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Gamekeeper's Thumb or Acute Skier's Thumb

ABSTRACT & COMMENTARY

Synopsis: The suture anchor fixation provided a stable repair if the surgery was performed early.

Source: Zeman C, et al. Acute skier's thumb repaired with a proximal phalanx suture anchor. *Am J Sports Med* 1998;265:644-650.

Zeman and colleagues studied the functional outcome of acute surgical repair for injuries of the ulnar collateral ligament of the thumb. Early ulnar collateral ligament repair was performed on 58 patients with grade III complete ruptures of the ligament using a suture anchor. Forty-five patients were interviewed at a minimum postoperative time of 12 months. Forty-four patients (98%) were felt to have a stable repair and were satisfied with their surgery. The same percentage felt that they were not hindered in their day-to-day activities and had a functional range of motion. Mild discomfort was felt in 17%, but only 7% had pain with activities. The average time to return to skiing was 1.7 days. It was felt that the suture anchor fixation provided a stable repair if the surgery was done early.

■ COMMENT BY JAMES P. TASTO, MD

Mondry first described the unstable thumb in 1940. In 1955, Campbell described the classic "gamekeeper's thumb" seen in Scottish gamekeepers.¹ Schultz, Fox, and Brown coined the phrase "skier's thumb" in 1973, as skiing appears to be the most common cause of acute rupture.²

Stability of the thumb on the ulnar side is maintained by four anatomical structures. They are the adductor aponeurosis, the adductor pollicis muscle, the proper and accessory ulnar collateral ligament (UCL), and the volar plate. The UCL provides major resistance to a radially applied stress, such as in pinching or holding equipment.

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Stener first described some of the pathoanatomy of the ruptured UCL.³ His discussion centered on why failure often occurred with conservative casting. The adductor aponeurosis, when pulled distally, entraps the ruptured ligament and does not allow it to reduce anatomically.

There is some variation in the literature in terms of what degree of angulation is compatible with a full rupture of the UCL. However, if one were to assume that it will occur somewhere between 35-40° of radial deviation of the thumb when a stress is applied to the metacarpophalangeal joint at 30° of flexion, then under most circumstances, this would be compatible with a full rupture and indicate the need for surgical intervention. This test can be done clinically, or it can be done with radiographic assistance for documentation.

There have been any number of different types of repairs documented in the literature, many of which are somewhat more complex than those described here by Zeman et al. In this series, a direct repair with a suture anchor is used, obviating the need for trans-osseous tunnels and tying sutures over buttons.

All methods of repair have been associated with a small percentage of patients who continue to have minor discomfort at the repair site as well as some limitation of

poor result if conservatively treated.

It is critical to make a diagnosis promptly at the time of injury, and if angulation beyond 35-40° is encountered with the thumb at 30° of flexion, then acute surgical repair appears to yield the best results. The technique described here is simple and seems to work well. ❖

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SLAP Lesions, Rotator Cuff Tears, and Instability

ABSTRACT & COMMENTARY

Synopsis: *Type II SLAP lesions result in additional laxity in the same quadrant of the shoulder, and subsequent internal impingement, stretch, and eventual tear of the rotator cuff.*

Source: Morgan CD, et al. Type II SLAP lesions: Three subtypes and their relationships to superior instability and rotator cuff tears. *Arthroscopy* 1998;14:553-565.

Avulsions of the long head of the biceps tendon and labrum from the glenoid rim are termed superior labral anterior-to-posterior (SLAP) lesions. Of the four varieties, Type II lesions are the most symptomatic as they involve detachment of the biceps anchor with the labrum. The mechanism of injury is presumed to involve traction on the arm, such as deceleration during the follow-through while throwing. Morgan and associates arthroscopically subdivided 102 Type II SLAP lesions and noted that the mechanism of injury was specific to the location of detachment. Anterior lesions correlated with traumatic events, such as traction against a contracted biceps muscle. Posterior detachment, either isolated or combined with further detachment anteriorly, was three times more likely to be associated with repetitive throwing. Throwers noted increased pain in the cocking phase rather than in the follow-through, bringing

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into question the mechanism of injury. The Jobe relocation test with posterior pain in abduction and external rotation (which is relieved by posterior directed pressure on the humeral head) was found to be diagnostic of posterior or combined lesions. Arthroscopically, Morgan et al were able to visualize a “peel back” mechanism of torsion on the posterior labrum and biceps attachment when the shoulder is in this position. Thirty-one percent (32 patients) of patients also had rotator cuff tears, including 12 complete and 20 partial tears. All of the partial tears involved the undersurface of the rotator cuff and were lesion specific in location. That is, the posterior SLAP lesions were associated with posterior rotator cuff tears. Morgan et al conclude that Type II SLAP lesions result in additional laxity in the same quadrant of the shoulder, and subsequent internal impingement, stretch, and eventual tear of the rotator cuff.

■ COMMENT BY DAVID R. DIDUCH, MS, MD

Morgan et al help us to better understand the mechanism for SLAP lesions and make an excellent case for subdividing Type II lesions according to location. They demonstrate, with a large series, that anterior SLAP lesions are more frequently associated with a traumatic event, while posterior or combined SLAP lesions are three times more common in throwers. They arthroscopically explained this difference by identifying torsional force on the posterior labrum and biceps anchor (the “peel back” mechanism) when the arm is in a cocked position.

These posterior or combined lesions lead to secondary posterior superior instability, demonstrated by the “drive through” sign arthroscopically. Upon repair of the SLAP lesion, this “drive through” sign was corrected. Although posterior superior instability cannot result in dislocations because of the acromial roof, repetitive subluxation could damage the undersurface of the rotator cuff due to increased tensile forces and internal impingement. Thus, posterior SLAP lesions become associated with posterior rotator cuff tears. It is important for the arthroscopist to make this association at the time of surgery, so that both problems are corrected.

This study helps us to better understand the mechanism of injury for SLAP lesions and offers important treatment correlations. Throwers with pain during the cocking phase may develop a posterior Type II SLAP tear due to “peel back” forces. This results in posterior-superior laxity and possibly posterior rotator cuff tears. In addition to rotator cuff repair, the posterior SLAP lesion needs to be stabilized to prevent recurrence. ❖

Initial Treatment of Primary Anterior Shoulder Dislocation

ABSTRACTS & COMMENTARY

Synopsis: *A long-term study of the natural history of recurrent shoulder instability after a primary traumatic anterior dislocation demonstrated a recurrence rate of 66%, while in another study, arthroscopic repair after first-time dislocation resulted in a recurrence rate of 14%.*

Sources: Hovelius L, et al. Primary anterior dislocation of the shoulder in young patients, a ten-year prospective study. *J Bone Joint Surg* 1996;78(A):1677-1684; Arciero RA, et al. Arthroscopic Bankart repair versus nonoperative treatment for acute, initial anterior shoulder dislocations. *Am J Sports Med* 1994;22:589-594.

An interesting and controversial topic currently exists in musculoskeletal sports medicine, involving the initial treatment of a primary anterior shoulder dislocation. This controversy is best highlighted by reviewing two different studies from 1996 and 1994.

The controversy, simply stated, involves both the natural history and treatment of primary anterior shoulder dislocations. As a background, the orthopaedic literature supports a high recurrence rate in patients younger than 20 years of age. In a retrospective review of shoulder dislocations, McLaughlin and MacLellan found a recurrence rate of 95% of 181 primary dislocations in patients 11-20 years of age.¹ Rowe also noted a recurrence rate of 83% in 107 patients younger than 20 years of age.² As one ages, the recurrence rate decreases. Initial treatment involved either immobilization (usually 4 weeks) or early range of motion exercises, with surgery being considered only after multiple recurrences of the dislocation. Classically, most shoulder dislocations have been treated with open surgery using the classic Bankart repair (reattaching the shoulder labrum to the glenoid edge), with a well-established success rate of 95%.³ In 1977, Hovelius began a prospective trial evaluating initial treatment of primary shoulder dislocations. Performing his study in the medical system of his native Sweden afforded Hovelius the unique opportunity of having exacting follow-up, which led to a subsequent five-year follow-up study showing no difference in initial management of the dislocation. With reevaluation at 10 years,

this clinical trial became a landmark natural history study of primary shoulder dislocations.

This unique prospective study of primary anterior shoulder dislocations in patients younger than 40 years of age provides tremendous information about the natural history of this injury, based on its one-of-a-kind follow-up. Of the original 245 dislocators, only 10 were lost to follow-up before 10 years (9 died, 1 left Sweden). Of the remaining patients, 211 were evaluated with a physical examination and follow-up interview, and 34 were evaluated by telephone interview or by a mailed questionnaire. Two hundred eight shoulders were examined radiographically at 10 years.

At the 10-year follow-up of patients between the ages of 12 and 22 years, recurrent dislocation requiring operative stabilization had been performed in 34 of 99 shoulders (34%). With increasing age, the percentage of operative stabilization for recurrent instability decreased to 28% for patients 23-29 years and to 9% in patients 30-40 years of age at the time of initial dislocation. Hovelius et al noted a phenomenon of spontaneous stabilization of recurrent shoulder instability in 24 of 107 (22%) shoulders (in other words, patients who had had a recurrence, with time stabilized and did not require treatment). Hovelius et al noted the reason for spontaneous stabilization was unclear but suggested it could be related to decreased shoulder external rotation with age, less physical activity, or decreased range of motion due to arthropathy.

Radiographic findings of arthropathy were noted in 41 of 208 shoulders studied. There was a lower incidence in arthropathy in the asymptomatic contralateral shoulder, implying that, as has long been suspected, the etiology of arthropathy may be related to the dislocation event(s).

Recurrence was an interesting phenomenon. Of those patients 12-22 years of age with no recurrent dislocation at the earlier two-year follow-up, 34 continued to have no recurrent dislocations at 10 years. Of those shoulders injured in patients between 12 and 22 years of age, 102 were followed at two years. At 10 years, 99 remained in this group, with 38 having no or one recurrence (38%, 34 of 99 or 34% with no recurrence), 34 (34%) having surgery, 13 of 99 (13%) being considered symptomatic, and another 13 of 99 (13%) being considered healed. In summary, based on approximately 100 patients younger than the age of 22, at 10 years, there was a recurrence rate of 66%.

The difference in recurrence rate from previous studies underlies the concept of the need for natural history studies of any injury or disease as well as the long opined need for prospective follow-up. This study gave

both. Previous studies were retrospective and of surgically treated patients. Although the findings in this study may be disputed (especially documentation of activity and functional level of the patients), this paper should be in every teaching file for sports medicine as a true attempt to prospectively document the natural history of primary anterior shoulder dislocations in young patients in a general population.

This leads us to review another paper that should also be in one's personal sports medicine teaching file.

The unique study by Arciero and colleagues was conducted on a specialized population of United States Military Academy cadet-athletes who must return to their preinjury activity levels in an environment where activity modification is not an option.⁴ Arciero et al had experienced a high recurrence rate after closed initial treatment and early success with arthroscopic repair techniques; therefore, they designed a prospective, non-randomized trial of arthroscopic Bankart repair vs. four weeks of immobilization for treatment of an initial anterior shoulder dislocation. This unique population allowed for excellent follow-up, a single source of medical care, and one single-age group in a demanding athletic environment.

A total of 36 patients were enrolled and completed the study. Fifteen patients selected nonoperative treatment and 21 patients chose early arthroscopic evaluation and Bankart repair. Age demographics were similar, while the mechanism of injury in one subset of limited contact was higher in the surgically treated group. Follow-up differed in the two groups, with patients with nonoperative management averaging 23 months (range, 15-39 months) and surgically managed patients averaging 32 months (range, 15-45 months) of follow-up.

Of the 15 treated nonoperatively, the recurrence rate was 80% (12 of 15 patients) with seven of the 12 (58%) patients requiring a subsequent open Bankart repair. Of the three remaining patients without a recurrence in the nonoperative group, two were functionally rated as excellent and one as good. In the operatively managed group, 18 of 21 (86%) patients had no recurrent instability, with one patient subsequently requiring a Bankart repair. Of the two remaining operative patients, one had a single episode of instability and returned to contact sports without further recurrence and the other had only one recurrence but no longer participates in contact sports.

■ COMMENT BY ROBERT C. SCHENCK, Jr., MD

In the study by Arciero et al, early arthroscopic repair decreased the rate of recurrent dislocation as compared to nonoperative management. Unfortunately, there were

failures in the arthroscopic group (3 patients) and, furthermore, three of 15 patients avoided surgery with non-operative management. Hence, six of 36 (17%) patients with a primary dislocation either were not benefited by (3 patients in the operative group) or would not have required an initial surgical approach (3 patients in the nonoperative group). Although Arciero et al clearly show a decreased incidence of recurrence with early arthroscopic repair, the take-away message must include the 8% who were not benefited by surgery and the 8% who did not need surgery. Early arthroscopic treatment of primary shoulder dislocations may have its benefits (time of disability, early treatment of pathology such as a Bankart lesion, and a predictable recovery) but, in any informed decision, the benefits of nonoperative management must be also considered and discussed with the patient.⁵

The controversy around these two papers stems from the current orthopaedic (and albeit American) trend of early arthroscopic stabilization in primary anterior shoulder dislocations in a young (< 20 years of age) athletic population. The uniqueness of both studies stems from the well-defined and captured populations of shoulder patients. Hovelius et al document the natural history of all comers (patient activity, sporting, and gender) with a shoulder dislocation in one country where excellent follow-up is feasible. The initial intent of the Hovelius study was to compare nonoperative treatment methods and evaluate their effect on the eventual rate of recurrence. They found no difference when comparing immobilization vs. range of motion; however, it is in the current era of arthroscopic shoulder stabilization that this natural history study creates controversy.

What is the clinician to do or at least recommend? Despite the advances in arthroscopic shoulder stabilization, open surgery for recurrent instability after an anterior dislocation remains the gold standard with a 95% success rate. Arthroscopic repair (especially early) is attractive based upon reparability of a Bankart lesion combined with the demands of the athletic population younger than the age of 20. Nonetheless, arthroscopic repairs have a higher failure rate (14% in this study by Arciero et al) when compared to open methods. Depending upon the population being treated, it may be logical to delay surgery until recurrence and its disability are experienced by the patient. Then the most successful operative stabilization procedure, namely open repair, should be pursued. In a high demand athlete younger than the age of 22, other issues, such as disability and time lost because of conservative care, play a role in treatment decisions. When arthroscopic shoulder repair success becomes comparable to open surgery, this con-

troversy will quiet in this specialized athletic population.

In summary, with the dogged persistence of Hovelius, a prospective clinical trial has become a classic natural history study of primary anterior shoulder dislocations. As Hovelius candidly noted in a postpublication editorial, “within six years, we hope (if we are still alive) to start the 25-year follow-up,” which will further our understanding of such injuries. Early shoulder surgery will remain controversial as techniques evolve and appropriate populations are further defined. We must remember to carefully consider the population (age, athletic demands, system demands) being treated as well as the successes and failures before recommending or condemning early surgery. ❖

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Association Between Menstrual Cycle and Anterior Cruciate Ligament Injuries in Female Athletes

ABSTRACT & COMMENTARY

Synopsis: Wojtys and colleagues found that most injuries occurred in the ovulatory phase of the cycle (day 10-14). The association between the athletes' menstrual cycle phase and the likelihood of injury was statistically significant ($P = 0.03$).

Source: Wojtys EM, et al. Association between the menstrual cycle and anterior cruciate ligament injuries in female athletes. *Am J Sports Med* 1998;26(5):614-619.

Identifying the risk factors for the increased rate of anterior cruciate ligament (ACL) injuries in women athletes has been a recent priority among sports

investigators. This study by Wojtys and colleagues highlights one area of intense investigation—the influence of estrogen levels or, more specifically, the stage of the menstrual cycle on ACL injury rates. This group of combined investigators from the University of Michigan Hospitals in Ann Arbor and the Cincinnati Sports Medicine and Orthopaedic Center retrospectively surveyed 28 young athletes (23 ± 11 years) with regular periods who sustained a noncontact ACL injury. They found most injuries occurred in the ovulatory phase of the cycle (day 10-14). The association between the athletes' menstrual cycle phase and the likelihood of injury was statistically significant ($P = 0.03$). Estrogen peaks at mid-cycle just prior to ovulation, raising the question as to whether peak estrogen levels may increase one's susceptibility to a non-contact ACL injury. Wojtys et al are quick to admit that, to date, the clinical and practical significance of such an association is unknown.

■ COMMENT BY LETHA Y. GRIFFIN, MD, PhD

Noncontact ACL injuries are being seen at an alarming high rate in women athletes (4-8 times greater than in men)—especially those performing pivotal sports such as basketball and soccer.

Proposed risk factors include women's increased joint laxity, their narrower femoral notches, and their smaller ligament size. Women's decreased total muscle mass, their decreased hamstring-to-quadriceps ratio, and proposed less favorable neuromuscular control have also been blamed. Others feel women's body mechanics, influenced by such factors as their lower center of gravity and increased knee valgus, hip varus, and foot pronation, is a predisposing factor and results in more "out of control" play.

Since increased estrogen levels are unique for women and since estrogen is known to have a direct effect on collagen metabolism, investigators questioned whether there could be a relationship between estrogen levels and ligament injury. Research efforts along these lines intensified after Liu and associates¹ and Sciore and colleagues² reported finding estrogen and progesterone receptor sites in human anterior cruciate ligaments.

This article by Wojtys et al adds another piece to the estrogen puzzle. Although their data are enticing, they remind us of their study's limitations, which most noticeably include the lack of actual measured estrogen levels, the wide age range of participants (11-42 years), and the fact that all data on the stages of the menstrual cycle at the time of injury were retrospectively gathered from patient recall rather than accurately recorded at the time of the injury. This study is also contrary to the proposal of Thomas and associates³ that the greatest inci-

dence of ACL injury is most likely to be during the premenstrual phase of the menstrual cycle when normal knee laxity is greatest. Now, there seem to be more questions than answers regarding risk factors in ACL injury, but early data on estrogen's influence is intriguing. ❖

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Preoperative Indicators of Motion Loss and Weakness Following Anterior Cruciate Ligament Reconstruction

ABSTRACT & COMMENTARY

Synopsis: *In anterior cruciate ligament reconstruction, the best results regarding terminal extension postoperatively are obtained in those patients who have full extension prior to surgery.*

Source: McHugh MP, et al. Preoperative indicators of motion loss and weakness following anterior cruciate ligament reconstruction. *J Orthop Sports Phys Ther* 1998;27(6):407-411.

Preoperative loss of motion has been implicated as a possible contributing factor to postoperative arthrofibrosis. It has also been associated with other postsurgical complications such as patellofemoral problems. The purpose of this study was to "1) determine what degree of preoperative motion loss represents a risk for postoperative motion problems; and 2) if preoperative weakness affects return to strength following surgery." McHugh and colleagues took measurements on 102 patients (56 men and 46 women; mean age, 31 ± 1 year). Autogenous bone-patellar tendon-bone graft was used on 96 patients, patellar tendon allograft on four patients, and semitendinosus-gracilis graft on two patients. Measurements were taken two weeks prior to anterior cruciate ligament (ACL) reconstruction and repeated six

months following surgery. The time from injury to surgery was also documented: 58 of the patients had acute injuries (surgery \leq 2 months from injury), 13 of the patients had subacute injuries (2-6 months since injury), and 31 patients had chronic injuries (surgery \geq 6 months from injury). Range of motion measurements were taken with the goniometer (no reliability of examiner reported) and knee extension strength was isokinetically measured. For analysis of range of motion measures, subjects were divided into three groups: Group 1 (patients who had equal extension bilaterally [n = 42]), Group 2 (patients who lacked 1-4° of extension preoperatively in the involved site [n = 20]), and Group 3 (patients who lacked 5° or more of extension preoperatively [n = 42]). It was determined from Fisher's Exact test that Group 1 was significantly different than Groups 2 and 3. In other words, having 5° loss of motion preoperatively did not increase someone's risk any greater than loss of 1° preoperatively. In addition, patients with acute injuries had significantly greater loss of extension preoperatively than patients with chronic injuries, but the groups were not different six months postoperatively with respect to range of motion. With regard to strength measures, there was a significant difference in strength preoperatively and six months postoperatively (postoperative was stronger). However, across the three groups (based on chronicity), there was no difference in the groups with regard to postoperative strength.

■ COMMENT BY CLAYTON F. HOLMES, EdD, PT, ATC

This study attempted to evaluate the effect of loss of motion and strength preoperatively on postoperative loss of knee extension and postoperative loss of strength. Essentially, the findings of McHugh et al are as follows: "If the patient has loss of strength preoperatively, this cannot predict loss of strength postoperatively. If the patient loses range of motion preoperatively, that increases their chances for postoperative complications relative to loss of knee motion." The most important weakness of this study is the lack of examiner reliability relative to the goniometry. Because of the nature of goniometry, the examiner should establish reliability prior to use in data collection. The most important finding confirms the conclusions of Cosgarea¹ and others who have stated that for best results regarding terminal extension post surgery, a patient should have full extension prior to surgery. This axiom holds true for range of motion but not necessarily strength. Future studies should look at regression models to evaluate the prediction of postoperative complications from preoperative variables. ❖

Reference

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Persistent Disability Associated with Ankle Sprains in Athletes

ABSTRACT & COMMENTARY

Synopsis: *It is important to identify the syndesmotic ligament injury and anticipate that a substantial proportion of even athletically fit individuals will not recover quickly from what appears to be a "simple" ankle sprain.*

Source: Gerber JP, et al. Persistent disability associated with ankle sprains: A prospective examination of an athletic population. *Foot Ankle Int* 1998;19(10):653-660.

A prospective observational study was carried out on all the cadets at the United States Military Academy who presented with ankle injuries during a two-month period. A standardized treatment program for ankle sprains was performed, and all of the injured ankles were reevaluated at six weeks and six months, subjectively, by physical examination, and through functional testing. There were 104 injuries over this two-month time span, with 96 sprains, seven fractures, and one contusion. Sixteen (17%) of the ankle sprains were syndesmosis injuries—injuries of the anterior tibiofibular ligament caused by an external rotation force. This is a higher incidence than reported by others.

While 95% of the injured cadets had returned to sports activities by six weeks, 55% of them reported loss of function and the presence of intermittent pain. Twenty-three percent had some persistent functional impairment as well. Even at six months, while all had returned to full activity, 40% had residual symptoms. A surprisingly high percentage of those with residual symptoms were in the syndesmosis sprain group.

■ COMMENT BY JAMES D. HECKMAN, MD

The simple ankle sprain may not always be so simple. This group of very fit, highly competitive individuals at the United States Military Academy, despite treatment in a rigorously controlled environment, frequently

had persistent symptoms as long as six months after the injury. Gerber and associates identify the syndesmotom sprain as a particular cause of prolonged disability. We usually think of the lateral ligament complex (anterior talofibular and fibulocalcaneal ligaments) as being the ligaments susceptible to injury at the time of a sprain. Often, the syndesmosis is overlooked. Injury to the syndesmosis can be easily identified by careful palpation over the area of the anterior tibiofibular ligament, performing an external rotation stress of the talus in the ankle mortise that will put tension on this ligament,¹ and by performing the “squeeze test.”² This review indicates even a mild syndesmotom sprain may continue to be symptomatic for up to six months and suggests that more aggressive early treatment, perhaps even with the temporary use of an air cast or fracture boot, might facilitate the healing of these syndesmotom injuries. For these injuries, I do not hesitate to provide an initial period of cast immobilization for 10 days to two weeks to facilitate early soft tissue healing.

The study shows that it is important to identify the syndesmotom ligament injury and anticipate that a substantial proportion of even athletically fit individuals will not recover quickly from what appears to be a “simple” ankle sprain. ❖

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CME Questions

1. According to the current study, a patient with a six-month history of loss of knee motion preoperatively:
 - a. is at risk for loss of motion postoperatively.
 - b. is at greater risk for loss of motion postoperatively than a patient with a history of one month of loss of motion.
 - c. is at risk for loss of strength postoperatively.
 - d. a and b only
 - e. a and c only
2. Posterior rotator cuff tears were found to be associated with:
 - a. impingement.
 - b. anteroinferior instability.
 - c. posterior Type II SLAP lesions.
 - d. trauma.

3. Which of the following are considered possible risk factors for noncontact ACL injuries in women athletes?
 - a. Hip valgus and knee varus
 - b. Lower center of gravity and greater length of the ligament
 - c. Greater hamstring to quadriceps strength and less muscle mass per total body weight
 - d. Poor body mechanics and “out of control” play
 - e. Narrower femoral notches and increased hindfoot varus
4. The incidence of recurrent dislocation of the shoulder in the 12- to 22-year-old population is:
 - a. 5%.
 - b. 33%.
 - c. 66%.
 - d. 95%.
5. The currently reported success rate of arthroscopic repair of traumatic anterior shoulder dislocations is:
 - a. 54%.
 - b. 73%.
 - c. 86%.
 - d. 99%.
6. What degree of flexion of the M-P joint should be maintained while testing for instability of the ulnar collateral ligament?
 - a. 0°
 - b. 15°
 - c. 30°
 - d. 45°
 - e. Limit of comfort
7. Not all “simple” ankle sprains heal quickly. This is particularly true of injury to which ligament?
 - a. Deltoid
 - b. Anterior talofibular
 - c. Calcaneofibular
 - d. Anterior tibiofibular

Readers are Invited . . .

Readers are invited to submit questions or comments on material seen in or relevant to *Sports Medicine Reports*. Send your questions to: Robin Mason—Reader Questions, *Sports Medicine Reports*, c/o American Health Consultants, P.O. Box 740059, Atlanta, GA 30374. For subscription information, you can reach the editors and customer service personnel for *Sports Medicine Reports* via the Internet by sending e-mail to robin.mason@medec.com. You can also visit our home page at <http://www.ahcpub.com>. We look forward to hearing from you. ❖

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Little Leaguer’s Shoulder: A Report of 23 Cases