Issue Rehabil. Orthop. Neurophysiol. Sport Promot. 2023; 42: 15–22. ISSN 2300-0767
DOI: 10.19271/IRONS-000181-2023-42

REVIEW ARTICLE

PROOF OF VALUE OF ANTERIOR GLENOHUMERAL INSTABILITY TECHNIQUES

DOWÓD WARTOŚCI TECHNIK NAPRAWCZYCH W NIESTABILNOŚCI PRZEDNIEJ STAWU RAMIENNEGO

Lubiatowski Przemysław[1,2], Stupnicki Szymon[1], Kaczmarek Agata[2], Tuczyński Piotr[2], Niziński Jan[2]
[1]Department and Clinic of Traumatology, Orthopaedics and Hand Surgery, Karol Marcinkowski University of Medical Sciences Poznań, Poland
[2]Upper Unit, Rehasport Clinic, Poznan

ABSTRACT
Arthroscopic Bankart and Coracoid Transfer are the most common procedures. Results of Bankart technique differ depending on the surgeon's experience (type of anchors used, qualification, long learning curve). Performing Arthroscopic Bankart may be effective when there is minimal bone loss (< 10–15%), good soft tissue (no ALPSA) and ISIS < 3. With these assumptions long term recurrence rate (RR) can be stated as 8%. Adding of remplissage improves RR to 3–6%, which is comparable to Latarjet with RR 4.4–6%. Coracoid transfer has advantage of being quicker, safer and cheaper. It must be underlined that this type of surgery is effective for patients with risk factors (probably regardless risk). Moreover, we assume that good function and satisfaction level with high return to sport (85%) is associated with this intervention. Still some issues remain like frequent complications (mostly temporary) like apprehension or residual pain. Learning curve is also not in favor of this technique. Yet it is difficult to conclude whether Arthroscopic Bankart or Coracoid Transfer are superior. Free bone block has comparable results to Latarjet, with the main problem being donor side complication in autografts. Open Bankart also do not stand out of Coracoid Transfer.

Keywords: Latarjet, Free Bone Block, Bankart Repair, Coracoid Transfer, Arthroscopic Bankart Repair

STRESZCZENIE
Artroskopia Bankart i transfer wyrostka kruczego są najczęściej wykonywanymi zabiegami. Wyniki techniki Bankarta różnią się w zależności od doświadczenia chirurga (rodzaj stosowanych kotwic, kwalifikacja, długa krzywa uczenia się). Wykonanie artroskopowego Bankarta może być skuteczne w przypadku minimalnego ubytku kości (< 10–15%), dobrej tkanki miękkiej (brak ALPSA) i ISIS < 3. Przy tych założeniach długoterminowy odsetek nawrotów (RR) można określić na 8%. Dodanie remplissage poprawia RR do 3–6%, co jest porównywalne z Latarjet z RR 4.4–6%. Zaletą tranferu wyrostka kruczegojest to, że jest on szybszy, bezpieczniejszy i tańszy. Należy podkreślić, że ten rodzaj operacji jest skuteczny u chorych z czynnikami ryzyka (prawdopodobnie niezależnie od ryzyka). Ponadto z tą interwencją wiąże się dobra funkcja i poziom satysfakcji z wysokim powrotem do sportu (85%). Nadal jednak istnieją pewne kwestie, takie jak częste powikłania (głównie przejściowe), lęk czy ból rezydualny. Krzywa uczenia się również nie jest korzystna dla tej techniki. Trudno jest jednak stwierdzić,

Author responsible for correspondence:
Tuczyński Piotr
Upper Unit, Rehasport Clinic,
Górecka 30, Poznan
Email: tuczynski.p@wp.pl
https://orcid.org/0000-0002-6458-3482

Authors reported no source of funding
Authors declared no conflict of interest

Date received: 1st February 2023
Date accepted: 15th February 2023

czy lepsza jest artroskopia Bankart czy traksfer wyrostka kruczego. Wolny blok kostny daje porównywalne wyniki jak Latarjet, przy czym głównym problemem są powikłania po stronie dawcy w przypadku autoprzeszczepów. Otwarty Bankart również nie wyróżnia się w porównaniu do transferu wyrostka kruczego.

Słowa kluczowe: Latarjet, wolny blok kostny, opracja Bankarta, transfer wyrostka kruczego, Bankart metodą artrospokową

Introduction

Since the inception of surgical treatment of anterior shoulder instability, several techniques have been developed. Some of them did not stand the test of time. However, several have been the turning point in the surgical treatment of instability. That includes labral repair (commonly called the Bankart technique) and coracoid transfer (known mostly as Latarjet and/or Bristow). Glenoid reconstruction with bone block came more recently. Another turning point was the introduction of an arthroscopic approach to shoulder instability. Since that turning point, multiple modifications to either of the aforementioned procedures have been introduced. Each one makes the technique more effective in the opinion of surgeons. Yet it was not only technique and new modifications but also an understanding of pathology that came with the rising experience and scientific data. Multiple risk factors of failure have been identified: including age, sex, sports participation, osseous defects and their interplay, chronicity, etc. Thus, some have started matching particular techniques to the clinical situation.

Surgical treatment of shoulder surgery is very common. Classic open Bankart repair has been widely considered to gold standard procedure (Neviaser *et al.* 2017). However, some concerns have been raised regarding the iatrogenic impact on subscapularis, persistent limitation of external rotation or in general more traumatic approach. Arthroscopic Bankart was aimed as much less traumatic and became probably the most common procedure globally. Reported low complication rates with improved outcomes more recently. Yet long-term recurrence seems to be the major issue. Open coracoid transfer (Latarjet) is another gold standard for the treatment of shoulder instability, especially when facing osseous defects. The technique promises low recurrence rates and the possibility of restoring the articular surface, reinforced with a sling effect. However, the procedure doesn't recreate the patient's correct anatomy, is characterized by hard surgical access and more difficult to revise if necessary. Reported complication rate may worry (Lubiatowski *et al.* 2016). Although arthroscopic coracoid transfer has been introduced providing the same advantages as open technique, its clear advantage as less traumatic has not been confirmed strongly yet. This demanding technique needs a long learning curve, a long time in the operating theater and bears possible surgical risks. The bone block is another solution, allowing for anatomic bone reconstruction with or without labral repair. It has been reported as open and arthroscopic. Yet it has not sling effects, concerns with graft resorption and there is much less scientific data available.

Aim

Literature on the subject is robust and increasing although strong data is much less reported. We believe that with current knowledge we have now the ability to reflect on the clinical value of operative treatment of anterior shoulder surgery. So, the aim of this paper is to analyze the proof of the value of Glenohumeral Instability Techniques. We have taken into consideration the most commonly used and reported surgical

procedures including open Bankart repair (OB), arthroscopic Bankart repair (@B), @B with remplissage, open coracoid transfer (OCT), arthroscopic coracoid transfer (@CT) and bone block glenoid reconstruction (BB).

Material and methods

This review was intended to concentrate on possibly the strongest scientific data available, including systematic reviews and metanalyses (SR, MA), long term studies, large in numbers of studies (> 100 study participants), randomized control trials (RCTs), comparative studies.

We have searched for studies on primary surgical treatment of recurrent anterior traumatic shoulder instability. Studies reporting revision cases and treatment of first-time shoulder dislocation were excluded from the review. Most common surgical techniques were analyzed, including open Bankart repair (OB), arthroscopic Bankart repair (@B), @B with remplissage, open coracoid transfer (OCT), arthroscopic coracoid transfer (@CT) and bone block glenoid reconstruction (BB).

Several parameters have been used to represent clinical procedures, including recurrence of instability following surgery, functional outcomes (clinical scores, range of movement, satisfaction), adverse effects (arthropathy, other complications).

87 studies have been included. Only 7 were RCTs. 41 were systematic reviews and metanalyses. Most of the studies were retrospective. Both BB and @CT have much less data to analyze currently.

Results

Results of open Bankart repair

Nevasier *et al.* has presented a well powered retrospective study. 127 of 162 patients underwent evaluation with an average follow-up of 17 years (5–25). Surgery performed by a single surgeon with application of absorbable anchors proved to be very effective in restoration of instability, achieving remarkably low recurrence rate (RR) 1.6% – 2 patients (1 redislocation, 1 re-subluxation). None of the patients had positive apprehension. Functional results were also very good with a mean Rowe score of 91. Some significant deficits of external rotation (ER) as compared to contralateral shoulder remained, as defined by, 4˚ ER at the side and 4˚ in 90˚ abduction. Satisfaction rate was 98%. Osteoarthritis (OA) developed in 47% of cases (grade I – 37%, II – 10% , III – 0%) (Neviaser *et al.,* 2017).

Two other long-term studies could not reproduce such excellent results (Pelet *et al.,* 2006; Warner, 2015). They were little less powered but with much longer follow-up time 29 (20–41) and performed anchorless to classic technique. Pelet *et al.* stated RR of 10%. 67% of the evaluated group reported good subjective results and the mean Rowe score reached 80. Much larger deficits of ROM were noted: for ER at the side – 34˚, at 90˚ abduction – 24˚. Rate of OA was greater (Pelet *et al.,* 2006). Mooder *et al.* showed RR of 17%. 12% of patients had persistent apprehension. Rowe score, limitations of ROM, incidence of OA were similar to Nevaiser's study (Warner, 2015). These two studies had significant groups with severe grade OA. Interestingly none of them assessed bone deficiency.

Salomonsson *et al.* randomized patients into either open Bankart (with anchors) or Putti-Platt procedure and followed at 2 and 10 years. Despite good functional outcomes, high RR was reported in both groups: 57% and 48% respectively. The only significant difference between the groups was a smaller ER deficit (3˚ vs 10˚) in favor of Bankart. Interestingly observations during surgery revealed anterior glenoid defect in 21% and minor glenoid wear in 44% of the whole cohort (Salomonsson, 2009).

Two systematic reviews reported results of open Bankart repair using some form of meta-analysis (Stone *et al.,* 2014; AlSomali *et al.,* 2021). Stone *et al* collected results of 1343 procedures with minimal follow-up of 8 months, focusing also on return to sport (Stone *et al.,* 2014). More recent review by AlSomali *et al.* pooled results of 566 operated shoulder with average follow-up of 11.5 years (2.5–29).

Similar failure rate was reported accounting for 8.5–9% of re-dislocation or re-subluxation. Dislocation recurred in 5.3% of cases. Rowe score was 87 and ER loss 10˚. Patients could have returned to sport with the same level in 72–81%, at average 23 weeks following surgery. OA affected 33% of shoulders, mostly grad I – II – 91%, III – 9% (AlSomali *et al.,* 2021).

Results of arthroscopic Bankart Repair

There have been several reports on long term results on arthroscopic anterior labral repair. In general RRs have been initially reported to be quite high, although ranging from 2% (Hurley *et al.,* 2020) to over 33% (Aboalata *et al.,* 2017). Murphy *et al.* have pooled results in the systematic review at 10-year follow-up. Based on 9 studies and 822 shoulders. Authors established the RR on 31% (any instability event) and limited to dislocation alone at 16%. As many as 26% patients kept having persistent apprehension. 17% required re-operation due the instability (Murphy *et al.,* 2019). Abolata *et al.* had more failures with absorbable, older design anchors (re-dislocation : 33% panalok and SureTac device 26.3% vs FASTak anchors 15.1%) (Aboalata *et al.,* 2017). In most cases recurrence occurred early – 50% at 2–3 years after procedure. Subsequently incidence was 22–30% at 2–5 years and less frequent after that time (3–22%). (Ono *et al.,* 2019; Flinkkilä *et al.,* 2018; Vermeulen *et al.,* 2019).

Average Rowe score was 87, patients satisfaction reached 86%. Return to sports was at an average of 78%. OA was a common finding (59%) mostly at mild stage (35% grade I), less commonly more severe (gr. II – 9%, gr. III. – 2%).

In the majority there was no need for arthroplasty (Kavaja *et al.,* 2012). Need for this surgery was associated with the number of dislocations prior to surgery and younger age initial to dislocation and procedure.

Several authors have found age to be a major risk factor (Flinkkilä *et al.,* 2018; Vermeulen *et al.,* 2019; Verweij *et al.,* 2021; Thomazeau *et al.,* 2019). Patients younger than 20 y.o. have 42% risk of recurrence. That dropped to 16% for the age range 20–40 and even lower to 10% for patients older than 40 years. Two systematic reviews with meta-analysis (min. 2 year FU, pooled 4582 shoulders have focused on multiple risks of recurrence after arthroscopic Bankant repair (Verweij *et al.,* 2021; Leroux *et al.,* 2017). Not participating in competitive sport reduces the risk from 21% to 11%, and even 8% with no glenohumeral bone loss. Significant glenoid defect raised the risk from 14% (absence) to 27%, and when off-track from 20% to 50%. Poor tissue quality is another factor, in case of ALPSA risk of recurrence is nearly two times more frequent.

Significant modification of arthroscopic Bankant repair was filling of Hill-Sachs lesion with infraspinatus and capsule – remplissage. 3 systematic reviews and meta-analysis (2 comparing Bankart repair alone) pooled 146–570 shoulders yielding similar results (Hurley *et al.,* 2020; Lazarides *et al.,* 2019; Camus *et al.,* 2018). Recurrence rate significantly dropped when remplissage was added from 17–30% to 3–6% for any instability event. Rate of re-dislocation dropped from 15% to 2% ($p = 0.001$). Revision rates were seldom 0–2% as compared to Bankart repair alone (9–11%, $p = 0.01$). Patients achieved significantly better functional recovery with remplissage (Row score of 93 vs 84, $p < 0.05$). There was no difference in return to sports but for flexion and external rotation it was. Two long term studies confirmed durability or results (Bastard *et al.* 2019; Brilakis *et al.,* 2019). Bastard *et al* at 10 years FU found no recurrence nor persistent apprehension in the remplissage group (Bastard *et al.,* 2019).

Results of coracoid transfer

Long term results are currently available only for open coracoid transfer, since arthroscopic approach is a relatively new technique. Mizuno *et al.* has published long term results of patients operated by single surgeon (G. Walch). 68 patients were reviewed retrospectively for at least 18 years (at average 20 years). Rate of re-dislocation was reported as 2.9%, rate of recurrent subluxation was also 2.9% (Mizuno *et al.,* 2014). Results of this study

coming from master surgeon could not have been clearly replicated by a wider population of surgeons. Two systematic reviews and meta-analysis (Hurley *et al.* 845 surgeries, > 10y. FU, – Gilat *et al* – 1052 surgeries, 5 and 10y. FU) presented risk of recurrence instability at 9–12%, dislocation recurrence in 3.2–4% and subluxation at 6.7–9%. 6–10% would experience persistent or recurrent apprehension (Hurley *et al.,* 2019, Gilat *et al.,* 2020). Rate of satisfaction and Row scores achieved similar levels in both Mizuno's study and both systematic reviews (95% vs 95%, 90 vs 81–89 respectively). Return to sport at preoperative level seemed to be more common in French study (93%) then calculated in reviews (76%). All studies reported patients complaining about residual pain on different occasions, 36% in general. Secondary arthritis was nearly equally common in Mizuno's study as well as in both reviews (30–38%), although mostly mild. So was the rate of revision (4% in both reviews). Gilat *et al.* compared mid-term and long-term results and found no significant difference (Gilat *et al.,* 2020).

Results of free bone block

Free bone graft reconstruction of anterior glenoid rim has been used for both primary and revision cases of anterior shoulder instability. Reports on that however are less frequent and less powered as compared to previously analyzed techniques. It has raised early concerns with risk of osteoarthritis following the procedure. Two separate studies by Wildner and Rachbauer have reported OA respectively in 79% and 88% of patients at average of 15 years follow-up with severe changes were observed in 6 and 13% (Wildner *et al.,* 1994; Rachbauer *et al.,* 2000). Later study by Rahme showed less worrying results with OA in just 47% of cases, with severe in 24% at the mean of 29 years following surgery. Redislocation rate was as high as 20% of cases (Rahme *et al.,* 2003). Yet those studies were assessing classic Eden-Hybinette technique in which bone graft was placed under labral and periosteal pouch with no fixation into glenoid. More anatomical approach was reported by Stefen and Hertel, in which graft is placed extra-articularly, anatomically contoured, fixed with screws and covered with labrum. The authors proved effectiveness by only 2% re-dislocation rate and 7% persistent apprehension at average 9 years follow-up (5–19). 53% had OA, nearly all mild and just 1 moderate. 18% of patients reported mostly slight pain, loss of ER was stated as 4˚ (Steffen *et al.,* 2013). Arthroscopic approach with autograft has also been reported with over 5 year follow-up, yet in a very small group of 14 patients (Boehm *et al.* 2020). It has reported 7.5% redislocation rate and 14% persistent apprehension. Rowe score was 89. External rotation deficit was 14˚, 7% had temporary loss of sensation at the graft donor site. Mild OA affected 57% of cases.

Discussion

Complications in operative treatment of shoulder instability

Safety of surgical treatment is another measure of clinical value. William *et al.* had reviewed literature in regard to specific surgical techniques for shoulder surgery based on pooled data of 4362 operations cases (William *et al.,* 2019). Full picture is slightly blurred since bone procedures have grouped both coracoid transfer and bone block. They have been looked at separately for open and arthroscopic approach. When excluding recurrence of instability, arthroscopic soft tissue stabilization and one accompanied with remplissage resulted in lowest rates of complications (1.6% and 1.4% respectively). Although rare, most common was stiffness (0.7%) and temporary nerve injury (0.2–0.5%). Highest rates of complication affected patients after arthroscopic bone stabilization (13.6%). Hardware problems occur in 4.5%, graft osteolysis in 4.5%, hematoma in 1.5%, non-union in 1.2% and temporary nerve injury in 0.9%. Open bone procedures bared 5.3% risk of complications, including non-union – 1.4%, fracture, – 0.9% hardware related 0.8%, temporary nerve injury in 0.8%. Open soft

tissue repair had overall 4.4% rate of complications, most commonly persistent pain – 1.4% and infection 1.4%. Thus, anything related to bony procedure bares the risk of specific graft and hardware related complications that do not occur in soft tissue procedures. Especially coracoid transfer has been associated with issues of safety, especially when approached arthroscopically. Two systematic reviews one earlier OCR- n = 1712, @CT- n = 177 (Grieser *et al.,* 2013) and one more recent OCT- n = 5035, @CT- n = 2140 (Hurley *et al.,* 2021) pooled the short term result of both approaches to coracoid transfer in regards to complications. In general, no significant differences could be found for the risk of complications between the techniques, including reports of comparative studies. General risk of complications in later study 6.8% both for open and arthroscopic surgery and this is significantly lower than previously reported. Complications related to coracoid itself accounted for 1.9% in open group as compared to 3.2@ of arthroscopic. In the latter fractures occur in 1.3% (0.2% in open). Rates of non-union were similar (1.1% in @CT, 1.6% in OCT). Symptomatic hardware problems occurred in 1.9% of arthroscopic and 1.1% in open approach. Surprisingly, the arthroscopic approach was not more risky in relation to nerve injury (0.7% vs 0.9%) and less likely to be associated with hematoma formation (0.2% vs 0.9%).

Conclusions

Arthroscopic Bankart and Coracoid Transfer are the most common procedures. Results of Bankart technique differ depending on the surgeon's experience (type of anchors used, qualification, long learning curve). Performing Arthroscopic Bankart may be effective when there is minimal bone loss (< 10–15%), good soft tissue (no ALPSA) and ISIS < 3. With these assumptions long term recurrence rate (RR) can be stated as 8%. Adding of remplissage improves RR to 3–6%, which is comparable to Latarjet with RR 4.4–6%. Coracoid transfer has advantage of being quicker, safer and cheaper. It must be underlined that this type of surgery is effective for patients with risk factors (probably regardless risk). Moreover we assume that good function and satisfaction level with high return to sport (85%) is associated with this intervention. Still some issues remain like frequent complications (mostly temporary) like apprehension or residual pain. Learning curve is also not in favor of this technique. Yet it is difficult to conclude whether Arthroscopic Bankart or Coracoid Transfer are superior. Free bone block has comparable results to Latarjet, with the main problem being donor side complication in autografts. Open Bankart also do not stand out of Coracoid Transfer.

REFERENCES

Aboalata M, Plath JE, Seppel G, et al. (2017) *'Results of Arthroscopic Bankart Repair for Anterior-Inferior Shoulder Instability at 13-Year Follow-up.'* Am J Sports Med.;45(4): pp. 782–787.

AlSomali K, Kholinne E, Van Nguyen T, et al. (2021) *'Outcomes and Return to Sport and Work After Open Bankart Repair for Recurrent Shoulder Instability: A Systematic Review.'* Orthop J Sports Med.;9(10): pp. 23259671211026907.

Bastard C, Herisson O, Gaillard J, et al. (2019) *'Impact of Remplissage on Global Shoulder Outcome: A Long-Term Comparative Study.'* Arthroscopy.;35(5): pp. 1362–1367.

Boehm E, Minkus M, Moroder P, et al. (2020) *'Arthroscopic iliac crest bone grafting in recurrent anterior shoulder instability: minimum 5-year clinical and radiologic follow-up.'* Knee Surg Sports Traumatol Arthrosc.;29(1): pp. 266–274.

Brilakis E, Avramidis G, Malahias MA, et al. (2019) *'Long-term outcome of arthroscopic remplissage in addition to the classic Bankart repair for the management of recurrent anterior shoulder instability with engaging Hill-Sachs lesions.'* Knee Surg Sports Traumatol Arthrosc.;27(1): pp. 305–313.

Camus D, Domos P, Berard E, et al. (2018) *'Isolated arthroscopic Bankart repair vs. Bankart repair with "remplissage" for anterior shoulder instability with engaging*

Hill-Sachs lesion: A meta-analysis.' Orthop Traumatol Surg Res.;104(6): pp. 803–809.
Flinkkilä T, Knape R, Sirniö K, et al. (2018) *'Long-term results of arthroscopic Bankart repair: Minimum 10 years of follow-up.'* Knee Surg Sports Traumatol Arthrosc.;26(1): pp. 94–99.
Gilat R, Lavoie-Gagne O, Haunschild ED, et al. (2020) *'Outcomes of the Latarjet procedure with minimum 5- and 10-year follow-up: A systematic review.'* Shoulder Elbow.;12(5): pp. 315–329.
Griesser MJ, Harris JD, McCoy BW, et al. (2013) *'Complications and re-operations after Bristow-Latarjet shoulder stabilization: a systematic review.'* J Shoulder Elbow Surg.;22(2): pp. 286–292.
Hurley ET, Jamal MS, Ali ZS, et al. (2019) *'Long-term outcomes of the Latarjet procedure for anterior shoulder instability: a systematic review of studies at 10-year follow-up.'* J Shoulder Elbow Surg.;28(2): pp. e33–e39.
Hurley ET, Schwartz LB, Mojica ES, et al. (2021) *'Short-term complications of the Latarjet procedure: a systematic review.'* J Shoulder Elbow Surg.;30(7): pp. 1693–1699.
Hurley ET, Toale JP, Davey MS, et al. (2020) *'Remplissage for anterior shoulder instability with Hill-Sachs lesions: a systematic review and meta-analysis.'* J Shoulder Elbow Surg.;29(12): pp. 2487–2494.
Kavaja L, Pajarinen J, Sinisaari I, et al. (2012) *'Arthrosis of glenohumeral joint after arthroscopic Bankart repair: a long-term follow-up of 13 years.'* J Shoulder Elbow Surg.;21(3): pp. 350–355.
Lazarides AL, Duchman KR, Ledbetter L, et al. (2019) *'Arthroscopic Remplissage for Anterior Shoulder Instability: A Systematic Review of Clinical and Biomechanical Studies.'* Arthroscopy.;35(2): pp. 617–628.
Leroux TS, Saltzman BM, Meyer M, et al. (2017) *'The Influence of Evidence-Based Surgical Indications and Techniques on Failure Rates After Arthroscopic Shoulder Stabilization in the Contact or Collision Athlete With Anterior Shoulder Instability.'* Am J Sports Med.;45(5): pp. 1218–1225.
Lubiatowski P. *'Recurrence of instability after the Latarjet procedure. Issue Rehabil.'* Orthop.Neurophysiol. Sport Promot. 2016; 14: 27–36.
Mizuno N, Denard PJ, Raiss P, et al. (2014) *'Long-term results of the Latarjet procedure for anterior instability of the shoulder.'* J Shoulder Elbow Surg.; 23(11): pp. 1691–1699.
Murphy AI, Hurley ET, Hurley DJ, et al. (2019) *'Long-term outcomes of the arthroscopic Bankart repair: a systematic review of studies at 10-year follow-up.'* J Shoulder Elbow Surg.;28(11): pp. 2084–2089.
Neviaser RJ, Benke MT, Neviaser AS. (2017) *'Mid-term to long-term outcome of the open Bankart repair for recurrent traumatic anterior dislocation of the shoulder.'* J Shoulder Elbow Surg.;26(11): pp. 1943–1947.
Ono Y, Dávalos Herrera DA, Woodmass JM, et al. (2019) *'Long-term outcomes following isolated arthroscopic Bankart repair: a 9- to 12-year follow-up.'* JSES Open Access.;3(3): pp. 189–193.
Pelet S, Jolles BM, Farron A. (2006) *'Bankart repair for recurrent anterior glenohumeral instability: results at twenty-nine years' follow-up.'* J Shoulder Elbow Surg.;15(2): pp. 203–207.
Rachbauer F, Ogon M, Wimmer C, et al. (2000) *'Glenohumeral osteoarthrosis after the Eden-Hybbinette procedure.'* Clin Orthop Relat Res.;(373): pp. 135–140.
Rahme H, Wikblad L, Nowak J, et al. (2003) *'Long-term clinical and radiologic results after Eden-Hybbinette operation for anterior instability of the shoulder.'* J Shoulder Elbow Surg.;12(1): pp. 15–19.
Salomonsson B, Abbaszadegan H, Revay S, et al. (2009) *'The Bankart repair versus the Putti-Platt procedure: a randomized study with WOSI score at 10-year follow-up in 62 patients.'* Acta Orthop.;80(3): pp. 351–356.
Steffen V, Hertel R. (2013) *'Rim reconstruction with autogenous iliac crest for anterior glenoid deficiency: forty-three instability cases followed for 5–19 years.'* J Shoulder Elbow Surg.;22(4): pp. 550–559.

Stone GP, Pearsall AW 4th. (2014) *'Return to Play After Open Bankart Repair: A Systematic Review. Orthop.* J Sports Med.;2(2): pp. 2325967114522960.

Thomazeau H, Langlais T, Hardy A, et al. (2019) *'Long-term, Prospective, Multicenter Study of Isolated Bankart Repair for a Patient Selection Method Based on the Instability Severity Index Score.'* Am J Sports Med.;47(5): pp. 1057–1061.

Vermeulen AE, Landman EBM, Veen EJD, et al. (2019) *'Long-term clinical outcome of arthroscopic Bankart repair with suture anchors.'* J Shoulder Elbow Surg.;28(5): pp. e137–e143.

Verweij LPE, van Spanning SH, Grillo A, et al. (2021) *'Age, participation in competitive sports, bony lesions, ALPSA lesions, > 1 preoperative dislocations, surgical delay and ISIS score > 3 are risk factors for recurrence following arthroscopic Bankart repair: a systematic review and meta-analysis of 4584 shoulders.'* Knee Surg Sports Traumatol Arthrosc.;29(12): pp. 4004–4014.

Warner JJ. (2015) *"The Bankart Procedure: An Unrealized Expectation for Long-Term Shoulder Stability: Commentary on an article by Philipp Moroder, MD, et al.: "Open Bankart Repair for the Treatment of Anterior Shoulder Instability without Substantial Osseous Glenoid Defects: Results After a Minimum Follow-up of Twenty Years".'* J Bone Joint Surg Am.;97(17): pp. e61.

Wildner M, Wimmer B, Reichelt A. (1994) *'Osteoarthritis after the Eden-Hybbinette-Lange procedure for anterior dislocation of the shoulder. A 15 year follow up.'* Int Orthop.;18(5): pp. 280–283.

Williams HLM, Evans JP, Furness ND, et al. (2019) *'It's Not All About Redislocation: A Systematic Review of Complications After Anterior Shoulder Stabilization Surgery.'* Am J Sports Med.;47(13): pp. 3277–3283.