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Background: Repair of the anterior labrum (Bankart lesion) with tightening of the ligaments (capsulorrhaphy) is the recommended treatment for recurrent anterior glenohumeral dislocations. Current evidence suggests that arthroscopic anterior stabilization methods yield similar failure rates for resubluxation and redislocation when compared to open techniques.

Study Design: Case series; Level of evidence, 4

Purpose: To examine the results of arthroscopic anterior shoulder stabilization of high-demand collision and contact athletes.

Methods: Thirteen collision and 5 contact athletes were identified from the senior surgeon's case registry. Analysis was limited to patients younger than 20 years who were involved in collision (football) or contact (wrestling, soccer) athletics. Objective testing included preoperative and postoperative range of motion and stability. Outcome measures included the American Shoulder and Elbow Society shoulder score, Simple Shoulder Test, SF-36, and Rowe scores. The surgical procedure was performed in a consistent manner: suture anchor repair of the displaced labrum, capsulorrhaphy with suture placement supplemented with thermal treatment of the capsule when indicated, and occasional rotator interval closure. Average follow-up was 37 months (range, 24-66 months).

Results: Two of 18 contact and collision athletes (11%) experienced recurrent dislocations after the procedure; both were collision athletes. One returned to play 3 years of high school football but failed after diving into a pool. One patient failed in his second season after his stabilization (>2 years) when making a tackle. None of the contact athletes experienced a recurrent dislocation, with all of them returning to high school or college athletics.

Conclusions: One hundred percent of all collision and contact athletes returned to organized high school or college sports. Fifteen percent of those collision athletes had a recurrence, which has not required treatment. Participation in collision and contact athletics is not a contraindication for arthroscopic anterior shoulder stabilization using suture anchors, proper suture placement, capsulorrhaphy, and occasional rotator interval plication.

Keywords: shoulder instability; arthroscopy; Bankart; athlete

Anterior shoulder dislocations occur commonly in young, active patients. The risk of recurrence approaches 90% to 95% in patients younger than age 20 years.[6] Continued participation in collision sports or activities requiring overhead activity can lead to recurrent subluxation or dislocation.

Arthroscopic stabilization of acute dislocations in young athletes reduces the recurrence rate when compared to nonoperative treatment.[2] Surgery is generally recommended for patients in a young age group with recurrent dislocations or subluxations. Patients who participate in competitive athletics, have failed physical therapy, or have symptoms at rest are also generally recommended surgery.

Two approaches designed to repair the capsulolabral pathoanatomy have been described. These 2 methods are arthroscopic and open stabilization. As techniques have improved arthroscopically, these procedures, which used to differ considerably, are now similar. The major advantages of arthroscopic repair for instability are the ability to accurately identify and treat the specific pathoanatomy, less iatrogenic damage to normal tissues (subscapularis), lower postoperative pain, and improved cosmesis. Some authors also report an easier functional recovery and improved motion than with an open repair method.[5] There are reports that more than 5 dislocations or subluxations is a

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relative contraindication for arthroscopic stabilization.[5,10] We feel that this is not a valid statement, but a thorough workup of various lesions should be performed to rule out bone lesions, humeral avulsion of glenohumeral ligaments, and so forth.

Failure rates in open anterior stabilization have been reported to be between 3% and 10% when the outcome measure was recurrent dislocation.[1,7-9,14,18,20-22,24,25] The open Bankart repair has a 96.5% success rate.

It is not the purpose of this article to compare open with arthroscopic stabilization but to report on a high-risk group of patients who underwent arthroscopic stabilization. Understanding the results of arthroscopic stabilization in this patient population is valuable to surgeons who treat competitive athletes. In the United States, 1 012 420 athletes participated in high school football in 2001 (wrestling, 244 984; soccer, 332 750).[13] These statistics, along with the fact that the orthopaedic surgeon treats high school athletes much more commonly than college or professional athletes, illustrate the potential prevalence of this problem.

PURPOSE

The purpose of this article was to examine the results of arthroscopic stabilization in collision athletes (football) younger than the age of 20 years. We believe that this group has a higher postoperative recurrence rate when treated with this technique.

METHODS

Patient Selection

This study was a retrospective cohort study. A computerized database was searched for patients who underwent arthroscopic anterior stabilization between December 1995 and December 1999 (ICD9-718.31/CPT 23455). One hundred and sixty-five cases were then limited to collision athletes (football and hockey) and contact athletes (wrestling and soccer) younger than 20 years. Thirteen collision (football) and 5 contact (wrestling and soccer) cases were found with a 24- to 66-month follow-up. Indication for surgery included symptomatic "instability" that had failed nonsurgical management and was affecting daily activities.

Dislocation was defined as an instability episode requiring manual reduction. *Subluxation* was defined as a history of the shoulder "slipping" or "popping" out, requiring discontinuation of activity or athletics for at least 1 day.

Preoperative and Postoperative Examinations

The American Shoulder and Elbow Society shoulder score (ASES),[19] the Simple Shoulder Test (SST),[12] the SF-12 (both mental and physical components), and Visual Analog Scales (VAS) scores were obtained prospectively and entered into a database, with follow-up ASES, SST, SF-12, VAS, and Rowe[20] scores obtained. The subjects were tested and rated both before and after surgery. Bone anatomy was retrospectively analyzed using preoperative radiographs, MRIs, and intraoperative photos. These images were analyzed for Hill-Sachs lesions and glenoid shape (pear, oval, or inverted pear).[4] Postoperative data were obtained at 6 months and then again at the latest follow-up available (24-60 months). Patients were contacted by telephone and then examined.

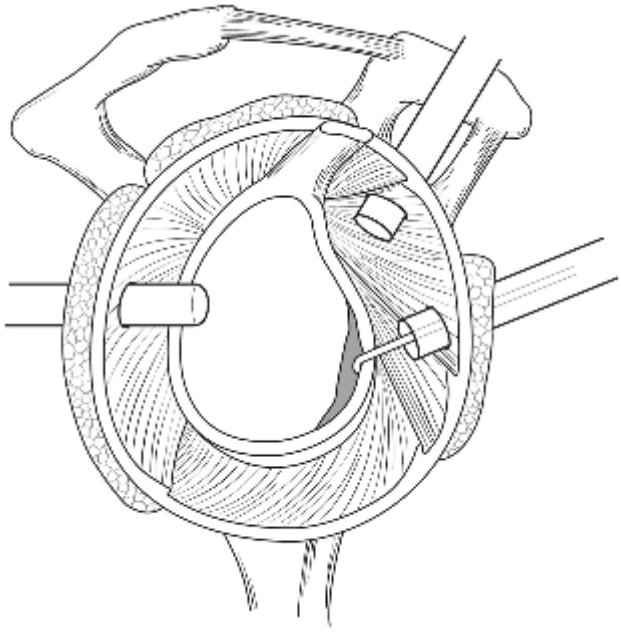

Figure 1. The 5-o'clock portal is established using an outside-in technique. The appropriate position of the portal is localized with an 18-gauge spinal needle. The entry point into the glenohumeral joint should be 1 cm below the upper rolled edge of the subscapularis tendon adjacent to the lateral edge of the middle glenohumeral ligament. A large screw-in cannula is then advanced into the shoulder over a Wissinger rod (Arthrex Inc, Naples, Fla). Establishing the 5-o'clock portal allows direct access to the Bankart lesion.

Surgical Technique

A diagnostic glenohumeral arthroscopy was performed. Once the anterior inferior capsulolabral avulsion was identified, an accessory 5-o'clock portal[15] was made. This portal was inserted 5 to 12 mm inferior to the superior rolled edge of the subscapularis, allowing access to the inferior aspects of the capsule (Figure 1).

Glenoid preparation began with mobilization of the anterior capsulolabral tissue (Bankart lesion) medially along the glenoid neck. A hooded arthroscopic bur was then used to debride the area and create a suitable bed for tissue healing. With the arm in external rotation, 2 to 3 capsular plication sutures were placed in the inferior pouch with the goal of eliminating any redundancy; this was confirmed tactically and visually with elimination of the drive-through sign (Figure 2). Approximately 1 cm of

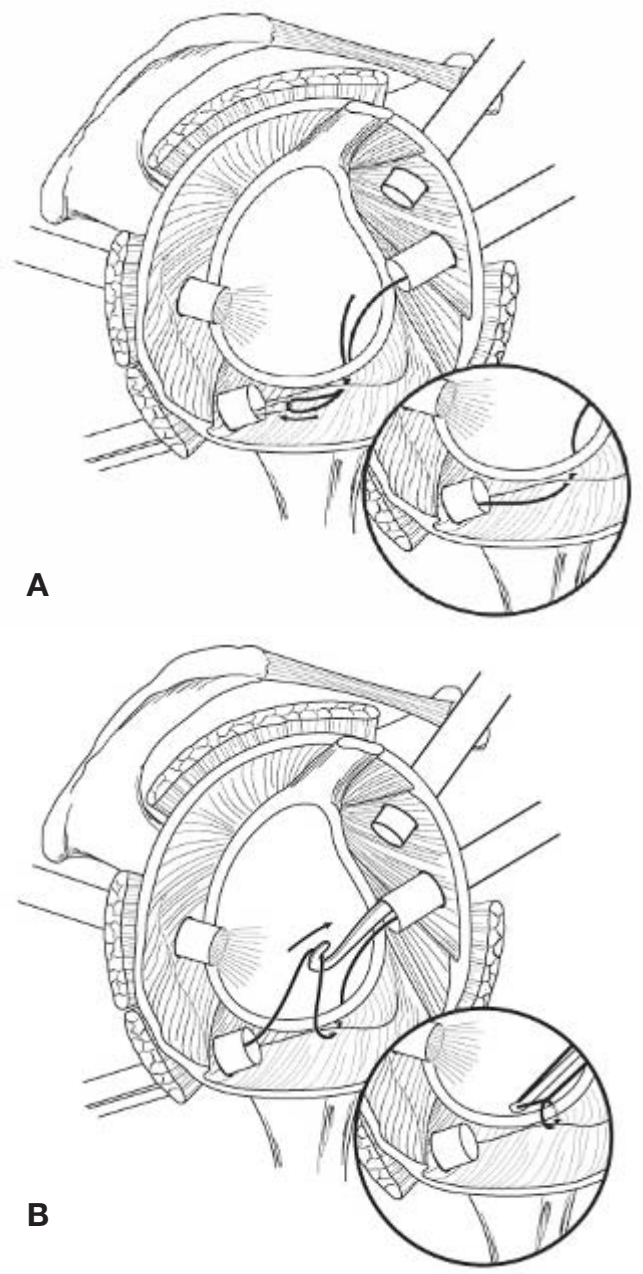

Figure 2. Inferior capsular plication. A suture penetrator is placed in the 7-o'clock portal (A) and plicates the inferior capsule, bringing it to the inferior labrum (B).

tissue was plicated. In 5 cases, the capsulorrhaphy was augmented with the application of thermal energy in a cornrow pattern.

The anchor-first technique was used to repair the capsulolabral lesion. This technique involved placing the anchor into the glenoid first and then shuttling the suture. The advantage of this method is that it allowed separation of anchor placement and tissue repair. The first anchor was placed in the 5-o'clock position 2 mm onto the articular rim at a 45° angle relative to the glenoid surface

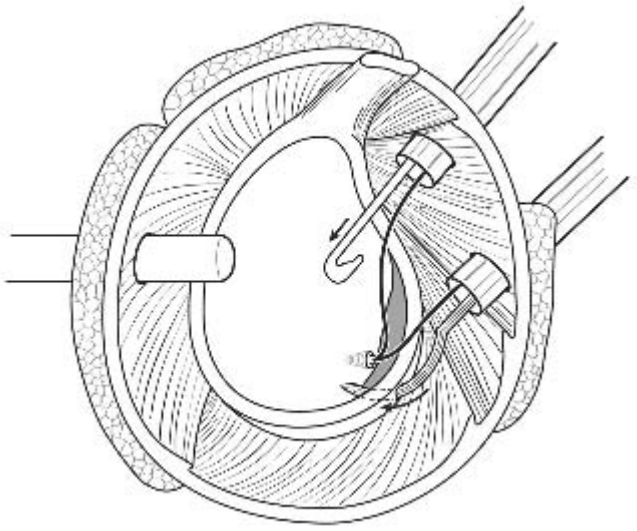

Figure 3. The first anchor is placed at the 5-o'clock position approximately 2 mm on the articular rim with a medial inclination of 45°. A suture retrieval device (or a suture passing device) should be passed through the capsule and labrum inferior to the anchor approximately 1 to 1.5 cm lateral to the medial edge.

(Figure 3). Once the anchor was implanted, the 2-suture limbs were separated. A suture retrieval device was then placed through the capsulolabral tissue, and the appropriate suture attached to the anchor was then shuttled through the tissue. The suture retrieval device was placed inferior to the anchor so that when the knot was tied the capsulolabral tissue was shifted cephalad; this formed a "bumper" of capsulolabral tissue onto the labral surface. Anchors were placed in sequential order approximately 5 to 7 mm apart for a secure repair.

The construct was then evaluated without traction on the arm. If there was persistent inferior laxity, the rotator interval was closed (Figure 4). Additional reduction in laxity was accomplished with thermal treatment of the glenohumeral capsule.

Postoperative Management

Patients' arms are placed into a sling/immobilizer after surgery, and formal therapy is not initiated until sutures are removed at 7 to 10 days after surgery. Postoperative therapy from 2 to 8 weeks involves active assisted range of motion exercises with goals of obtaining external rotation with the arm at the side of 45° to 50°, abduction to 50°, and forward elevation of 140°. From 8 to 12 weeks after surgery, the athlete will regain full motion as well as early isometric strengthening. At 12 weeks after surgery, the athlete is allowed to return to preinjury conditioning programs, including advanced weight training. At 6 months after surgery, the athlete is allowed to participate in contact or collision sports based on range of motion and strength guidelines dictated by the contralateral shoulder.

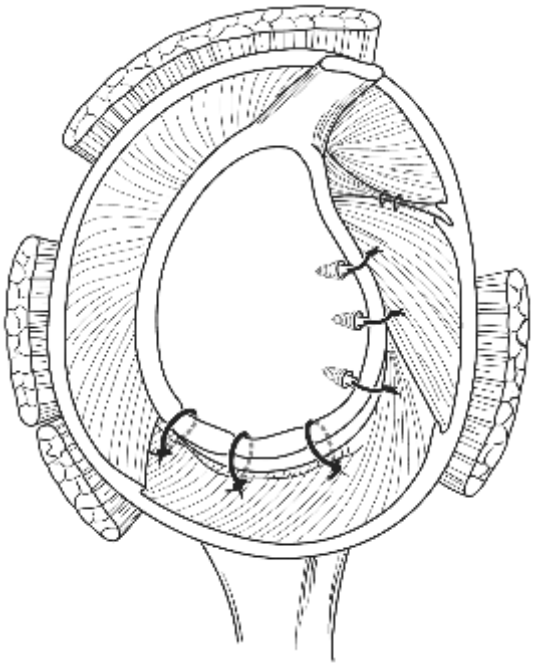

Figure 4. Completed Bankart repair with 3 anchors and capsule plicated inferiorly. The rotator interval is closed.

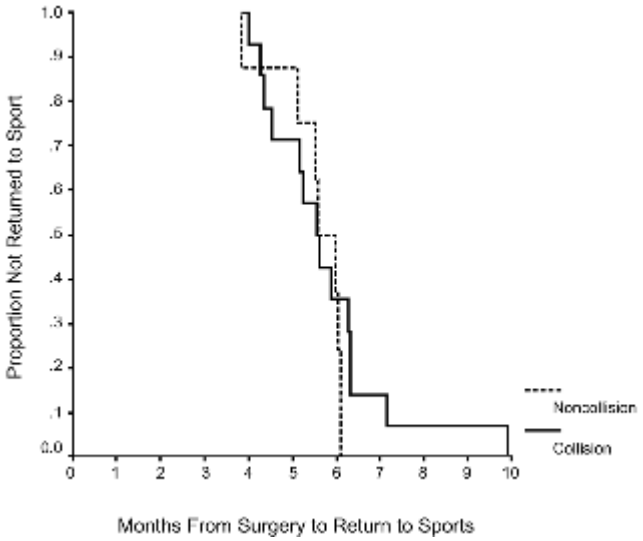

Figure 5. Kaplan-Meier survival curve for return to sport. All athletes returned to their prior level of competition by 10 months (mean = 5.7 months) after surgery.

Statistics

Analysis of variance with Bonferroni post hoc analysis was used for the parametric data obtained (range of motion). The Friedman test, which is a tool for comparing repeated measures, was used to analyze the nonparametric data (outcome measure scores). Kaplan-Meier survival curves were calculated for return to sport. The probability value for significance was set at .05. The Friedman test is the most powerful nonparametric test for repeated measures available.

RESULTS

Patient Demographics

Patient demographics are reported in Table 1. The average age of the contact athletes was 16.6 years, with a mean follow-up time of 36.6 months (range, 24-66 months). The contact athletes were slightly older at 18.0 years, with an average follow-up of 25.6 months after surgery. The average height was 69.7 ± 2.7 in, and average weight was 169.3 ± 20.9 lb. The dominant arm was involved in 13 of 18 patients, with an average time to surgery of 16.3 months (range, 0.5-60 months). All patients had symptomatic anterior instability, with an average of 2.2 subluxations (range, 0-10) and 0.4 dislocations (range, 0-3) requiring emergency department reduction. Three of the 5 contact athletes had previous surgery (subacromial decompression, open Bankart repair, and a diagnostic arthroscopy). None of the 13 collision athletes had previous surgery, evidence of hyperlaxity, or symptomatic posterior instability. Eight of the 13 collision athletes and 1 of the 5 contact athletes had a traumatic dislocation. The other 9 had recurrent subluxations after an inciting event.

Return to Sports

All athletes in this study returned to their level of competition by 10 months after surgery (mean = 5.7 months) (Figure 5). All 13 of the collision athletes and 5 of the contact athletes returned to high school competition, with 2 returning to high school football and then continuing on to participate in Division II football. One of the contact athletes went on to play college baseball, whereas the other wrestled in college.

Outcome Measures

The ASES, SST, VAS, Rowe, and SF-12 physical component were all statistically improved ($P < .05$) after surgery (Table 2). The ASES is based on a 100-point scale. The median score for the ASES is reported because it is a more accurate value for analyzing clinical significance. On the affected side, the ASES was significantly improved ($P < .05$) from 64 to 90 (normal standardized range from 59.7 ± 17.8 to 89.1 ± 11.99). The SST is based on a 12-point scale and was significantly improved ($P < .05$) in both the collision (from 9.4 ± 2.8 to 11.9 ± 0.3) and contact (from 9.0 ± 4.0 to 10.8 ± 2.7) athlete groups. The physical component of the SF-12 for ages 18 to 34 years had a normalized value of 53.3 ± 6.7; this was significantly improved ($P < .05$) from 40.2 ± 3.4 to 49.6 ± 5.3. The VAS, which is based on a 10-point scale, was statistically improved ($P < .05$) from 4.5 ± 2.2 to 1.5 ± 0.7. The Rowe score is based on a 100-point scale and was statistically ($P < .05$) improved in collision (from 68.9 ± 9.6 to 94.2 ± 11.0) and contact (from 75.0 ± 0.0 to 92 ± 11) athletes.

TABLE 1
Patient Demographics for Collision and Contact Athletes

Patient	Age	Height, in	Weight, lb	Dominant Arm	Affected Arm	Preoperative Instability Episodes	
						Dislocation	Subluxation
Collision athletes							
1	14	70	165	Right	Left	0	3
2	15	67	160	Right	Right	3	0
3	20	73	195	Right	Left	3	0
4	23	69	166	Right	Left	1	0
5	16	73	215	Right	Right	1	3
6	18	68	180	Right	Right	2	0
7	18	67	170	Right	Right	2	1
8	15	65	135	Right	Right	0	>10
9	15	69	140	Right	Right	1	0
10	17	71	160	Right	Right	0	>10
11	17	69	162	Right	Right	0	>10
12	14	70	160	Right	Left	0	1
13	14	68	155	Right	Right	1	2
Mean	16.6	69.2	166.4				
SD	2.7	2.3	21.1				
Contact athletes							
14	20	73	200	Right	Right	0	2
15	18	69	165	Right	Left	1	2
16	18	72	155	Right	Right	0	4
17	17	66	170	Right	Right	0	5
18	17	75	195	Right	Right	0	6
Mean	18.0	71.0	177.0				
SD	1.2	3.5	19.6				

Patient	Time From Injury to Surgery, d	Return to Sport, mo	Follow-up, mo	Sport	Sport Level	Dislocation/ Subluxation After Surgery	Traumatic Instability
Collision athletes							
1	130	6	24	Football	High school	Yes (22 months)	Yes
2	557	5.5	42	Football	High school	No	Yes
3	1172	5	26	Football	High school	No	Yes
4	1842	6	35	Football	High school	No	Yes
5	829	6.5	25	Football	High school	No	Yes
6	199	6.5	25	Football	High school	No	Yes
7	356	7	29	Football	College	No	Yes
8	33	5	48	Football	College	No	Yes
9	23	10	60	Football	High school	Yes (60 months)	Yes
10	401	6	33	Football	High school	No	Yes
11	931	4	66	Football	High school	No	Yes
12	221	4.5	28	Football	High school	No	Yes
13	201	4.5	32	Football	High school	No	Yes
Mean			5.9	36.4			
SD			1.5	14.7			
Contact athletes							
14	72	6	25	Soccer/baseball	College	No	Yes
15	880	6	24	Wrestling	College	No	Yes
16	257	5	24	Wrestling	High school	No	Yes
17	386	5.5	26	Soccer	High school	No	Yes
18	445	6	29	Soccer/basketball	High school	No	Yes
Mean			5.7	25.6			
SD			0.5	8.3			

TABLE 2
Outcome Measures for Collision and Contact Athletes[a]

	ASES		SST		Rowe		Pain VAS (1-10)		SF-12 PCS		SF-12 MCS	
Patient	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Collision athletes												
1	82	76	12	12	75	75	3	3	45	44	45	46
2	30	95	4	12	75	100	6	1	53	52	50	50
3	87	90	12	12	75	100	1	1	47	52	51	50
4	83	88	11	12	75	75	3	2	39	45	43	53
5	75	90	11	12	75	100	3	2	41	46	50	49
6	75	95	11	12	55	100	3	1	40	45	52	56
7	73	90	11	12	75	100	3	2	39	45	43	56
8	35	95	5	12	55	100	8	1	47	57	55	61
9	58	90	6	12	55	100	5	2	36	47	54	49
10	50	80	7	12	75	75	6	1	39	56	52	60
11	55	95	10	12	75	100	7	1	41	47	50	49
12	48	95	10	12	75	100	7	1	39	46	51	49
13	78	90	12	12	55	100	3	1	38	45	48	56
Mean	63.9	89.9	9.4	11.9	68.9	94.2	4.5	1.5	41.7	48.2	49.5	52.6
SD	18.9	6.0	2.8	0.3	9.6	11.0	2.2	0.7	4.8	4.5	3.8	4.7
Contact athletes												
14	37	90	10	12	75	100	10	2	45	47	53	53
15	80	95	11	12	75	100	3	1	45	53	56	55
16	62	62	10	6	75	80	2	4	38	40	37	42
17	52	100	2	12	75	100	3	1	39	57	51	58
18	78	95	12	12	75	80	3	1	47	56	47	60
Mean	61.7	88.4	9.0	10.8	75.0	92.0	4.2	1.8	43.1	50.6	48.7	53.6
SD	18.3	15.2	4.0	2.7	0	11.0	3.3	1.3	3.9	7.1	7.3	7.0

[a]ASES, American Shoulder and Elbow Society shoulder score; SST, Simple Shoulder Test; VAS, Visual Analog Scales; PCS, Physical Component Summary; MCS, Mental Component Summary.

Physical Examination

There was no statistical difference ($P > .05$) in preoperative or postoperative range of motion (Table 3) or in the SF-12 mental component. In all cases, apprehension and relocation tests were negative after surgery. In the collision athlete group, there was a slight decrease in the external rotation of the affected arm in adduction (74° ± 11° to 67° ± 11°) but a slight increase in external rotation of the arm in 90° of abduction (83° ± 19° to 84° ± 8°) after surgery.

Surgical Results

Surgical results are summarized in Table 4. The magnitude of the capsulolabral disruption was quantified by using hours on the face of a clock (eg, standard Bankart lesion from 3 to 6 = 3-hour injury). The average magnitude of injury was 3.2 hours (range, 3-8 hours), and the average number of anchors used for repair was 3.55 (range, 2-6). A permanent braided suture was used in 12 of 18 (66%) of patients. A long-term absorbable braided suture was used to plicate the capsule in 1 of 18 (5%), and a monofilament suture used in 5 of 18 (27%) patients. Thermal capsulorrhaphy was used in 5 of 18 (28%) patients to augment the suture plication, and the rotator interval was closed in 1 of 18 (5%) patients.

Failure

Two patients in the collision group were characterized as failures. The first patient (Patient 1) sustained 3 episodes of resubluxation. During the index procedure, it was noted that he had a capsulolabral lesion from 11 to 6 o'clock. The repair was performed using suture anchors. No thermal capsulorrhaphy, suture plication, or interval closure was performed in this patient. At 22 months after surgery, the patient was playing football again, and with his arm at the side he was involved in a pileup in which his arm was forced into extension. The patient noticed pain and had a feeling of soreness afterward and increased looseness. The patient was able to continue football that season and has required no treatment at this time. At his 60-month follow-up, he was stable, and in further interviews at 80 months after surgery, the patient was a personal trainer with mild symptoms.

The second patient (Patient 9) had a traumatic dislocation reduced in the emergency department. The patient recovered and returned to competition. Three years after surgery, a subluxation incident was noted. No increased laxity was found on examination, and after rehabilitation he successfully returned to football. Five years after surgery, a subluxation event occurred while he was diving into

TABLE 3
Physical Examination Results for Collision and Contact Athletes

	External Rotation 90°		External Rotation Side		Forward Elevation		Internal Rotation		Apprehension Test (0-3)		Relocation Test		Sulcus Sign (0-3)	
Patient	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Collision athletes														
1	90	80	80	75	180	180	T7	T1	2	2	+	–	1	0
2	20	70	80	45	140	180	T11	T12	2	0	+	–	2	0
3	90	80	90	80	180	180	T7	L1	2	0	+	–	1	0
4	70	85	66	60	152	148	T4	T3	2	0	+	–	0	0
5	90	100	80	74	180	160	T7	T4	2	0	+	–	1	0
6	90	90	75	80	180	180	T9	T7	0	0	–	–	0	0
7	90	90	90	80	180	180	T11	T7	2	0	+	–	1	0
8	92	90	70	45	160	165	T3	T7	2	0	+	–	1	0
9	90	85	65	70	180	170	T7	T4	2	0	+	–	1	0
10	90	90	70	70	180	180	T7	T7	2	0	+	–	1	0
11	80	95	80	64	180	168	T8	T4	2	0	+	–	1	0
12	90	75	75	70	170	160	T7	T3	2	0	+	–	2	0
13	90	85	45	70	180	180	T2	T7	2	0	+	–	1	0
Mean	82.5	85.8	74.3	67.9	172.5	171.6								
SD	19.7	8.1	11.8	11.8	13.4	10.7								
Contact athletes														
14	92	100	80	90	160	180	T9	T4	2	0	+	–	2	0
15	90	90	85	90	180	180	T4	T7	2	0	+	–	1	0
16	75	80	60	74	170	170	T7	T10	2	0	+	–	1	0
17	70	90	70	90	180	180	T9	T12	2	0	+	–	1	0
18	100	110	120	60	180	180	T7	T12	2	0	+	–	1	0
Mean	85.4	94.0	83.0	80.8	174.0	178.0								
SD	12.5	11.4	22.8	13.5	8.9	4.5								

a pool. The patient was again treated without surgery, and no further treatment has been required.

Bone Lesions

In a retrospective analysis, 1 of the failures had an inverted pear glenoid (Table 4), and no engaging Hill-Sachs lesions were found for any of the failures; however, 1 of the successful repairs did have an engaging Hill-Sachs lesion that was seen on the intraoperative photographs, preoperative radiographs, and operative note. No other bone lesions were detected.

Postoperative Symptoms

Postoperative symptoms were minimal. One patient did report a significant number of "barometric" symptoms, meaning that the shoulder was sore or achy in cold or wet weather. Two of the 18 patients reported being very cautious of their shoulders at >2 years' follow-up. One patient reported that he felt his shoulder was slightly weaker. All patients reported that they would recommend this surgery, and 15 of 18 would repeat the surgery on the other arm if indicated. One patient reported vague anterior shoulder pain when palpating the anterior aspect of the arm. The 5-o'clock portal goes through the subscapularis tendon. We were worried that this might lead to residual pain, so we inquired about it in our questionnaire.

DISCUSSION

The purpose of this article was to analyze a high-risk group of patients with chronic anterior shoulder dislocations, treated arthroscopically and generalizable to the orthopaedic sports medicine community. More than 1 million high school athletes participate in football alone, with anterior shoulder dislocations being a common injury. It was the intent of this study to aid in the decision-making process for surgeon, parent, trainer, and coach because of the reported high recurrence rate in this group.

The technique used in this article closely mimics the technique used for open surgery. A debridement of the capsular labral tissue is performed. The glenoid neck and surface are debrided to a bleeding bed. Suture anchors are then placed at a 45° angle 2 to 3 mm onto the articular surface. A capsular plication and repair of the labrum to form a bumper are performed. The arm is then taken through range of motion, and, if indicated, a rotator interval closure is completed. The indication for rotator interval closure was increased anterior translation after capsule plication and Bankart repair. Thermal capsulorrhaphy was used in the beginning to augment repairs, but the tech-

TABLE 4
Surgical Results and Findings for Collision and Contact Athletes

Patient	Position[a]	Glenoid Type	Hill-Sachs	Magnitude of Injury, h[b]	Number of Anchors	Plication Suture Type[c]	Rotator Interval Closure	Thermal
Collision athletes								
1[d]	LD	Inverted pear	Small	8	5	Pan	No	No
2	LD	Oval	Medium	4	3	Per	No	No
3	BC	Pear	Small	5	4	Per	No	No
4	LD	Pear	Small	4	3	Per	No	No
5	BC	Pear	Large	3	3	PDS	No	No
6	BC	Pear	Small	8	6	PDS	No	No
7	LD	Pear	Small	6	3	Per	No	No
8	BC	Pear	Small	4	5	PDS	Yes	No
9[d]	BC	Pear	Small	5	3	Per	No	No
10	BC	Oval	Small	5	5	Per	No	Yes
11	BC	Pear	Large	4	3	Per	No	No
12	BC	Pear	Small	4	3	Per	No	No
13	LD	Oval	Small	4	4	Per	No	Yes
Contact athletes								
14	BC	Pear	Small	4	2	Per	No	Yes
15	BC	Oval	Small	4	4	Per	No	No
16	LD	Pear	Small	3	3	PDS	No	Yes
17	BC	Pear	Small	5	4	Per	No	No
18	LD	Pear	Small	4	1	PDS	No	Yes

[a]LD, lateral decubitus; BC, beach chair.
[b]Labral lesions occur with varying magnitudes in a circumferential manner that may be quantified by correlating them to the positions on a clock. The 12-o'clock position is the superior-most aspect of the glenoid labrum.
[c]Per, permanent; Pan, Panacryl; PDS, absorbable, monofilament polymer of polydioxanone.
[d]The two patients who failed were both collision athletes.

nique has evolved to the use of suture plication beginning at the posterior inferior glenohumeral ligament and to then move anteriorly.

All outcome measures were significantly improved, and patient satisfaction was excellent. There was not a significant decrease in range of motion after surgery. All patients returned to their previous level of competition. An excellent patient satisfaction rating, relatively normal range of motion, and a return to high school athletics within 6 to 7 months was the preoperative goal that was successfully reached in this study.

Fifteen percent (2 of 13) of the contact athletes were considered failures after 2 and 5 years. These patients sustained a subluxation event that did not require further treatment. This failure rate is consistent with other reports of stabilization of collision athletes. Uhorchak et al reported a 23% (15 of 66) failure rate for open Bankart repairs and capsular shifts in collision athletes,[23] Pagnani and Dome reported a 3% (2 of 58) subluxation rate for collision athletes,[17] O'Neill reported a 12% (2 of 17) resubluxation event in collision athletes using a transglenoid arthroscopic technique,[16] and Bacilla et al reported a 5% (1 of 21) dislocation rate in football players using arthroscopic suture anchors.[3] The relative success of Bacilla et al is thought to be because of the surgical technique that closely mimics the open technique (nonabsorbable suture, capsular plication, and rotator interval closure). Previous arthroscopic reports with anchors did not always plicate or close the interval, which may have contributed to the failure rate.

There are several potential criticisms of this study. The follow-up period is relatively short and will need to be continued. Manta et al reported that their results deteriorated (10%-30%) from the 2- to 5-year follow-up.[11] There is a potential for bias on treatment selection, as this was a retrospective cohort study with no treatment randomization or control group. This study comprised a small group, which may make comparison to the larger population more difficult.

The technique used in this article was varied and occasionally used thermal surgery to augment the suture anchor repair. This technique has been abandoned at this time in favor of suture plication. The arthroscopic technique that should be used to minimize failures involves using nonabsorbable sutures, creating a bumper with the capsulolabral tissue, placating redundancy in the inferior pouch, and closing the rotator interval if indicated.

This study had a 100% return to high school athletics and a 15% recurrence rate after 2 years. Arthroscopic stabilization of chronic anterior dislocations in athletes who participate in collision athletics is a viable option. Using the suture anchor/plication technique with this group can be successful. Collision athletics are not relative contraindications to arthroscopic repair.

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