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CORR Insights®: Recurrent Instability and Surgery Are Common After Nonoperative Treatment of Posterior Glenohumeral Instability in NCAA Division I FBS Football Players

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Where Are We Now?

Posterior shoulder instability tends to be the result of repetitive microtrauma [14]. Posterior shoulder instability only accounts for up to 10% of all instances of shoulder instability [10], but it may be more common in young military cadets [3, 10] and National Football League (NFL) combine participants than in the general population. Among NFL combine participants, MR images of 38% of players showed evidence of posterior labral tears [8]. Posterior shoulder instability and its associated pathologies are reported most frequently in weightlifters, football linemen, rugby players, swimmers, gymnasts, wrestlers, overhead athletes, and active-duty military service members.

Patients with posterior shoulder instability may be treated with or without surgery. Nonoperative management is aimed at controlling pain and increasing stability, and these goals might be attained through a three-phase program: (1) static proprioceptive control through closed-chain kinetic movements with visual feedback; (2) dynamization through isokinetic balancing of the internal and external rotators to ultimately accomplish global concentric strengthening; and (3) dynamic, proprioceptive, open-chain, kinetic exercises for eventual return to sports [5]. There have been no comparative studies with different protocols to examine posterior shoulder instability, but this seems logical and comparable to the protocols examining anterior shoulder instability. After undergoing nonoperative care, as many as 70% of patients with posterior shoulder instability eventually undergo surgery [16]. Risk factors for undergoing surgery include BMI greater than 35 kg/m^2 and contact or weightlifting athletes [16]. It has also been demonstrated that patients with evidence of a posterior labral tear on MRI who simultaneously had subjective complaints and objective examination results consistent with instability and those with increased glenoid retroversion and posterior humeral head subluxation were more likely to undergo surgery than patients without these factors [4]. For patients without substantial bone loss whose symptoms do not improve with nonoperative treatment, arthroscopic posterior capsulolabral repair is, in my experience, the most-commonly used approach, with operatively treated patients reporting high return to activity, low risk of recurrence [3], and clinically important improvements in patient-reported outcomes (for example, American Shoulder and Elbow Surgeons, Rowe, Walch-Duplay, Constant, and Single Assessment Numeric Evaluation scores) [6, 7]. Regardless, many athletes—particularly overhead athletes—do not return to previous levels of play [6], and some undergo revision surgery. Factors associated with these problems include the use of anchorless techniques, use of fewer than four anchors, being a

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woman, and surgery on the dominant shoulder [13].

Tennent et al. [15] reported a prospective observational case series of National Collegiate Athletic Association Division I Football Bowl Subdivision players from three United States Military Service Academies who sustained posterior shoulder instability and opted for initial nonoperative management. The authors found that although seven of 10 players were able to return to play in the same season (and commonly during the same game in which they were injured), recurrent instability was common, and all of the players who returned to play eventually opted for surgery. A previous study reported that players in the NFL combine who underwent surgery played more by their second season than did players treated nonoperatively [8], and the present study by Tennent et al. [15] complements these data by encouraging caution when discussing with collision athletes the prognosis of nonoperatively treated posterior shoulder instability. Based on these data, I would encourage early surgical management when possible to facilitate fewer recurrent instability events and potentially fewer associated conditions such as complex labral tears and bone loss.

Where Do We Need To Go?

The ultimate goal of care in any patient with posterior shoulder instability should be early and effective treatment that minimizes the patient's time away from a desired activity, sport, or occupation. To accomplish this goal, we need to focus on patient-centered and condition-specific measures when conducting research on this uncommon condition. Interestingly, in all of the previously mentioned studies [3-8, 10, 13, 14, 16], the authors did not use contemporary shoulder instability-specific patient-reported outcomes, such as the Western Ontario Shoulder Instability Index, Oxford Shoulder Instability Score, or Melbourne Instability Shoulder Score [11]. These are all valid, reliable, and responsive measures of shoulder instability. A further investigation analyzing the impact of type of sport, age, gender, and concomitant injuries on patient-centered and condition-specific outcomes after the treatment of posterior shoulder instability is warranted.

How Do We Get There?

Fortunately, posterior shoulder instability is an increasing focus of research. Most studies to date have been case series or case-control studies and prospective series, and when patient-reported outcome measures were used, they were not specific to shoulder instability [3-8, 10, 15, 16]. Although these are reasonable study designs, given the rarity of posterior shoulder instability, the largest area for improvement is to focus on contemporary, patient-centered, and condition-specific measures such as the Western Ontario Shoulder Instability Index, Oxford Shoulder Instability Score, and Melbourne Instability Shoulder Score. The importance of using condition-specific, patient-reported outcome measures is relatively straightforward. General metrics of health-related quality of life such as the SF-12 fail to capture joint-specific disability, making them less ideal for the study of specific pathologic conditions [17]. Even shoulder-specific outcome measures, such as the Constant score and simple shoulder test, show low content validity and responsiveness for disability associated with shoulder instability [11, 12]. Previous work on the Patient-Reported Outcomes Measurement Information System upper-extremity form has determined it has a near-excellent correlation with the Western Ontario Shoulder Instability Index, but with ceiling effects in patients younger than 21 years [2]. The benefit of the patient-Reported Outcomes Measurement System questionnaire is that it generally takes less time to complete than other surveys because of computerized adaptive testing, reducing burden on patients and research staff.

Using these condition-specific patient-reported outcomes will help to determine whether patients are hitting the mark more accurately and reliably than the orthopaedic community has in the past, whether patients and physicians choose operative or nonoperative treatment. These more-accurate and more-reliable outcome measures may inform physicians, therapists, trainers, and patients as to the best strategies for treatment in order to minimize time off work and play. Using these data, we can create diagnostic algorithms so that this information is accessible and decisions can be determined quickly to attain the best likely outcome. Ultimately, implementing contemporary methods such as machine-learning into orthopaedic decision-making for posterior shoulder instability may assist surgeons, as it has for other musculoskeletal issues [1, 9].

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