Primary Versus Revision Arthroscopic Reconstruction With Remplissage for Shoulder Instability With Moderate Bone Loss


Purpose: This study aims to evaluate our outcomes of arthroscopic remplissage in this setting. Methods: A retrospective review was performed to identify patients who underwent arthroscopic remplissage of an engaging Hill-Sachs lesion along with anterior capsulolabral reconstruction for anterior glenohumeral instability with moderate glenohumeral bone loss at our institution. Thirty-five patients, with a minimum of 2 years’ follow-up, were identified. We assessed the American Shoulder and Elbow Surgeons score, incidence of recurrent instability, and postoperative Rowe instability score.

Results: Follow-up was available for 30 patients (31 shoulders). The mean age was 24.6 years, with a mean follow-up period of 41 months. Prior instability surgery had failed in 11 patients, and they underwent capsulolabral reconstruction and remplissage (“revision surgery”). The failure rate in revision cases (36%) was significantly higher than the failure rate in primary surgery cases (0%) (P = .01). Failure resulted from trauma in all 4 patients, and none required further surgery. The mean American Shoulder and Elbow Surgeons score for all patients improved from 50 preoperatively to 91 postoperatively (P < .001), with no significant postoperative difference between primary and revision patients (P = .13). The patients with clinical failure showed nonsignificant improvement from 41 preoperatively to 72 postoperatively (P = .08). The mean postoperative Rowe score for the entire cohort was 90. The Rowe score was significantly lower in the 4 cases of failure than in the 27 non-failure cases (51 vs 96, P < .001). Conclusions: In our experience, aggressive capsulolabral reconstruction with remplissage in traumatic instability patients with moderate bone loss and engaging humeral Hill-Sachs lesions yields acceptable outcomes for primary instability surgery. However, a significantly higher failure rate occurred when arthroscopic reconstruction with remplissage was performed in the revision setting. Level of Evidence: Level IV, therapeutic case series.

Arthroscopic Bankart reconstruction has become routine in the treatment of traumatic glenohumeral instability; however, an increased rate of failure of arthroscopic treatment has been associated with bone loss from both the glenoid and humerus. The surgical management of glenoid bone loss has been described extensively with both open and arthroscopic techniques, but fewer series have reported outcomes of the surgical treatment of humeral bone loss.

In 1948 Palmer and Widen suggested that the Hill-Sachs deformity was the essential lesion of recurrent instability. Contrary to the original claim made by Bankart in 1923, Palmer and Widen stated that “the most logical treatment would be to reconstruct the head by filling in the compression hollow; [however] for technical reasons this is not practicable and we must therefore concentrate on the lesion at the anterior rim.” In 1972 Connolly described infraspinatus tenodesis and posterior capsulodesis through an open posterior approach to convert the Hill-Sachs lesion into an extra-articular entity. Purchase et al. subsequently published their arthroscopic technique of posterior capsulodesis with infraspinatus tenodesis using suture anchors, which they termed “remplissage” (French for “filling”).

Several studies reporting short-term outcomes (24 to 38 months) with arthroscopic remplissage have shown favorable rates of failure—defined as recurrent instability or revision surgery—of 0% to 15% in this
challenging patient population. The purpose of this study was to evaluate our outcomes of arthroscopic remplissage in the setting of moderate glenohumeral bone loss with an engaging Hill-Sachs lesion. Our hypothesis was that arthroscopic remplissage for patients at high risk of failure of Bankart reconstruction would yield acceptable and equivalent outcomes for both primary and revision surgery.

**Methods**

Institutional review board approval was obtained for a retrospective review of consecutive patients who underwent arthroscopic Bankart reconstruction for recurrent anterior shoulder instability with remplissage of a Hill-Sachs lesion at our institution, in whom a minimum of 24 months of follow-up could be obtained.

As described by Burkhart and DeBeer, the primary indication for remplissage was an engaging Hill-Sachs lesion identified at the time of surgery by either direct arthroscopic visualization or examination under anesthesia showing fixed glenohumeral dislocation. Hill-Sachs lesions were considered to engage if the humeral head lesion traversed the anterior glenoid rim in less than 90° of abduction and 90° of external rotation. Patients were recognized as candidates for remplissage if preoperative imaging showed a Hill-Sachs lesion of more than 10% but less than 50% of the humeral articular surface along with estimated glenoid bone loss of less than approximately 25%. Measurements were made on preoperative axillary lateral radiographs and correlated with axial sequences on advanced imaging studies. Many patients in this largely referral-based population presented with advanced imaging (e.g., magnetic resonance arthrogram or computed tomography scan) that had already been completed; for economic considerations, patients were not required to undergo standardized repeat or additional advanced imaging. The decision to perform remplissage without glenoid augmentation was then confirmed intraoperatively by use of the bare-spot method to verify that less than 25% glenoid bone loss was present (Fig 1). Surgeries were performed by 1 of 3 surgeons, and both revision and primary procedures were included in this review. Patients underwent determination of their preoperative functional status by the American Shoulder and Elbow Surgeons (ASES) score. Patients undergoing concomitant glenoid bone grafting or coracoid transfer were excluded from this retrospective review.

Patients underwent induction with general anesthesia after receiving a regional nerve block and were placed in the lateral decubitus position with the body oriented 30° from the perpendicular to position the glenoid parallel to the floor. An examination under anesthesia was performed with instability graded as 1+ (translation to the glenoid rim), 2+ (beyond the glenoid rim with spontaneous reduction), or 3+ (beyond the glenoid rim without spontaneous reduction). All patients in this study showed 2+ to 3+ instability. A posterior portal was established, and engagement of the Hill-Sachs lesion was confirmed during diagnostic arthroscopy (Fig 2, Video 1 [available at www.arthroscopyjournal.org]). Anterosuperior and anteroinferior portals were then established in preparation for the reconstruction. The Bankart lesion was mobilized to allow an adequate anterosuperior capsular shift. For the capsulolabral reconstruction, standard nonmetallic labral anchors, with locking arthroscopic knots, were used in all cases, with selection of single- or double-loaded anchors based on surgeon preference. The anteroinferior glenoid anchors were placed followed by suture passage, but tying was not immediately performed. Remplissage was performed at this time because adequate access to and visualization of the posterior humeral head is maximal before reduction of the capsular volume with capsulorrhaphy.

Remplissage was performed while the surgeon was viewing from the anterosuperior portal (Fig 3). The posterior cannula was redirected toward the Hill-Sachs defect, the lesion lightly abraded with a shaver, and the fracture bed tapped. A standard, double-loaded, nonmetallic rotator cuff anchor was placed through the cannula. The cannula was then backed outside of the capsule and rotator cuff layers, and the sutures were passed in a retrograde manner by use of a commercially available, angled retrieval device (IDEAL suture grasper; DePuy Mitek, Raynham, MA). The sutures were retrieved in a double-mattress suture fashion with limbs positioned on either side of the capsular rent created by the cannula. Knots were tied and the sutures were cut in a percutaneous fashion while the arthroscope was maintained in the intra-articular space. The anterior Bankart reconstruction was

![Fig 1. Superior view measuring bone loss from bare spot (arrow) to anterior glenoid rim. © Felix H. Savoie III.](image_url)
then completed by tying the anteroinferior sutures and placing additional glenoid anchors as indicated by the pathologic pattern. In some cases the remplissage sutures were not tied until after Bankart reconstruction was attained.

Postoperatively, the extremity was immobilized in a pillow sling, with periscapular exercises and range of motion of the elbow, wrist, and hand initiated early. Gentle shoulder range of motion was begun at 1 week, and formal physical therapy was started at 4 weeks. Return to most activities was permitted around 4 months postoperatively and competitive athletics after 6 months.

Patients were routinely evaluated at 1 week, 4 weeks, 12 weeks, 6 months, and 1 year. They were contacted at a minimum of 24 months postoperatively, asked to complete a written survey, and requested to return for physical examination conducted by an unblinded, fellowship-trained orthopaedic surgeon. Informed consent was obtained. ASES and Rowe scores were calculated, and patients were screened for surgical failure, defined as dislocation, subluxation, or revision instability surgery. Data were analyzed with the Student t test and Fisher exact test to assess for significance. Details were elicited regarding all reported redislocation

Fig 2. (A) A right shoulder in the lateral decubitus position viewed from the posterior portal during diagnostic arthroscopy shows combined glenohumeral bone loss with a large Hill-Sachs lesion. (B) Dynamic engagement of the Hill-Sachs lesion occurred when the shoulder was abducted and externally rotated. © Felix H. Savoie III.

Fig 3. (A) In the same patient shown in Fig 2, with viewing from the anterosuperior portal, the humeral head Hill-Sachs lesion is abraded with a shaver and tapped after redirecting the posterior portal toward the fracture bed. (B) A double-loaded suture anchor is placed by a standard percutaneous technique. (C) The sutures are retrieved in a double-mattress suture fashion. (D) Intra-articular appearance of completed remplissage while knots are tied. © Felix H. Savoie III.
and subluxation events by a fellowship-trained orthopaedic surgeon. Subluxation was identified as a specific event during which the patient had a mechanical sensation of instability with immediate, spontaneous reduction.

**Results**

**Demographic Characteristics**

A total of 36 shoulders in 35 patients were identified. Follow-up was available on 31 shoulders (30 patients, 86% follow-up); the remaining 5 patients were lost to follow-up. The mean age at the time of remplissage was 24.6 years (range, 15.8 to 44.7 years). The mean follow-up period was 41 months (range, 24 to 68 months); 11 patients (35%) had follow-up of 4 years or more. There were 29 male patients (30 shoulders) and 1 female. Remplissage was performed in the context of revision surgery in 11 patients (11 shoulders) (Table 1). No patients were involved in Workers’ Compensation claims.

In 16 patients (52%) preoperative imaging indicated that they would be candidates for remplissage; however, in 15 patients (48%) the significance of combined bone loss was not recognized until the time of surgery. Suture anchors with a mean of 4.6 labral fixation points (range, 3 to 6 fixation points) were used. Remplissage was performed with 1 double-loaded rotator cuff anchor in 30 shoulders; the remaining patient received 2 single-loaded rotator cuff anchors.

Concomitant pathology identified in addition to moderate-grade bone loss included the following: high-grade chondromalacia (Outerbridge grade III or IV\(^1\)) in 10 patients (32%), low-grade chondromalacia (Outerbridge grade I or II) in 2 (6%), loose bodies in 3 (10%), anterior labral periosteal sleeve avulsion in 2 (6%), type III SLAP tear in 1 (3%), type IV SLAP tear in 1 (3%), and traumatic capsular tear within the rotator interval in 1 (3%).

The mean age of the patients undergoing revision surgery was 23.0 years (range, 16.9 to 44.8 years) versus 25.5 years (range, 15.8 to 42.8 years) in the primary surgery patients \((P = .42)\). The mean follow-up period in the revision subset was 41 months (range, 24 to 68 months), which was similar to that in the primary surgery cohort (40 months; range, 24 to 63 months) \((P = .86)\).

Of the 20 primary surgeries, 18 involved patients who had had 3 or more instability episodes as a result of a traumatic event. The remaining 2 patients elected to undergo surgical treatment after only 2 instability episodes. One of these patients was unable to play high-level competitive ice hockey because of his shoulder; the other patient was a rugby player who had been previously treated surgically for recurrent traumatic instability of the contralateral shoulder. One patient in this subset had multidirectional instability, and 1 patient had a seizure disorder.

### Table 1. Characteristics of Patients Undergoing Bankart Reconstruction With Remplissage in Primary and Revision Settings

<table>
<thead>
<tr>
<th></th>
<th>Primary Surgery</th>
<th>Revision Surgery</th>
<th>(P) Value</th>
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<tbody>
<tr>
<td>No. of cases</td>
<td>20</td>
<td>11</td>
<td>NA</td>
</tr>
<tr>
<td>Age at surgery (yr)</td>
<td>25.5</td>
<td>23.0</td>
<td>.42</td>
</tr>
<tr>
<td>Follow-up (mo)</td>
<td>40</td>
<td>41</td>
<td>.86</td>
</tr>
<tr>
<td>Concomitant MDI</td>
<td>1</td>
<td>2</td>
<td>.28</td>
</tr>
<tr>
<td>Supplemental RI plication</td>
<td>6</td>
<td>7</td>
<td>.13</td>
</tr>
<tr>
<td>No. of anchors</td>
<td>2.8</td>
<td>2.9</td>
<td>.8</td>
</tr>
<tr>
<td>Clinical failures</td>
<td>0</td>
<td>4</td>
<td>.01*</td>
</tr>
<tr>
<td>Preoperative ASES score</td>
<td>52</td>
<td>48</td>
<td>.62</td>
</tr>
<tr>
<td>Postoperative ASES score</td>
<td>94</td>
<td>86</td>
<td>.13</td>
</tr>
<tr>
<td>Postoperative Rowe score</td>
<td>96</td>
<td>80</td>
<td>.009*</td>
</tr>
</tbody>
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MDI, multidirectional instability; NA, not applicable; RI, rotator interval.

*Statistically significant \((P < .05)\).

Of the 11 revision surgery patients, 6 had recurrent instability within 1 year of the index operation, with a mean time to surgery of 13 months (range, 8 to 23 months) postoperatively. The remaining 5 patients underwent revision at a mean of 7 years (range, 2 to 10 years) after the index operation. One of these patients had undergone 2 previous arthroscopic stabilizations at 2 years and 5 years before his third reconstruction with remplissage. Two patients in this subset had a diagnosis of multidirectional instability. Four patients had been previously operated on at our institution, and 7 were referred from other clinics.

**Failure**

Postoperatively, 4 patients (4 shoulders, 13%) sustained an instability event. One of these patients had a frank dislocation during a fall off of a truck bed at a construction site 23 months postoperatively; he had returned to work at the time of the last follow-up. The remaining 3 patients had subluxations during athletic activity (softball collisions in 2 and a rock climbing accident in 1) at 27, 42, and 50 months postoperatively. One of these patients chose not to continue to play softball; the others returned to recreational sports. No patients had undergone further surgery at final follow-up.

The failure rate in patients with 4 years of follow-up or more was 18% (2 of 11 shoulders). This was not significantly different from the 10% failure rate (2 of 20 shoulders) in patients with shorter follow-up \((P = .6)\). In patients undergoing supplemental rotator interval plication, the failure rate of 15% (2 of 13 shoulders) was not significantly different from that in patients in whom the additional procedure was not performed \((11%, 2 of 18 shoulders)\) \((P > .9)\).

All 4 failures occurred in revision cases: 4 of 11 revisions (36%) compared with 0 of 20 primary surgeries \((P = .01)\). No significant difference was noted in cases of failures in terms of indication for remplissage, degree of bone loss, duration since initial episode of instability, or...
number of prior instability episodes. Three patients underwent their index surgery elsewhere. In the remaining patient, multidirectional instability was present and 2 prior arthroscopic stabilizations at our institution had failed. No specific preoperative or intraoperative findings could be identified retrospectively that may have predisposed these previously operated on patients to failure of revision reconstruction.

### ASES Score

The ASES score for the entire population improved from 50 (range, 5 to 90) preoperatively to 91 (range, 37 to 100) postoperatively \((P < .001)\) (Tables 2 and 3). Both the primary and revision subsets showed significant postoperative improvements in ASES scores: 52 preoperatively to 94 postoperatively in primary cases \((P < .001)\) and 48 to 86 in revision cases \((P < .001)\). As expected, the non-failure cases showed a significant improvement in mean ASES score as well, from 52 preoperatively to 95 postoperatively \((P < .001)\). The 4 failure cases showed a nonsignificant trend toward improvement, from 41 preoperatively to 72 postoperatively \((P = .08)\).

The primary surgery patients had slightly better postoperative ASES scores than the revision patients, 94 versus 86, but this was not significant \((P = .13)\).

### Rowe Score

The mean postoperative Rowe score for the entire cohort was 90 (range, 45 to 100). In the failure cases, it was only 51, which was significantly lower than that in the non-failure cases, 96 \((P < .001)\). The primary subset did significantly better in terms of the Rowe score when compared with the revision cohort because this included 4 failures \((96 \times 80, P = .009)\). However, when the failure cases were excluded from the revision cohort, the mean Rowe score in the revision non-failure cases was equal to that in the primary patients \((96 \times 96, P = .95)\).

### Discussion

Rowe et al.\(^1\) found that a Hill-Sachs lesion was present in 76% of patients in whom surgical treatment of recurrent instability failed, although only 14% of those patients were determined to have a “large” Hill-Sachs defect (4 cm long, 1 cm wide). This finding suggests that even relatively small Hill-Sachs lesions may be functionally significant if a corresponding anterior glenoid deficiency is present. This pathologic bony environment is responsible for the loss of articular congruity originally illustrated by Palmer and Widen\(^7\) and forms the premise behind the concept of the engaging Hill-Sachs lesion as described by Burkhart and DeBeer\(^1\) in 2000. In their series they noted a 67% failure rate in patients with significant bone loss compared with a 4% failure rate in those without a complicating bony deficiency. Significant attention has been dedicated to the optimal treatment of instability patients at high risk of failure of surgical stabilization, including those with a moderate degree of glenohumeral bone loss. This report represents a series of patients from this high-risk subset who were treated with primary or revision arthroscopic Bankart reconstruction with supplemental remplissage.

For the original remplissage technique, described by Purchase et al.,\(^10\) a recurrent instability rate of 7% (2 of 24) was reported, but no further details were given on this population. Several recent series have shown favorable short-term outcomes (mean follow-up, 18 to 30 months) with arthroscopic Bankart reconstruction and remplissage, with reported recurrence rates of 0% to 15%.\(^11\) Park et al.\(^11\) reported an instability rate of 15% (3 of 20 patients) in their series of patients with large Hill-Sachs lesions, which included 2 revision cases. Nourissant et al.\(^12\) performed arthroscopic Bankart reconstruction with remplissage in 15 patients in whom treatment of the Hill-Sachs lesion would reduce the Instability Severity Index Score\(^21\) to 4 or lower; the number of revision cases was not specified. Their single failure (7%) resulted from a seizure. Haviv et al.\(^13\) reported 0 failures among 11 patients treated with remplissage for intraoperatively diagnosed engaging Hill-Sachs lesions; they did not indicate whether any patients had undergone prior surgery. An 8% failure rate (4 of 49 patients) was documented in the largest series involving remplissage, by Zhu et al.\(^14\); none of their patients were revision cases. Boileau et al.\(^15\) reported on 47 patients who underwent remplissage for purely humeral-sided bone loss, and 9 of these patients had prior instability surgery (6 open Bristow-Latarjet procedures, 1 open Bankart reconstruction, and 2 arthroscopic Bankart procedures). Their 1 case of failure resulted in a 2% recurrent instability rate for the entire cohort; however, the minimum follow-up period was

### Table 2. ASES Scores Before and After Bankart Reconstruction With Remplissage

<table>
<thead>
<tr>
<th></th>
<th>Preoperative</th>
<th>Postoperative</th>
<th>(P) Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entire cohort</td>
<td>50</td>
<td>91</td>
<td>&lt;.001*</td>
</tr>
<tr>
<td>Primary cases</td>
<td>52</td>
<td>94</td>
<td>&lt;.001*</td>
</tr>
<tr>
<td>Revision cases</td>
<td>48</td>
<td>86</td>
<td>&lt;.001*</td>
</tr>
<tr>
<td>Non-failure cases</td>
<td>52</td>
<td>95</td>
<td>&lt;.001*</td>
</tr>
<tr>
<td>Failure cases</td>
<td>41</td>
<td>72</td>
<td>.08</td>
</tr>
</tbody>
</table>

*Statistically significant \((P < .05)\).

### Table 3. Subgroup Analysis of Outcome Measures in Cases of Clinical Failure Versus Non-Failure After Bankart Reconstruction With Remplissage

<table>
<thead>
<tr>
<th></th>
<th>Failure Cases</th>
<th>Non-Failure Cases</th>
<th>(P) Value</th>
</tr>
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<tbody>
<tr>
<td>Preoperative ASES score</td>
<td>41</td>
<td>52</td>
<td>.39</td>
</tr>
<tr>
<td>Postoperative ASES score</td>
<td>72</td>
<td>95</td>
<td>.002*</td>
</tr>
<tr>
<td>Rowe score</td>
<td>51</td>
<td>96</td>
<td>&lt;.001*</td>
</tr>
</tbody>
</table>

*Statistically significant \((P < .05)\).
only 12 months (mean, 24 months). In a comparative study that excluded revision surgery cases, Franceschi et al.\textsuperscript{18} reported a 0% recurrence rate in 25 patients after a mean follow-up period of 25 months. Our overall failure rate of 13% (4 of 31 shoulders) in 20 primary cases and 11 revisions with a longer mean follow-up period of 41 months is similar to the failure rates in these previous studies.

Our hypothesis that remplissage yields acceptable and equivalent outcomes for primary and revision instability surgery was rejected because of the significant difference in failure rates between the 2 subsets (0% and 36%, respectively). Nevertheless, our revision cohort showed significant improvement in the ASES score despite this relatively high failure rate, suggesting that some patients still may benefit from an arthroscopic approach if carefully selected, with the understanding that an increased failure risk remains. Attenuated soft tissues, which are commonly encountered in the revision setting, likely contributed in part to the significantly increased number of failures in this subset. These findings emphasize the recommendation that discretion be used when contemplating arthroscopic techniques in the previously operated patient with bone loss.

However, our very low failure rate after primary surgery suggests that remplissage may be an effective supplemental technique in the unoperated moderate–bone loss population. We have interpreted these results to indicate that if significant bone loss is present in the primary setting, patients are optimally served if all pathologic components of instability are addressed at the time of initial surgical treatment.

The potential for morbidity associated with arthroscopic remplissage must also be weighed. Although comprehensive strength and range-of-motion data were not available in our series, 3 clinical studies have evaluated the effects of remplissage. Zhu et al.\textsuperscript{14} found no significant difference between preoperative and postoperative range of motion and no change in infraspinatus strength. The study by Nourissant et al.\textsuperscript{12} prospectively evaluated range of motion in patients undergoing Bankart reconstruction with remplissage and compared them with patients who had Bankart reconstruction alone. No significant difference was noted in range of motion, although one-third (5 of 15 patients) noted some degree of posterosuperior shoulder pain. Boileau et al.\textsuperscript{15} meticulously compared range of motion of the operated extremity with that of the nonoperative extremity and found a significant difference of 8\textdegree\ of external rotation with the arm at the side and 9\textdegree\ of external rotation with the arm abducted. The mean difference in internal rotation was less than 1\textdegree\ compared with the contralateral extremity. The authors found that 90% of athletes returned to sport and nearly 70% returned to the same level of play. Other researchers have shown that remplissage appears to increase the shoulder’s ability to resist external rotation forces (shoulder stiffness) while adversely affecting range of motion to some degree.\textsuperscript{22,23} These studies, however, were performed at 1 institution using the same shoulder simulation apparatus and geometrically similar Hill-Sachs patterns, so the clinical significance of these findings is unknown.

We elected to include subluxation events as criteria for clinical failure. Although 3 of 4 clinical failures resulted from subluxations greater than 2 years postoperatively, we believe that strict criteria are required to critically evaluate this complicated patient population. Recurrent subluxation is undesirable in patients with multiply operated shoulders, even if the frequency and intensity of such events are decreased postoperatively.

**Limitations**

There are several limitations of this study, including the retrospective design and relatively small number of patients. Although this is the first study, to our knowledge, that specifically analyzes remplissage in revision surgery, we have only reported on 11 cases and therefore believe that further research is needed in this subset before definitive conclusions can be drawn regarding the ultimate role of remplissage in the revision setting. Furthermore, including 3 surgeons’ experiences introduces variation; however, we believe that arthroscopic remplissage is a highly reproducible technique for experienced arthroscopists. Our lack of quantitative data on infraspinatus strength and shoulder range of motion, specifically internal and external rotation, is another limitation of this study.

A significant limitation of this retrospective study is a lack of quantitative measurements of the size of the Hill-Sachs lesions treated. This is, in part, because of surgeon variation but is also a reflection of a current lack of a consensus agreement in the literature on the best way to quantify humeral bone loss.\textsuperscript{20} This remains a topic of controversy and offers an opportunity for future research.

Although it would have been useful to evaluate the interval change in the size of the Hill-Sachs lesions in the 11 revision cases from the first surgery to the revision with remplissage, we were unable to do so. There was a lack of radiographic standardization both among patients and within each particular patient’s preoperative imaging history, primarily because most of these patients were referred from other clinics.

**Conclusions**

This study reports a series of 30 patients (31 shoulders) undergoing arthroscopic Bankart reconstruction with remplissage with a mean follow-up period of 41 months, including 11 patients with a follow-up period of 4 years or more. It is the first series to analyze this technique in the setting of revision surgery with moderate gleno-humeral bone loss. Our series showed no failures among
patients undergoing primary arthroscopic Bankart reconstruction with remplissage. For revision surgery, there was a 9% redislocation rate (1 of 11 patients) and a 27% rate of recurrent subluxation (3 of 11 patients). No cases required further surgery.

References


