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Functional and radiological outcomes of arthroscopic scapular spine bone block “diamond” fixation for recurrent anterior shoulder instability with subcritical glenoid bone loss

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Background: Arthroscopic glenoid reconstruction with free bone blocks reduces recurrence in anterior shoulder instability. The scapular spine bone block has been described to address subcritical glenoid bone loss (GBL), though its clinical outcomes are still unclear. This study aimed to report the functional and radiological outcomes of patients with anterior shoulder instability and GBL <15% who underwent arthroscopic glenoid reconstruction using a scapular spine bone block fixed with knotless suture anchors in a “diamond” configuration.

Methods: A tricortical spine bone graft was harvested. Two knotless all-suture anchors were centrally placed at the glenoid defect. Each anchor included 1 suture for repair and another for transport. The repairs suture from the anchors were interconnected through two holes, creating a bridge over the graft tunnels. The remaining suture limbs were inserted into a third knotless anchor midway between the initial two, establishing a stable configuration for secure fixation. Range of motion, patient-reported outcomes, return to sport, instability recurrence, complications, and reintervention were assessed at a minimum 2 years postoperatively. The glenoid surface area was measured preoperatively, postoperatively, and at a 2-year follow-up, with graft resorption evaluated at a 2-year follow-up.

Results: Three patients were included. The GBL ranged from 8% to 13%. Range of motion was similar between sides at the 2-year follow-up. Patients scored higher in patient-reported outcomes from baseline to the 1-year and 2-year follow-ups. All patients returned to sports within 8 months. No recurrent instability or reinterventions occurred. At 3 months postoperatively, all patients achieved graft union, with complete glenoid surface area remodeling at 2-year follow-up.

Conclusion: Arthroscopic scapular spine bone block fixation using knotless suture anchors in a “diamond” configuration is effective and safe for treating recurrent anterior shoulder instability with <15% GBL, facilitating an early return to sports.

Glenoid bone loss (GBL) is a well-established factor contributing to recurrent glenohumeral instability.[2,9,29] The GBL threshold for considering glenoid reconstruction has been progressively decreasing, with recent studies showing that even subcritical defects, those under 15%, may benefit from bony procedures.[7,24-26] Free bone block techniques have gained popularity as a versatile alternative to the Latarjet procedure, offering customizable solutions tailored to individual cases.[5,12,17]

Recent studies have shown that the scapular spine provides a tricortical bone graft of approximately 20 × 10 × 8 mm, dimensions considered adequate to restore subcritical GBL in patients with anterior shoulder instability.[3,18,23,28] Some authors suggest that its size is comparable to that of the coracoid process, offering sufficient structural support for subcritical GBL.[18] Furthermore, harvesting from the scapular spine avoids the morbidity associated with iliac crest grafts and preserves shoulder anatomy, making it a favorable alternative.[3,18,28] However, the nuances of its clinical outcomes remain uncertain.[28]

The study was performed at the Department of Orthopaedic Surgery and Traumatology, Bellvitge University Hospital, L'Hospitalet de Llobregat, Barcelona, Spain.

This study has been approved by the local ethics committee; approval number: PR229/24.

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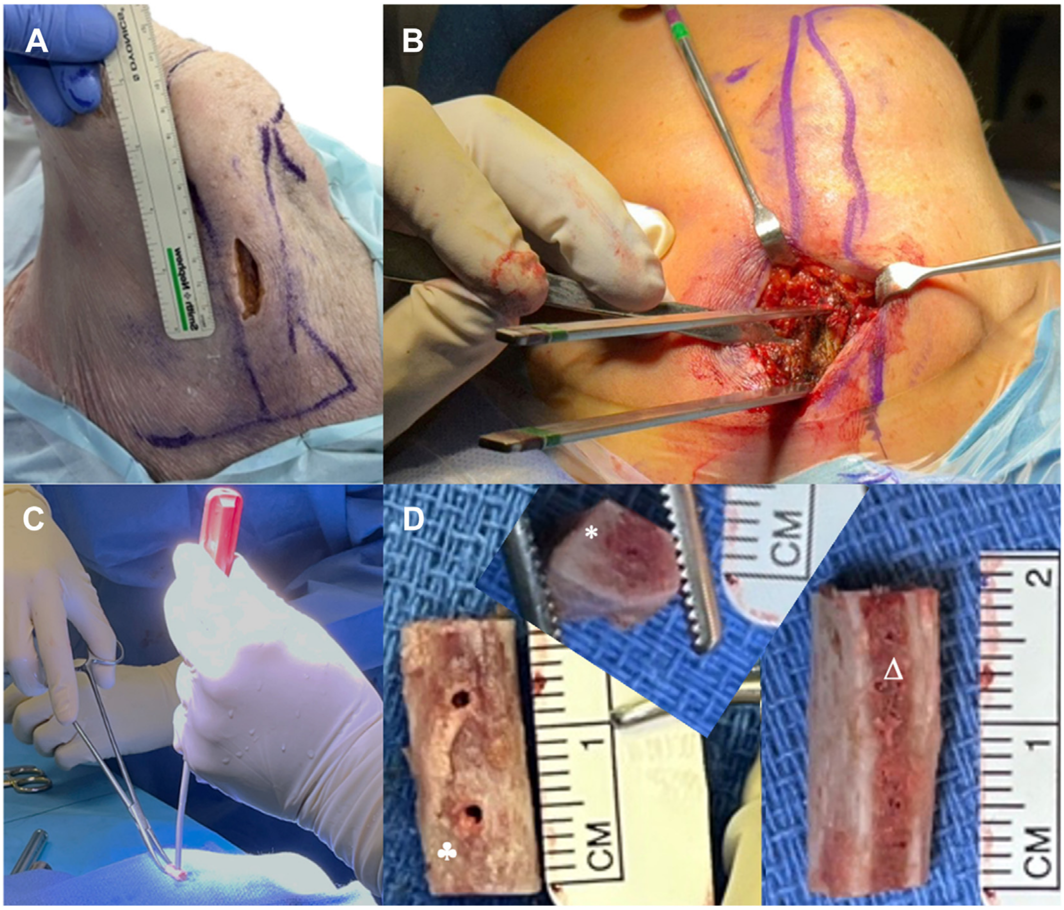

Figure 1 Left shoulder, lateral decubitus, posterior view (**A**) Size and location of the incision directly above the scapula spine with approximately 7 cm from the posterior superior acromion and 4-5 from the medial edge of the scapula in the shoulder specimen. (**B**) Notice the two parallel osteotomes to obtain a symmetrical straight-edged graft facilitating a 7-8 mm deep osteotomy with a saw. (**C**) The all-suture anchor drill guide is used to facilitate the graft's drilling. (**D**) Scapular spine bone graft measurements. ♣Cortical bone *Trapezoidal shape ⊿Cancellous bone.

This study aimed to describe the arthroscopic technique for glenoid reconstruction using a scapular spine bone block, fixed with knotless suture anchors, in patients with anterior shoulder instability and GBL less than 15%. In addition, we reported the functional and radiological outcomes observed in three patients.

Methods

Study design

This was a technical note on arthroscopic scapular spine bone block knotless fixation for recurrent anterior shoulder instability, along with the report of three cases. The inclusion criteria were recurrent anterior shoulder dislocation or subluxations (≥1 episode) with an associated on-track or off-track lesion and GBL <15%, with a minimum 2-year follow-up. The exclusion criteria included patients younger than 16 years and those with multidirectional or posterior shoulder instability. All procedures were performed by a single shoulder surgeon (A.H.). Informed consent was obtained from the patients before the commencement of the study.

Arthroscopic technique

In our practice, we restrict scapular spine grafts to anterior shoulder instability cases with GBL less than 15%, and we may include Remplissage for off-track lesions.

Patient positioning and bone graft harvesting

The patient is positioned in the lateral decubitus position under general anesthesia, with the procedure arm placed in 30° of abduction and neutral rotation. The operating table is tilted 15° dorsally to align the glenoid horizontally. The bony landmarks are marked on the skin. The midpoint of the scapular spine is marked, approximately 4-5 cm lateral to its medial edge, in line with the trapezius tubercle. A 3-cm incision is made over the midpoint of the scapular spine (Fig. 1, *A*). The spine of the scapula is exposed by carefully dissecting the lower trapezius and deltoid fascia and aponeurosis, separating them inferiorly from the middle trapezius. A tricortical bone graft is then harvested using two osteotomes and a curved saw to ensure parallel edges of the osteotomy; the skin is sutured afterward (Fig. 1, *B*). A 1.8 mm all-suture anchor K-wire drill guide creates two tunnels 1 cm apart along the midline of the graft's cancellous surface (Fig. 1, *C*). Typically, the graft is trapezoidal, measuring 18-20 mm in length, 8 -10 mm in width, and 6-7 mm in height for the cortical bone, with a cancellous base measuring 4-6 mm (Fig. 1, *D*).

Arthroscopic portals, joint exam, and glenoid preparation

Standard posterior, anterior, and anterosuperolateral portals are used. The long head of the biceps, rotator cuff, labrum, capsule, and bony defects are thoroughly examined through the posterior portal.

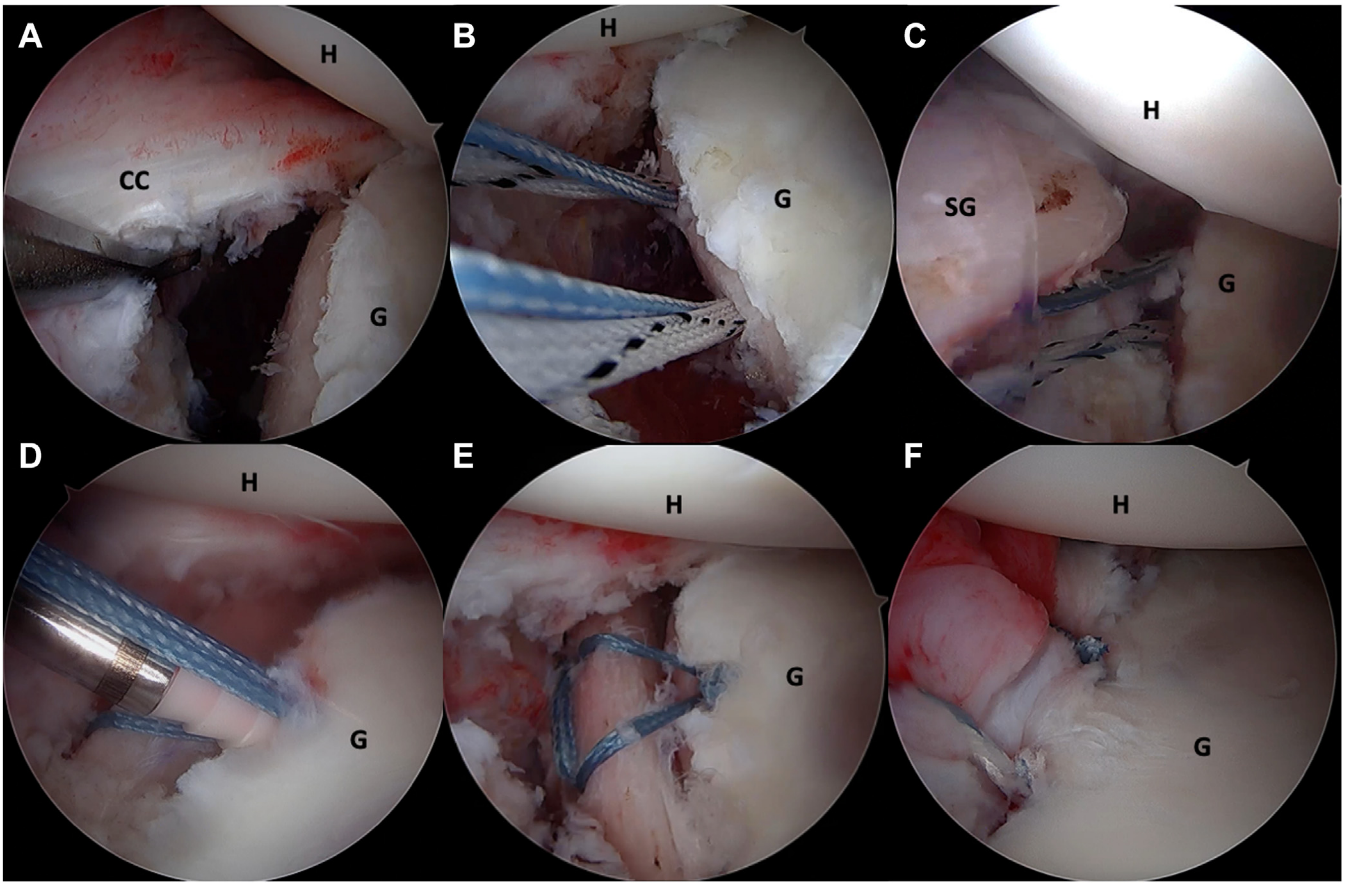

Figure 2 Left shoulder in a lateral decubitus position, viewed through the anterosuperolateral portal. (**A**) The capsulolabral complex (CC) is detached from the anterior glenoid rim. (**B**) Two knotless all-suture anchors are placed medial to the glenoid rim. (**C**) The scapular graft from the same shoulder is introduced through the cannula, using all the sutures like a zip line through the graft holes. (**D**) A knotless biocomposite anchor, which carries the sutures from the all-suture anchors, is inserted into the glenoid rim, positioned halfway between the two anchors. (**E**) The final "Diamond" graft fixation is observed. (**F**) Finally, the capsulolabral complex is reattached to the anterior glenoid rim using knotless all-suture anchors, ensuring the graft remains extra-articular. *G*, glenoid; *H*, humerus; *SG*, spine graft.

The anterior rotator interval portal is created using the outside-in technique, positioned very close to the tendon to allow downward movement toward the subscapularis. The anterosuperolateral viewing portal is established to assess the Hill-Sachs lesion and its interaction between the humeral head and the anterior border of the glenoid. A glenoid dissector and a bipolar radiofrequency ablation probe are used to release the capsulolabral complex from the anterior glenoid rim from the 1 o'clock to the 6-7 o'clock position, exposing and identifying the anterior glenoid defect. This approach allows for the retention of the inferior pouch and inferior glenohumeral ligament, depending on the patient's shoulder laxity after bone block fixation. A percutaneous suture passer is inserted approximately 3 cm inferior to the anterior portal to guide a nonresorbable suture through the upper edge of the subscapularis and beneath the capsulolabral complex. This temporary traction suture is used to maintain tension in the capsulolabral complex and subscapularis tendon while also keeping the anterior cannula free of obstruction. By pulling the complex away from the anterior glenoid, it creates a "tent-like" space that facilitates bone block insertion. Subsequently, the anterior glenoid rim is visualized and débrided with a curette to ensure flush contact with the graft (Fig. 2, *A*).

Implant and graft placement

An arthroscopic measuring tool is used to determine the length of the anterior glenoid defect, ensuring accurate graft sizing. The graft is positioned with its cancellous surface facing the glenoid rim, typically between the 2- and 5-o'clock positions to match the location of the anteroinferior defect. Following this, a curved sleeve is used through the anterior cannula to place two 1.8 mm all-suture anchors (Knotless 1.8 FiberTak; Arthrex, Naples, FL, USA) are then inserted 2-4 mm medial to the glenoid rim and spaced 10 mm apart (Fig. 2, *B*). This distance is chosen to position the graft slightly medial to the cartilage at its lower aspect, where it has a cancellous thickness of approximately 4-6 mm. The graft then gradually increases in thickness to 6-8 mm near the cortical surface as it ascends anteriorly, thereby restoring the native glenoid concavity without anterior overhang.

The implant sutures are retrieved through the anterior cannula and passed through predrilled holes in the graft, from its cancellous to cortical side. This allows the graft to be introduced smoothly through the cannula, positioning it flush against the anterior glenoid with the cancellous surface facing the joint (Fig. 2, *C*). The combination of this anatomical contouring and the subsequent capsular reinsertion to the native glenoid ensures that the graft remains extra-articular, avoiding direct contact with the humeral head and thereby reducing the risk of graft prominence and secondary osteoarthritis.

Graft fixation and capsulolabral repair

The anterior cannula is used to interconnect the repair suture of 1 anchor to the other using the opposing transport suture. This allows the repair suture to be pulled down, creating the initial

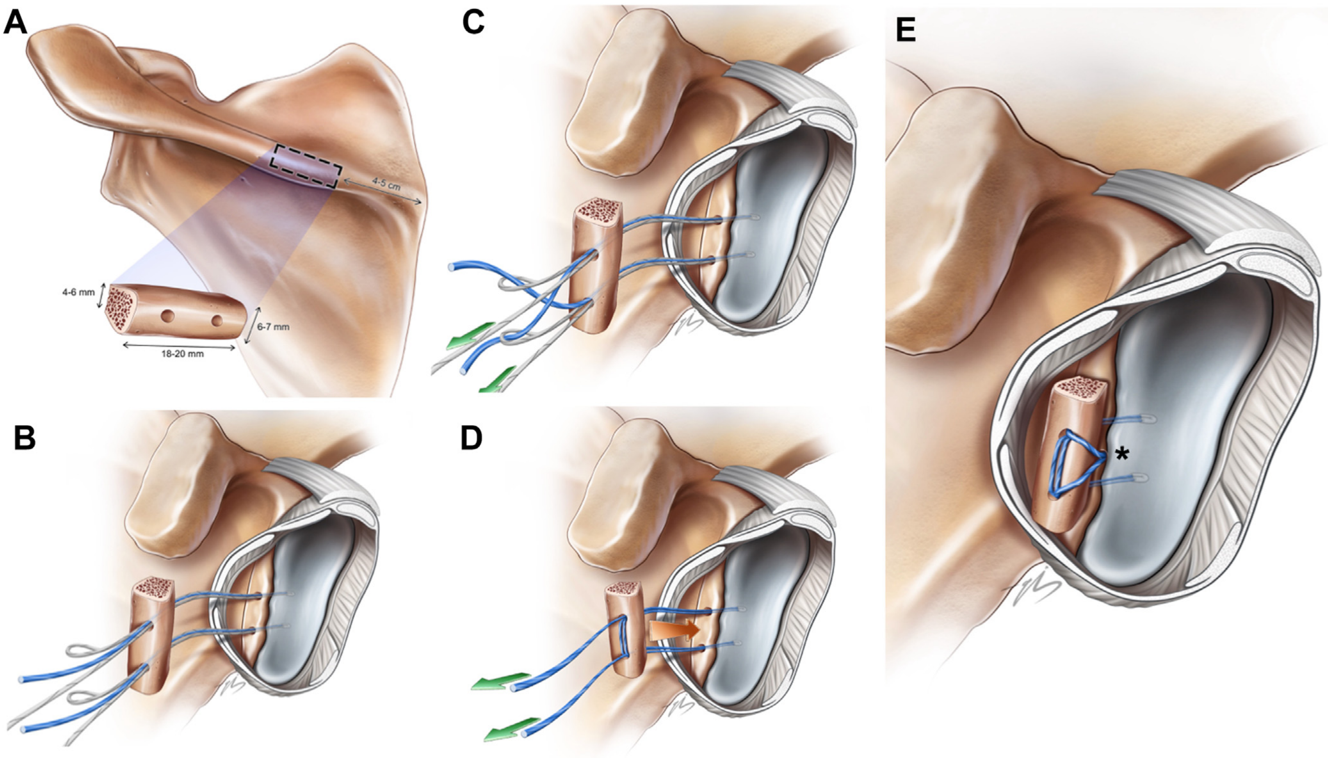

Figure 3 Illustration of spine scapula fixation using metal-free, knotless suture anchors. (**A**) A tricortical spine bone graft is obtained. Note the dimensions of the graft and the distance from the medial edge of the scapula. (**B**) Two knotless all-suture anchors are placed near the glenoid rim, at the center of the glenoid defect. Each anchor has 1 suture for repair and another for transport, using two limbs. (**C**) Each suture repair connects to the other anchor through the suture transport. (**D**) The connected sutures between the anchors form a bridge between the graft tunnels. (**E**) The remaining sutures are inserted into the third knotless anchor (*), positioned midway between the first two anchors, creating a "diamond" configuration.

suture bridge between the graft tunnels. This process is repeated with the remaining repair and transport suture creating a knotless double pulley construct. Once the graft is flush against the glenoid, the self-locking mechanism of the suture anchors is activated by simultaneously pulling the sutures. The final tension of the suture bridge is adjusted using a knot pusher to ensure that the graft is properly positioned and compressed against the glenoid surface, avoiding any tilting or instability. Graft fixation is then tested using an arthroscopic probe to confirm rotational and compressive stability. Next, a third anchor, a 2.9 mm PushLock (Arthrex, Naples, FL, USA) is inserted, loaded with the two remaining bone bridge graft sutures, through the anterior cannula (Fig. 2, *D*). This implant is fixed to the edge of the glenoid articular cartilage between the first two anchors and securing the remaining suture limbs and providing rotational control, creating a "diamond configuration" graft fixation (Fig. 2, *E*). Finally, the capsulolabral complex is shifted superiorly from the 5:30-6:30 to the 3:30-4:30 clock position and repaired to the anterior glenoid rim using three 1.8 mm all-suture anchors (Knotless 1.8 FiberTak): 1 placed inferiorly, 1 at the superior extremity of the graft, and the third proximally. This configuration leaves the bone block in an extra-articular position (Fig. 2, *F*).

A schematic illustration summarizing the arthroscopic scapular spine bone block fixation is shown in Figure 3.

Postoperative rehabilitation

After surgery, patients were immobilized in a sling for 2-3 weeks. During this period, pendulum arm exercises within the scapular plane, isometric deltoid muscle contractions, and scapular retraction exercises were permitted. At 3 weeks postsurgery, active-assisted shoulder joint movements were initiated, progressively increasing the range of motion (ROM). In the fourth week, physical therapy was introduced, incorporating scapular retraction exercises using resistance bands with the elbow at the body. Unrestricted ROM and active exercises were allowed at 5-6 weeks postoperatively. Overhead external rotation was permitted at the eighth week, with the return to sports allowed at 3-4 months postoperatively.

Study variables

Patient factors, including age, sex, laterality, number of shoulder dislocations, previous instability surgeries, participation in sports, and follow-up duration, were recorded. Active ROM of the operated and nonoperated arms was measured and compared at the 2-year follow-up with a goniometer. ROM measurements included forward flexion, abduction, external rotation at the side and 90° of shoulder abduction, and internal rotation at 90° of shoulder abduction. Patient-reported outcomes (PROs) were documented at baseline, 1 year, and 2 years postsurgery. PROs included the Western Ontario Shoulder Instability Index, Rowe score, Constant-Murley score, and Subjective Shoulder Value. Patients were also surveyed about the time it took to return to their previous level of sports activity. Any recurrence of instability, additional surgical procedures, and complications related to the surgery were recorded.

Radiological evaluation consisted of preoperative anteroposterior and axillary shoulder radiographs, as well as a computed tomography (CT) scan conducted 3 months before surgery to assess the location, thickness, and orientation of the scapular spine. Postoperatively, true anteroposterior radiographs were obtained

Table I
Baseline characteristics.

	Case 1	Case 2	Case 3
Patient demographics			
Age: years	23	25	21
Sex	Male	Female	Female
Side	Right	Right	Left
Previous surgery	Yes	No	No
Number of dislocations	4	11	1
Participation in sports	Yes	Yes	Yes
Professional	No	No	Yes
	Soccer, Tennis	Acrobatics	Rugby
Follow-up: months	24	24	24
Preoperative radiological evaluation			
Glenoid surface area: %	90%	87%	92%
Glenoid bone loss: %	10%	13%	8%
Hill-Sach defect	On-Track	On-Track	On-Track

before the 3-week follow-up, with axillary views taken at 6 weeks, 3 months, 6 months, and 2 years postsurgery. Postoperative CT scans were performed within the first 4-6 weeks after surgery and at the 2-year follow-up. The treating surgeon conducted all radiological assessments. Bone union was evaluated using an axillary view radiograph and CT. The articular surface position of the graft was evaluated on axillary views. Glenoid surface area and GBL were assessed on preoperative and postoperative CT scans using the best-fit circle method described by Sugaya et al.[27] The graft surface within the best-fit circle was considered the loaded area of the graft, whereas the graft extending beyond the best-fit circle was considered the nonloaded area.[12] To minimize measurement inaccuracies during postoperative radiological assessments, the preoperative CT-measured surface area using the best-fit circle was consistently used to determine the glenoid surface area.

Statistical analysis

Since no control group was available and the sample size was limited, only descriptive data were presented.

Results

Three consecutive patients with a minimum follow-up of 2 years were included. One patient had previously undergone shoulder instability surgery, and the number of previous dislocations ranged from 1 to 11. All patients were active in sports. The GBL ranged from 8% to 13%, and all patients had an on-track Hill-Sachs defect. Baseline characteristics are shown in Table I.

At the 2-year follow-up, patient #1 exhibited a 5° loss in forward flexion (165° vs. 170°) and external rotation at the side (80° vs. 85°), with abduction (130°), external rotation at 90° (85°), and internal rotation at 90° (90°) fully preserved. Patient #2 had full forward flexion (180°), abduction (180°), and external rotation (100° at the side and 105° at 90°), but a 5° reduction in internal rotation at 90° (100° vs. 105°). Patient #3 achieved symmetric ROM, with 180° of forward flexion and abduction, and 90° in external and internal rotation.

Patients scored higher in PROs from baseline to the 1-year and 2-year follow-ups. The Rowe score increased from 25 preoperatively to 100 at the 1-year and 2-year follow-ups for all cases. The Subjective Shoulder Value increased from 60 to 70 for patient #1, 60 to 98 for patient #2, and 50 to 100 for patient #3 at the 2-year follow-up. All patients reported mild posterior shoulder discomfort during the first 2-3 postoperative weeks. All patients returned to sports within 8 months. No complications, recurrent

Table II
Patient-reported outcomes, return to sports, instability recurrence, and complications.

	Case 1	Case 2	Case 3
WOSI (%)			
Preoperative	33	64	36
1-yr FU	68	82	87
2-yr FU	71	87	98
Improvement at 1-yr	35	18	51
Improvement at 2-yr	38	23	56
Improvement: 1-yr vs. 2-yr	3	5	5
Rowe			
Preoperative	25	25	25
1-yr FU	100	100	100
2-yr FU	100	100	100
Improvement at 1-yr	75	75	75
Improvement at 2-yr	75	75	75
Improvement: 1-yr vs. 2-yr	0	0	0
Constant-Murley			
Preoperative	83	91	72
1-yr FU	93	92	90
2-yr FU	95	95	92
Improvement at 1-yr	10	1	18
Improvement at 2-yr	12	4	20
Improvement: 1-yr vs. 2-yr	2	3	2
SSV			
Preoperative	60	60	50
1-yr FU	70	90	90
2-yr FU	70	98	100
Improvement at 1-yr	10	30	40
Improvement at 2-yr	10	38	50
Improvement: 1-yr vs. 2-yr	0	8	10
Return to previous sports level	Yes	Yes	Yes
Time to return to sports: months	3	4	8
Instability recurrence	No	No	No
Complications	No	No	No

FU, follow-up; *SSV*, Subjective Shoulder Value; *WOSI*, Western Ontario Shoulder Instability Index.

instability or reinterventions occurred. Postoperative functional outcomes are presented in Table II.

All grafts were positioned correctly, with their articular surfaces flush with the anterior glenoid rim. At 3 months postoperatively, all patients achieved graft union. The glenoid surface area increased from 90% preoperatively to 113% immediately after surgery, then decreased to 100% at 2 years in patient #1; from 87% preoperatively to 118% immediately after surgery, then decreased to 99% at 2 years in patient #2 (Fig. 4); and from 92% preoperatively to 121% immediately after surgery, then decreased to 100% at 2 years in patient #3. All patients exhibited osteolysis in the nonloaded area of the graft. Radiological outcomes are shown in Table III.

Discussion

The most important finding of this study was that arthroscopic scapular spine bone block fixation with knotless suture anchors in a "diamond" configuration for recurrent anterior shoulder instability with GBL <15% was effective and safe with an early return to sports. The procedure demonstrated a high union rate, with articular graft surface remodeling predominantly occurring in nonloaded areas.

GBL is present in up to 90% of patients with anterior shoulder instability.[2,9,29] Even defects as small as 10% are associated with an increased risk of failure following Bankart repair, particularly in young and active patients.[7,24-26] In such cases, free bone blocks present an effective alternative to the Latarjet procedure.[5,12,17] They preserve the subscapularis and reduce the risk of neurovascular injuries associated with coracoid harvesting during Latarjet procedures.[5,10,17] Various sources of free bone blocks and fixation methods have been described.[5,17] The tricortical iliac crest bone

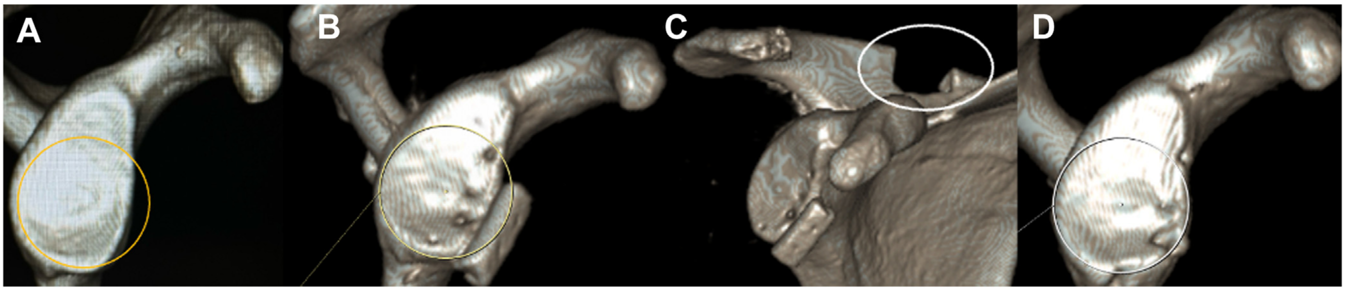

Figure 4 Glenoid surface area results from patient #2. A 3D computed tomography scan of the right shoulder in sagittal view with the best-fit circle is presented. (**A**) The preoperative view revealed slight anterior glenoid bone loss. (**B**) The postoperative view indicated that the scapular graft extended beyond the best-fit circle. (**C**) The graft was flush against the glenoid surface and the harvesting site of the spinal scapula. (**D**) Two years postoperatively, graft remodeling reconstructed the glenoid shape. *3D*, three-dimensional.

Table III
Radiological outcomes at 1 year postoperative.

	Case 1 (%)	Case 2 (%)	Case 3 (%)
Glenoid surface area (%)			
Preoperative	90	87	92
Postoperative*	113	118	121
2-yr FU (mean ± SD)	100	99	100
Preoperative vs postoperative*: Δ	23	31	29
Postoperative* vs. 2-yr: Δ	−13	−19	−21
Preoperative vs. 2-yr: Δ	10	12	8

FU, follow-up; *y*, year; *Δ*, difference; *SD*, standard deviation.
*Within 6 weeks.

graft was the first free bone block technique used for glenoid reconstruction and has demonstrated favorable outcomes.[1,12,13,19,31] However, it necessitates a second surgical site and is linked to a considerable rate of donor-site morbidity, ranging from 8% to 27%.[12,14,19] Other options for free bone blocks include distal tibia allografts, which have shown versatility in adapting to large glenoid defects and restoring cartilage surfaces.[6,17] However, in cases of small bone defects, the bulkiness of the graft may pose challenges, and considerations regarding cost, availability, and the potential for allograft rejection cannot be ignored.[6,17] Using other free bone block sources that are more tailored to subcritical glenoid bone defects seems rational.

The scapular spine has emerged as a potential autograft source for glenoid reconstruction, offering a tricortical graft with average dimensions of approximately 20 × 10 × 8 mm, suitable for restoring subcritical GBL in anterior shoulder instability.[3,18,20,23,28] Anatomical studies report a mean harvestable length of 81.5 mm, with the widest cross-section (mean height 10.9 mm, width 11.5 mm) located around 49.6 mm lateral to the medial scapular border.[22] Rohman et al[23] demonstrated in a CT study that the scapular spine exhibits dimensions comparable to those of the coracoid and iliac crest when harvested approximately 5 cm lateral to the medial scapular border. Its advantages include a size similar to that of the coracoid, proximity to the surgical site, autologous tissue, ease of surgical approach, minimal muscular attachments, and the absence of nearby neurovascular structures, reducing the risk of complications.[16] Despite recent descriptions of the arthroscopic procedure,[3,18] there is only 1 clinical series assessing the outcomes of this technique.[3,28] In this series, which involved 27 patients with recurrent anterior shoulder instability and GBL of 10%-15%, the authors reported significant improvements in functional scores without any cases of redislocation or apprehension at a minimum follow-up of 2 years. Their findings align with ours, which supports the utility of this technique in patients with anterior shoulder instability with subcritical GBL.

Achieving a strong and stable construct that promotes graft union is critical for preventing complications and recurrence.[21,31] Suture-tape cerclages for bone block fixation have demonstrated improved contact loading of coracoid grafts compared to screws or suture buttons.[21] Metal-free suture-tape cerclages for free bone blocks were introduced with iliac crest grafts by Hachem et al[11,12] and later extended to scapular spine grafts by Moroder et al.[18] However, this method presents notable risks for scapular spine grafts. First, the bone tunnels required for suture-tape cerclage, drilled to a minimum of 2.4 mm, can occupy up to 60% of the graft's thickness at its cancellous base, potentially weakening its structural integrity. Second, the friction caused by the suture-tape cerclage can further compromise its integrity. Third, given these factors and the graft's size, the force required to apply sufficient tension for proper contact loading risks fracturing the graft. Considering this, we regard 1.8 mm suture anchors as a more reliable fixation option. By utilizing knotless anchors, we simplified the fixation process, improving both reproducibility and efficiency. Xiang et al[3,28] were the first to describe the arthroscopic technique for fixing the scapular spine with suture anchors. The graft fixation method was the main distinction between their technique and ours. While the previous authors utilized two anchors for fixation, our approach involved three anchors in a tripod or diamond configuration. The third anchor is based on the guy wire principle, previously employed in rotator cuff repairs.[8] A guy wire acts as a stabilizing component, counteracting upward or pulling forces on a structure. In the shoulder, the humeral head experiences anterior displacing and compressive forces against the glenoid, often occurring during activities such as bench pressing or throwing a ball. These forces challenge the shoulder's stabilizing system.[15] By adding a third anchor in the diamond configuration, we provide an additional point of tension and support, which helps to resist rotational and shear forces on the graft, decreasing the risk of migration or turnover. Although biomechanical studies are necessary to confirm this, our clinical experience suggests that this enhanced fixation allows for a shorter immobilization period, faster rehabilitation progression, and an earlier return to sports, likely due to the improved stability provided by the additional anchor.

Graft remodeling and resorption occur following glenoid bone reconstruction procedures.[4,12,30] This resorption typically occurs in nonloaded areas of the graft and usually does not progress postoperatively after the first year.[4,12,28,30] Our findings align with this, with restoration of the normal glenoid surface area at the 2-year follow-up. Our findings support this, showing the normal glenoid surface area restoration at the 2-year follow-up. The increase in glenoid surface area achieved postoperatively with the scapular spine graft was approximately 30% in our series, compared to nearly 40%-45% achieved with iliac crest grafts.[12,30] Despite these differences, the immediate postoperative glenoid surface area was similar at 120%.[12,30] This suggests that free bone block sources can be effectively adapted to address GBL with favorable outcomes regarding glenoid surface restoration. However, despite the more than 20% increase in glenoid surface area observed with the scapular spine graft in our patients, we do not recommend its use for GBL beyond 15% due to its irregular shape and variable size. For instance, a study indicated that only 66% of scapular spine grafts successfully restored a 20% GBL defect.[22]

Limitations

This study has several limitations. First, its retrospective design may introduce selection and information biases, as choosing the reported technique depends on the surgeon's discretion and patient preference. Second, generalizability is limited due to the small number of cases, all performed by a single high-volume shoulder surgeon at 1 institution. Third, including both primary and revision procedures introduces heterogeneity in the results. Fourth, the preoperative and postoperative imaging assessments performed by the treating surgeon without inter-rater and intra-rater correlation studies, are susceptible to bias. Lastly, the short-term follow-up limits our ability to predict mid- and long-term functional and radiological outcomes.

Conclusion

Arthroscopic scapular spine bone block fixation using knotless suture anchors in a “diamond” configuration is effective and safe for treating recurrent anterior shoulder instability with GBL of less than 15%, facilitating an early return to sports.

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