Technical Note

Single Working Portal Technique with 70-Degree Arthroscope for Arthroscopic Bankart Repair

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Abstract: The Bankart lesion is a common injury to the labrum in the shoulder joint, usually resulting from anterior shoulder dislocation. Arthroscopic Bankart repair is a surgical technique used to treat recurrent dislocations by reattaching the labrum to the glenoid rim using suture anchors. Typically, 3 portals are created: 1 for visualization and 2 for instrumentation. However, this Technical Note proposes a single working portal approach using a 70° arthroscope from the posterior portal. This technique enhances visualization and prevents portal jamming, particularly in cases with a small rotator interval.

The Bankart lesion is a common pathology of the glenohumeral joint that involves an injury to the anteroinferior aspect of the labrum. It typically occurs as a result of traumatic anterior shoulder dislocation.[1] The lesion is characterized by a detachment or avulsion of the labrum from the glenoid rim.[2,3] Arthroscopic Bankart repair is a widely used surgical technique for the treatment of recurrent anterior shoulder dislocation caused by a Bankart lesion. This procedure aims to restore stability to the glenohumeral joint by reattaching the detached or avulsed labrum to the glenoid rim using suture anchors. During the procedure, the surgeon creates multiple portals to access the shoulder joint and inserts an arthroscope to visualize the structures.[4-7] Arthroscopic Bankart repair typically involves the use of 1 posterior viewing portal and 2 anterior portals. The anteroinferior portal is primarily employed for instrumentation tasks, such as drilling holes for anchors and passing suture loops, whereas the anterosuperior portal serves the purpose of providing anterior visualization during the debridement of the anterior glenoid rim.[4-6] This Technical Note describes the use of a single working portal technique for arthroscopic Bankart repair using a 70° arthroscope for enhanced visualization from the posterior portal. Therefore, this technique helps to prevent portals from jamming, especially in cases in which the rotator interval is small.

Surgical Technique (With Video Illustration)

Patient Position

The patient is administered an interscalene block in combination with general anesthesia. To facilitate the procedure, the patient is positioned in a lateral decubitus position, with the affected arm abducted at a 30° angle. This positioning enables the application of traction to the arm while ensuring sufficient visualization by using a pillow placed in the axilla for lateralization (Fig 1 and Video 1). The bony prominences are carefully padded. The surgeon assumes a position beside the patient's head while the monitor is strategically placed directly opposite. Before surgery begins, the shoulder area is meticulously prepared and draped using standard sterile techniques.

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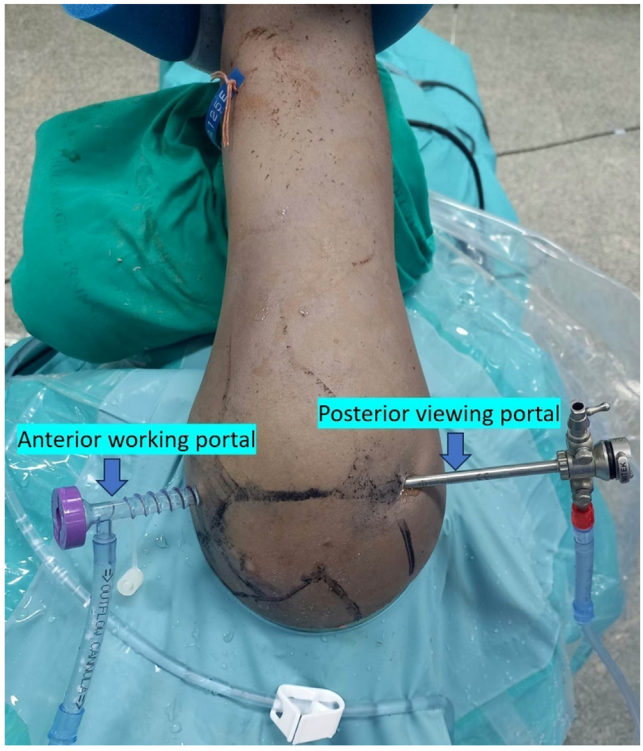

Fig 1. Right cadaveric shoulder, lateral decubitus position. The procedure uses an anterior single working portal and a posterior viewing portal.

Step 1: Arthroscopic Examination Using a 30° Arthroscope

The posterior viewing portal is created approximately 1 cm inferior and medial to the posterolateral corner of the acromion. Arthroscopic examination is conducted using a 30° arthroscope to identify any associated intra-articular injuries, such as cartilage damage, long head biceps tendon issues, rotator cuff tendon pathology, and superior or posterior labrum lesions. For the anterior portal, an outside-in technique is employed by inserting a spinal needle through the rotator interval, located between the long head biceps and subscapularis tendon, followed by a stab incision. A switching stick is then inserted through the incision into the rotator interval and subsequently into the glenohumeral joint. An 8.5-mm cannula (DePuy Mitek, Raynham, MA) is inserted into this portal as the main working portal (Fig 2A and Video 1).

Step 2: Detachment of Anterior Labrum

The Bankart lesion is carefully evaluated, and its mobility is assessed using a probe and grasper, visualized through the posterior portal with a 30° arthroscope. The Bankart lesion is carefully released using an elevator, and additional refinement is performed using radiofrequency and a shaver until the labrum can be easily reduced with minimal tension (Fig 2B and Video 1). To promote optimal bone healing, the glenoid rim is further prepared by decorticating with a shaver.

Step 3: Arthroscopic Examination Using 70° Arthroscope

The 30° arthroscope is exchanged for a 70° arthroscope at the posterior viewing portal to facilitate a more comprehensive evaluation of the glenohumeral joint. This is because the 70° arthroscope offers a wider field of view compared with the 30°arthroscope. The 70° arthroscope view from the posterior portal provides the same perspective as the 30° arthroscope view from the anterior portal. This view enables better visualization of anterior lesions that are challenging to observe with the standard 30° arthroscope from the posterior portal, such as an anterior labroligamentous periosteal sleeve avulsion lesion or medialized Bankart lesion (Fig 3 and Video 1).

Step 4: Bankart Repair

The landmarks for placing suture anchors are determined using radiofrequency ablation. The first Gryphon suture anchor (DePuy Mitek) is inserted at the 5-o'clock position of the glenoid (Fig 4A and Video 1). To sew the capsulolabral tissue at the 6-o'clock position, a 45° curve suture passer is used (Fig 4B and Video 1). Following this, the passing wire is passed through the suture passer. The passing wire is advanced as far as possible, and then the suture passer is carefully removed from the cannula (Fig 4C and Video 1). The suture retriever is employed to retrieve both the suture limb and the passing wire through the anterior cannula for suture management (Fig 4D and Video 1). Subsequently, the suture limb from the anchor is passed through the capsulolabrum using the shuttle relay technique (Fig 5A and Video 1). Finally, a Chula sliding knot[8] is tied, followed by 3 alternating half hitches (Fig 5B and C and Video 1). The second and third Gryphon suture anchors (DePuy Mitek) are placed at the 3- and 2-o'clock positions of the glenoid. Subsequently, the same process is repeated to shuttle the sutures and tie the knots (Fig 5D and Video 1).

Postoperative Rehabilitation

The affected shoulder is immobilized with a simple arm sling for 4 weeks following surgery. From the first day, active hand, wrist, and elbow activities are allowed, and supervised shoulder mobilization starts 15 days after the procedure. After 6 weeks, active assisted physiotherapy is recommended to achieve complete passive and active shoulder range of motion, as well as the ability to perform daily activities without difficulty. Return to sports is permitted after 6 months.

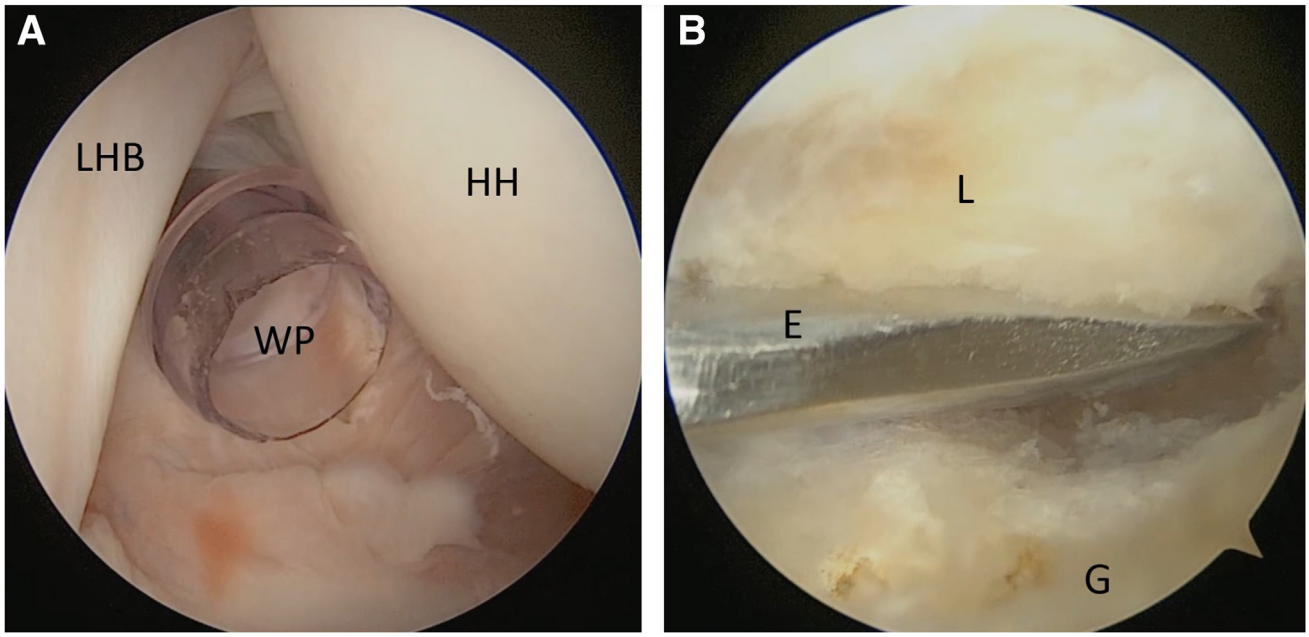

Fig 2. Right shoulder, lateral decubitus position, 30° arthroscope viewing from posterior portal. (A) An 8.5-mm cannula is inserted into this portal as the main working portal. (B) The Bankart lesion is carefully released using an elevator. (E, elevator; G, glenoid; HH, humeral head; L, anterior labrum; LHB, long head of biceps tendon; WP, working portal.)

Discussion

Increasing the number of portals during arthroscopic shoulder surgery introduces a greater risk of complications, including neurovascular injury, skin issues, and infection.[9] Conversely, reducing the number of portals makes the surgical procedure more challenging. There are many articles that describe the use of a single-working portal for shoulder arthroscopy.[10-14] In this article, we describe a surgical technique that minimizes portal-related complications by using a single working portal and one viewing portal.

Using a posterior viewing portal with a 30° arthroscope may lead to potential misdiagnosis of anterior labrum lesions, such as anterior labroligamentous periosteal sleeve avulsion lesion or medialized Bankart lesions.[15] An anterior viewing portal is necessary for effective visualization of these lesions. The view obtained from the posterior portal with a 70° arthroscope

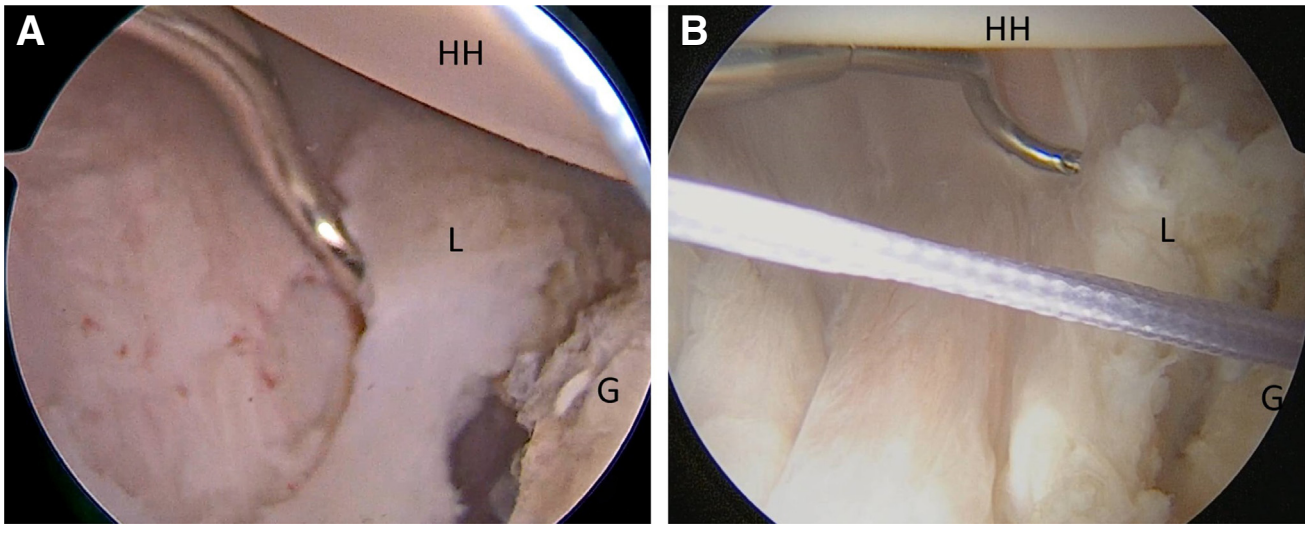

Fig 3. Right shoulder, lateral decubitus position. The 70° arthroscope view from the posterior portal provides the same perspective as the 30°arthroscope view from the anterior portal. (A) 30° arthroscope viewing from anterior portal. (B) 70° arthroscope viewing from posterior portal. (G, glenoid; HH, humeral head; L, anterior labrum.)

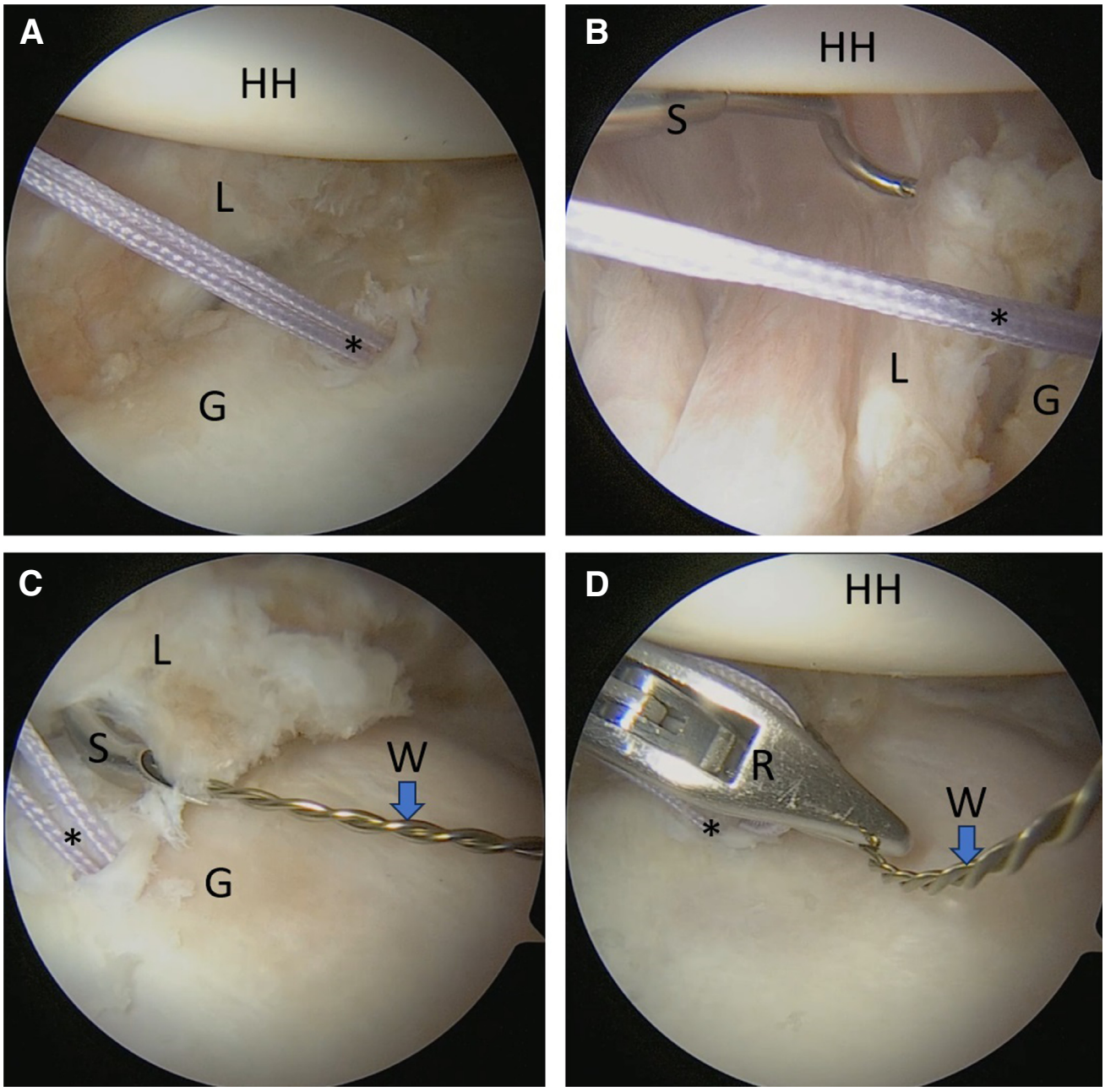

Fig 4. Right shoulder, lateral decubitus position, 70° arthroscope viewing from posterior portal. (A) The first suture anchor is inserted at the 5-o'clock position of the glenoid. (B) The 45° curve suture passer is used to sew the capsulolabral tissue at the 6-o'clock position. (C) The passing wire is passed through the suture passer. The passing wire is advanced as far as possible, and then the suture passer is carefully removed from the cannula. (D) The suture retriever is employed to retrieve both the suture limb and the passing wire through the anterior cannula for suture management. (*, suture anchor; G, glenoid; HH, humeral head; L, anterior labrum; R, suture retriever; S, suture passer; W, passing wire.)

is comparable with that from the anterosuperior portal with a 30° arthroscope. This technique offers several advantages, including reduced invasiveness, minimized tissue trauma, improved cosmetic outcomes, and most importantly, it helps prevent jamming of the anterior portals. It can be used in both the lateral decubitus and beach-chair positions. However, challenges arise in suture management and the use of a single working portal.

This surgical technique includes several key points. First, the view obtained from the posterior portal using a 70° arthroscope is comparable with the view obtained from the anterior portal using a 30° arthroscope. Second, during the procedure, the

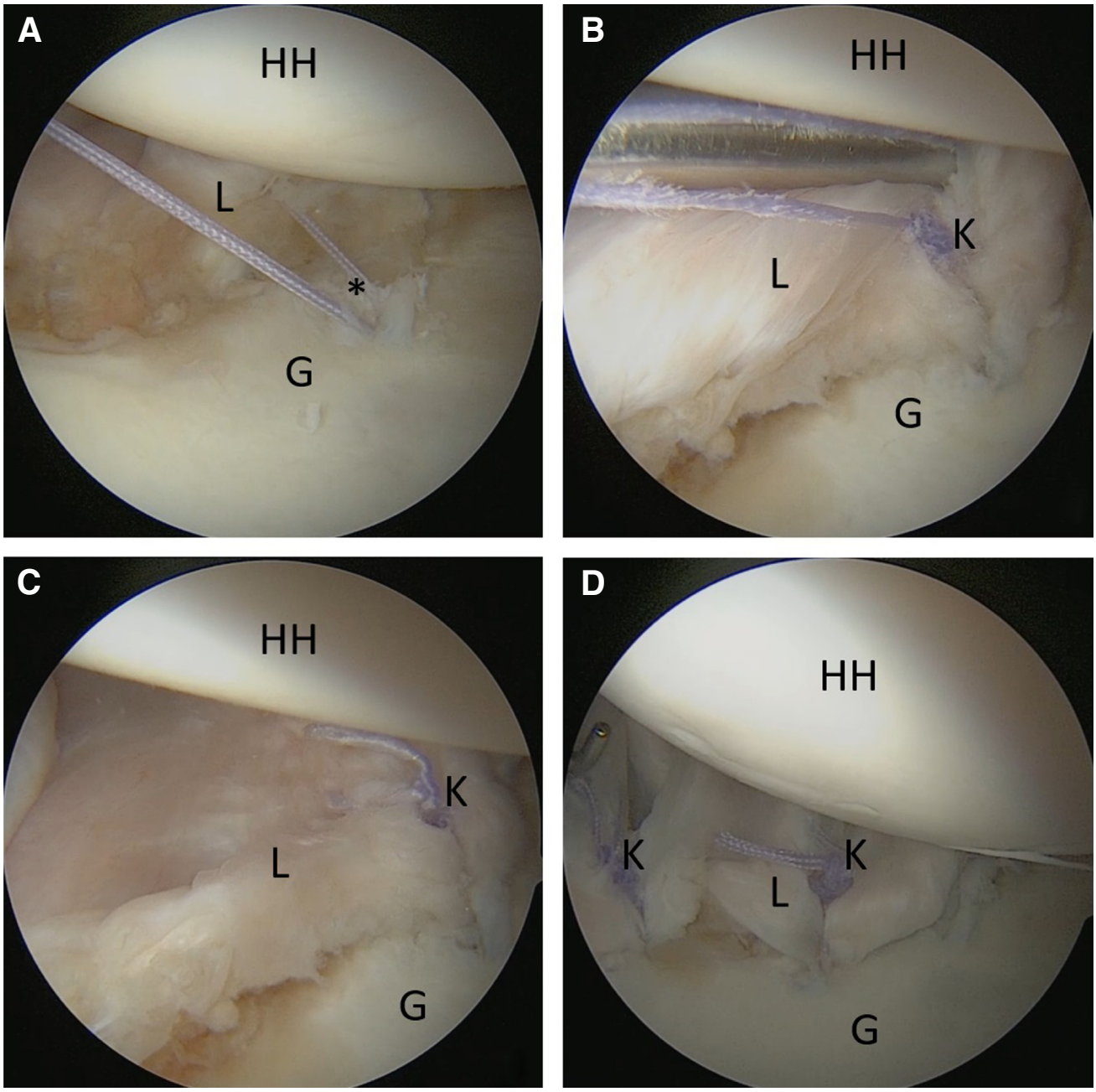

Fig 5. Right shoulder, lateral decubitus position, 70° arthroscope viewing from posterior portal. (A) The suture limb from the anchor is passed through the capsulolabrum using the shuttle relay technique. (B) The Chula sliding knot is tied, followed by three alternating half hitches. (C) The sutures are cut. (D) The second and third suture anchors are placed at the 2- and 3-o'clock positions of the glenoid. Subsequently, the same process is repeated to shuttle the sutures and tie the knots. (*, suture anchor; G, glenoid; HH, humeral head; K, knot; L, anterior labrum.)

passing wire is advanced as far as possible, and then the suture passer is carefully removed from the cannula. Lastly, a suture retriever is used to retrieve both the suture limb and the passing wire through the anterior cannula, allowing for effective suture management. These steps contribute to the overall success of the surgical technique. The advantages, disadvantages, and key points of the procedure are further elaborated in Table 1. In conclusion, the technique presented in this study is a reproducible and safe surgical method for repairing the Bankart lesion.

Table 1. Advantages, Disadvantages, and Pearls for the Procedure

Advantages	- Less invasive - Minimization of skin and soft-tissue trauma from the anterosuperior portal - Minimization of supraspinatus tendon injury from the anterosuperior portal - The 70° arthroscope view from the posterior portal provides the same perspective as the 30° arthroscope view from the anterior portal. - Better cosmetic outcome - Prevent portals from jamming - Able to use in both lateral decubitus and beach-chair positions
Disadvantages	- Difficult in suture management from one working portal - Requirement of 70° arthroscope
Pearls	- 70° arthroscope view from posterior portal is comparable with 30° arthroscope view from anterior portal - After advancing the passing wire as far as possible, then the suture passer is removed carefully from the cannula - Suture retriever is used to retrieve suture limb and passing wire through anterior cannula for suture management

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