pain and weakness.

Method: A retrospective study.

Results: Of 74 patients diagnosed with a posterior labral tear at arthroscopy 55 had subjective weakness on performing a O’Briens test, a sensitivity of 83% and a positive predictive value (PPV) of 90%.

Conclusion: Multiple tests have been described for posterior labral pathology and none of these, on their own, have a high sensitivity rate. Posterior labral injuries can often be missed on magnetic resonance imaging scanning and also at surgery if not specifically looked for. Using a sign of clinically demonstrated weakness when performing the O’Briens test, and hence reinterpretation of the test, is sensitive, with a high PPV for posterior labral pathology and can help guide further treatment.

Key words: O’Briens test, posterior instability, posterior labral injury

INTRODUCTION

Injuries to the posterior labrum are much less common, and less frequently diagnosed as compared to their anterior counterparts. This may to some degree be due incidence, approximately 5%, but may also reflect the difficulty in preoperative diagnosis. Numerous clinical tests have been described in the diagnosis of posterior labral tears and instability with varying degrees of sensitivity and specificity. These include the Kim test, the Jerk test, posterior stress test, load and shift test, and the O’Brien’s test. The latter test was initially described in relation to acromioclavicular joint pathology and superior labral anterior and posterior (SLAP) lesions, with a positive test being ascribed to the initial presence then absence of pain during testing. Patients who present with a painful shoulder and the added component of weakness could be incorrectly diagnosed as having a cuff tear. It is proposed that if the O’Briens test is used to subjectively test isometric strength it may be a sensitive test in the diagnosis of a posterior labral tear.

MATERIALS AND METHODS

Between March 2010 and June 2013, 74 nonconsecutive patients who presented to the senior author (LF) were included in the study. All were prospectively examined, and their data entered into a database prior to undergoing arthroscopic examination and procedure. A retrospective case-controlled study was done on these data correlating the examination reference and the findings at shoulder arthroscopy. Data were collected with the consent of all patients and recorded using a patient management data system; patient confidentiality was maintained in all cases. For inclusion in the case controlled study criteria, requirements were: No prior surgery, over 16 years of age, and suspected posterior labral injury requiring arthroscopic stabilization. The entire sample received verification using the same reference.
Sensitivity, specificity, positive predictive values (PPVs), and negative predictive values (NPVs) were determined using a 2 × 2 table. Analysis of findings of the O’Briens test and correlation with the arthroscopic examination was then done to determine the sensitivity, specificity, and positive and NPVs of the test with respect to the diagnosis of posterior labral injury.

RESULTS

Seventy-four patients (69 male and 5 female) with and the average age of 25.82 years (STD = 7.89 years) fulfilled the inclusion criteria. The average number of days between the reference standard test, the O’Briens test, and the index standard, the arthroscopic examination, was 80.21 days. Table 1 shows the correlated results between the arthroscopic findings and the O’Briens test with subsequent calculation of respective sensitivity (83%), specificity (25%), PPV (90%) and NPV (15%). On further examination of the subgroup of patients who did not have a posterior labral tear on arthroscopy, there is a trend toward finding that these patients had a combination of multidirectional instability, lax posterior capsules, or attenuated labrum [Table 2].

DISCUSSION

The results of this study suggest this reinterpretation of the O’Briens test to be sensitive (83%) to and highly predictive (90%) of posterior labral injury, thereby allowing the clinician to rule out the diagnosis more confidently in a negative test. Unfortunately, the specificity is low (25%), influenced by the negative test results. Further examination of the cases which were negative with the reference standard and comparison with arthroscopic findings show that in the majority of cases, there were either multidirectional instabilities, lax glenohumeral capsules or attenuated labrums.

Table 1: Results showing sensitivity, specificity, PPV, and NPV for the O’Briens test in diagnosing posterior labral tears preoperatively

| Test outcome | Labral tear present (%) | Labral tear absent (%) | Predictive value (%) |
|--------------|-------------------------|-------------------------|----------------------|
| O’Briens test +ve | 55 | 6 | PPV 90 |
| O’Briens test –ve | 11 | 2 | NPV 15 |

PPV = Positive predictive value; NPV = Negative predictive value

Table 2: Patients in whom no labral tear was found at arthroscopy regardless of whether the O’Briens test was positive or negative (n = 8)

| True negatives | False positives |
|----------------|-----------------|
| 1 multidirectional instability with attenuated labrum | 3 multidirectional instabilities |
| 1 lax posterior capsule | 2 lax capsules |
| | 1 attenuated labrum |
posterior labral problem underwent arthroscopy. A prospective study with a suitable control group would further investigate both the sensitivity and specificity, and verify the robustness of the O'Briens test as a screening test for posterior labral injuries.

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