

## Letters to the Editor

### The Use of Rotator Interval Closure in the Arthroscopic Treatment of Posterior Shoulder Instability

To the Editor:

We read with interest the article “Arthroscopic Management of Posterior Instability: Evolution of Technique and Results” by Savoie et al.<sup>1</sup> in the April 2008 issue of the *Journal*. The authors have had excellent results in 136 patients treated arthroscopically for posterior shoulder instability. The authors should be commended for describing the evolution of their repair technique and recognition of the pathology with a posterior instability lesion. However, we are concerned with the high level of emphasis that the authors placed on repair of the rotator interval as being critical to success in their patient population. The authors make several claims in their article regarding the rotator interval that might have been further addressed in their article. Specifically, we would like the authors to expound on how they diagnosed a rotator interval lesion arthroscopically as they found “with close observation, one can usually assess damage to the rotator interval.” They stated that 61% of the cases had rotator interval pathology; however, it was unclear if this pathology was evident on physical examination<sup>2-4</sup> or during intra-articular inspection.<sup>5,6</sup> We are not aware of any reliable method of intra-articular examination to determine a pathologic rotator interval, although lesions of the biceps pulley suggest some level of incompetent structures in the rotator interval.<sup>7</sup> In addition, the authors stated in their discussion that as they gained experience, “. . . it became easier to detect damage to the rotator interval and surrounding structures.” Again, we would like to understand how this became easier and exactly what they were looking for to identify rotator interval lesions.

A second concern is with their postoperative assessment of range of motion. The authors used the Neer criteria, which provide a satisfactory rating if the shoulder is within 10° of full extension and 40° of rotation compared with the contralateral shoulder. From multiple biomechanical studies, an arthroscopic closure of the rotator interval at time 0 has shown predictable losses of external rotation, especially with the arm at the side of the shoulder.<sup>8-14</sup> We are concerned that some of these patients, based on the Neer criteria (up to 40° of loss of motion is rated as satisfactory) may sustain a significant loss of external rotation postoperatively. We were unable to find range of motion data in the article to support the notion that their rotator interval closure did not have an appreciable effect on external rotation of the shoulder.

Another concern is the extrapolation of biomechanical data from Harryman et al.<sup>15</sup> for their specific rotator interval

closure technique. Although the authors did not describe their technique of rotator interval closure in their Methods section, it was surmised by us from the discussion that an arthroscopic closure from the subscapularis tendon to the supraspinatus tendon was performed. The authors stated in the discussion that “We routinely used our wide based technique to close the rotator interval rather than a simple superior glenohumeral ligament to middle glenohumeral ligament plication, because we believe our technique more accurately mimics the study of Harryman et al. . . .” Although the authors have probably performed a robust rotator interval closure from supraspinatus to subscapularis, they have not clearly demonstrated that an arthroscopic rotator interval closure mimics what Harryman et al. performed. Harryman et al.<sup>15</sup> performed an open rotator interval closure with a 1-cm pants-over-vest imbrication of the coracohumeral ligament (CHL). The vector of the CHL is in a very different direction than that of a supraspinatus to subscapularis closure, and it is doubtful that CHL tissue is routinely imbricated in the same fashion as Harryman et al. performed in their open cadaveric study. We feel that the authors’ claim is unsupported by their article. However, additional studies are needed to determine the efficacy of open versus arthroscopic rotator interval closure procedures.

One should also keep in mind that the circle concept as introduced in an abstract by Warren et al.<sup>16</sup> has been refuted numerous times—meaning that if a shoulder dislocates posteriorly, rotator interval structures are probably intact. In fact, Weber and Caspari<sup>17</sup> reported that in 8 cadaveric posterior dislocations, there was no damage to the rotator interval in any of the specimens. Clinically, there are reports of several large series<sup>18-20</sup> of arthroscopic posterior instability stabilization with excellent results in which the rotator interval was not closed. In addition, we are concerned with the potential tenodesis effect of the proposed rotator interval closure (either supraspinatus to middle glenohumeral ligament or supraspinatus to subscapularis). With the latter, we feel that it is difficult to reliably hold sutures and maintain repair integrity between these 2 tendons after repair. We are unaware of any biomechanical studies that have investigated a rotator interval repair between the supraspinatus and subscapularis tendons.<sup>12</sup>

Again, we would like to congratulate the authors on their contribution to a better understanding of the arthroscopic treatment of posterior instability. However, we would like the authors to provide us with some additional information to support their frequently touted claims that the rotator inter-

val was one of the main keys to successful treatment in their large series of patients.

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### Authors' Reply

We welcome Dr. Provencher's comments on our article. He essentially poses four excellent questions, and although we believe that they were addressed adequately in the article and on numerous occasions by the senior author, we will attempt to explain more fully in order that he might understand.

The question of arthroscopic diagnosis is simply to look carefully at the normal ligamentous contour and fiber arrangement before placing an anterior portal. Similarly, that anterior portal should be placed in the soft spot of the interval, which would allow palpation of the structures so that the area of injury can also be felt. Careful inspection for areas of scarring and disruption of the normal fiber alignment is indicative of damage (Fig 1). Repair plicates both the coracohumeral and superior glenohumeral ligaments (Fig 2; arm in 90° of external rotation).

The second question regards range of motion. All of our surgeries are performed in the lateral decubitus position with the arm in 90° of external rotation. Therefore, external rotation loss is not a problem in our patient population. All patients had normal external rotation, and we regret that we did not include that information in the manuscript. The loss of external rotation is not usually a factor in posterior instability, but we appreciate Dr. Provencher's concern.

The third question is in regard to our rotator interval closure technique. Our 2 sutures are placed obliquely between the supraspinatus and the subscapularis mimic plicating the coracohumeral ligament and superior glenohumeral ligament, a technique established by Harryman et al.<sup>1</sup> Dr. Provencher's work on the rotator interval is well recognized and is superbly done;