

28 NOVEMBER
29 BRAGA'19 | PORTUGAL

A artroscopia na operação de Latarjet e outras técnicas com “bloqueio ósseo”

Arthroscopic Latarjet and other “bone block” techniques

NUNO VIEIRA FERREIRA



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PORTUGUESE SOCIETY
OF ARTHROSCOPY AND
SPORTS TRAUMA

Fórum Braga



Universidade do Minho
Faculdade de Medicina



Bone block



- **Eden-Hybbinette (1918 / 1932)**

- Tibial graft → Iliac crest
- Capsulorrhaphy

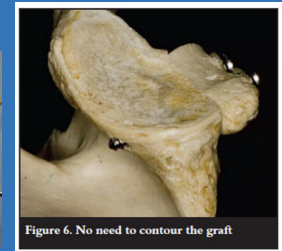
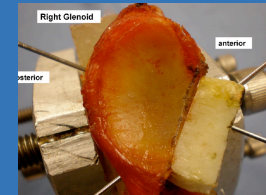
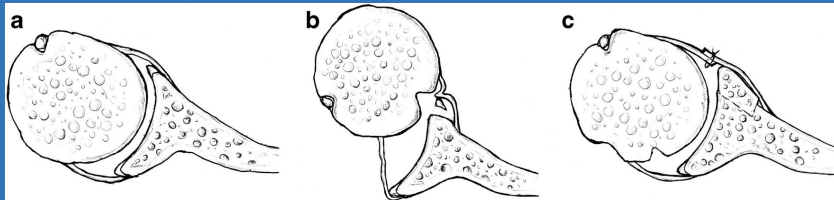


Aus der Chirurgischen Universitätsklinik in Jena. (Direktor:
Geheimrat Professor Dr. E. Lexer.)

**Zur Operation der habituellen Schulterluxation unter
Mitteilung eines neuen Verfahrens bei Abriß am
inneren Pfannenrande.**

Von Privatdozent Dr. Rudolf Eden, Assistent der Klinik.

(Mit 2 Abbildungen.)



Eden R (1918) Zur Operation der habituellen Schulterluxation unter Mitteilung eines neuen verfahrens bei Abriß am inneren Pfannenrande. Dtsch Z Für Chir 144:269–280.

Hybbinette S (1932) De la transplantation d'un fragment osseux pour remédier aux luxations récidivantes de l'épaule; constatations et résultats opératoires. Acta Chir Scand 71:411–445



Bone block



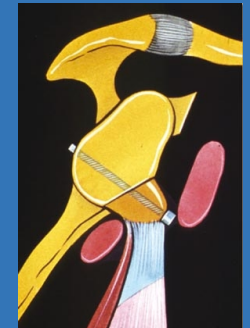
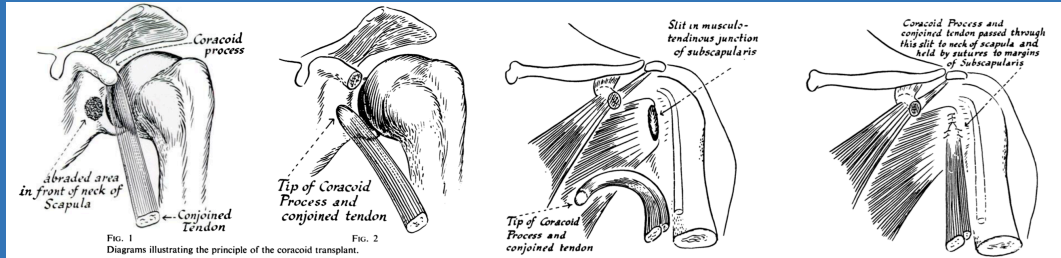
CORACOID TRANSPLANTATION FOR RECURRING DISLOCATION OF THE SHOULDER

ARTHUR J. HELFET, CAPE TOWN, SOUTH AFRICA

From the Department of Orthopaedic Surgery, Groote Schuur Hospital, and the University of Cape Town

Ten years have passed since the death of W. Rowley Bristow, a leader in orthopaedic surgery and a great clinician. In his memory I present details of an operation which he showed me nineteen years ago and which I have since used exclusively for recurring dislocation of the shoulder.

- Rowley Bristow (Helfett 1958)
 - 1939
 - Transf of 1-2 cm coracoid, distal to pectoralis minor
 - Single screw



Helfett AJ. Coracoid transplantation for recurring dislocation of the shoulder. The Journal of bone and joint surgery British volume. 1958;40-b(2):198-202.

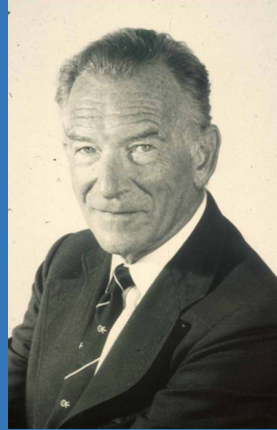


Bone block



- **Latarjet (1954)**

- Larger bone block: 2-3 cm
- 2 Screws

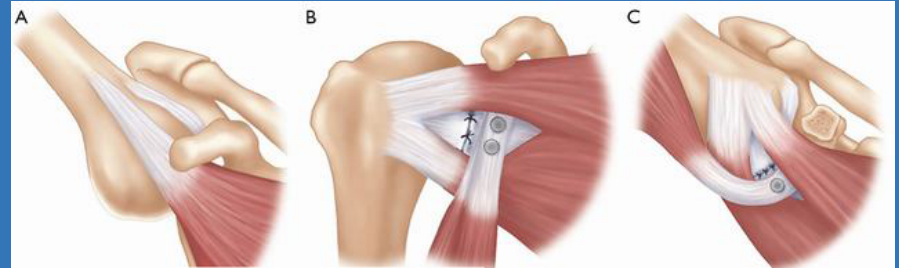
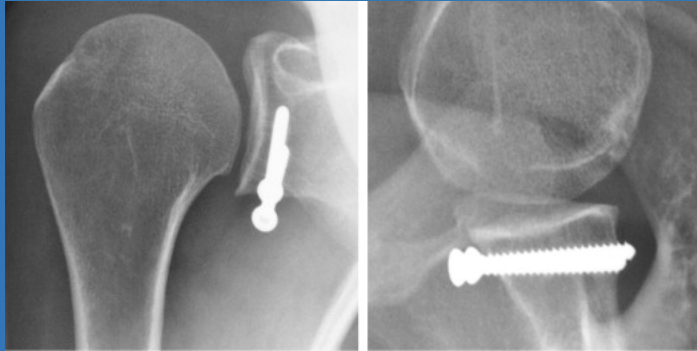


SÉANCE DU 18 MARS 1954

A PROPOS DU PROCÈS-VERBAL

A propos du traitement des luxations récidivantes de l'épaule

par M. LATARJET



Latarjet M. A propos du traitement des luxations récidivantes de l'épaule. Lyon chir. 1954 Nov-Dec;495(8):994-7. 29



Latarjet: outcome



- 20 years after the Latarjet procedure:
 - 68 patients
 - Rowe score increased from 37.9 preoperatively to 89.6 at final follow-up
 - Postoperative rate of recurrence was 5.9%
 - Arthritis may develop or progress in 23.5% of cases, but the majority of arthritis is mild

J Shoulder Elbow Surg (2014) 23, 1691-1699



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Long-term results of the Latarjet procedure for anterior instability of the shoulder



Naoko Mizuno, MD^{a,*}, Patrick J. Denard, MD^b, Patric Raiss, MD^c, Barbara Melis, MD^d, Gilles Walch, MD^e

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^bSouthern Oregon Orthopedics, Medford, OR, USA

^cClinic for Orthopaedic and Trauma Surgery, University of Heidelberg, Heidelberg, Germany

^dPoliclinico Città di Quartu, Quartu Sant'Elena, Cagliari, Italy

^eCentre Orthopédique Santy, Lyon, France

The Latarjet procedure provides excellent long-term outcomes in the treatment of recurrent anterior glenohumeral instability





Latarjet: indications

ISI Score

Decision making instrument!

Instability Severity Index Score³

Prognostic Factors	Points
Age at Surgery	
• ≤ 20	2
• > 20	0
Level of Sport	
• Competitive	2
• Recreational	0
Type of Sport	
• Contact/forced ABER*	1
• Other	0
Clinical Exam	
• Hyperlaxity	1
• No hyperlaxity	0
AP X-ray (IR† and ER‡)	
• Hill-Sachs on ER‡ view	2
• No Hill-Sachs visible	0
AP X-ray	
• Glenoid contour loss	2
• No glenoid contour loss	0

*ABER = abduction and external rotation; †IR = internal rotation;
‡ER = external rotation

The present consensus is that patients with an ISI score of ≥ 4 are suited and should be treated with a bone-block procedure to avoid recurrent instability or dislocation.

	Bankart	Latarjet
ISIS	≤ 3	≥ 4
Competition /Contact sport		
Hyperlaxity		
Glenoid defect	$< 20\%$	$\geq 20\%$
Hill-Sachs	$< 30\%^*$	$\geq 30\%$ or engaging

Balg F, Boileau P, The instability severity index score. A simple pre-operative score to select patients for arthroscopic or open shoulder stabilisation. J Bone Joint Surg Br 2007; 89:1470–1477



Latarjet: indications

Decision making instrument!

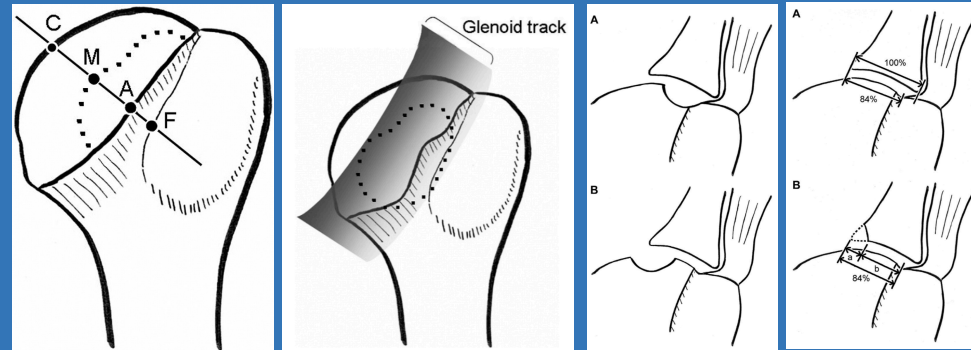
On-track/off-track concept

- A large Hill-Sachs lesion may have a potential risk to engage with the anterior rim of the glenoid, which causes instability
- The glenoid track concept:
 - Stratify the anatomic interaction between the Hill-Sachs lesion and glenoid bone loss
- Determine the treatment of choice for individuals with various defect patterns



Contact between the glenoid and the humeral head in abduction, external rotation, and horizontal extension: A new concept of glenoid track

Nobuyuki Yamamoto, MD,^a Eiji Itoi, MD,^b Hidekazu Abe, MD,^a Hiroshi Minagawa, MD,^a Nobutoshi Seki, MD,^a Yoichi Shimada, MD,^a Kyoji Okada, MD,^a Akita and Sendai, Japan



If a Hill-Sachs lesion remains within the glenoid track, there is no chance that the Hill-Sachs lesion overrides the rim of the glenoid. If extends more medially than the glenoid track, there is a risk of dislocation.

Yamamoto N, Itoi E, Abe H, Minagawa H, Seki N, Shimada Y, et al. Contact between the glenoid and the humeral head in abduction, external rotation, and horizontal extension: a new concept of glenoid track. J Shoulder Elbow Surg 2007;16:649e56. <https://doi.org/10.1016/j.jse.2006.12.012>



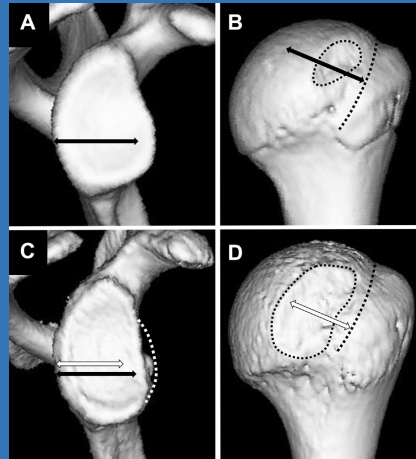
Latarjet: indications



Decision making instrument!

On-track/off-track concept

- 92 patients



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Contents lists available at ScienceDirect

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journal homepage: www.elsevier.com/locate/jses

Surgical decision making based on the on-track/off-track concept for anterior shoulder instability: a case-control study

Taku Hatta, MD, PhD, Nobuyuki Yamamoto, MD, PhD, Kiyotsugu Shinagawa, MD, Jun Kawakami, MD, PhD, Eiji Itoi, MD, PhD*

Department of Orthopaedic Surgery, Tohoku University School of Medicine, Sendai, Japan

Check for updates

The overall recurrence rate in patients who were treated with surgical options based on the on-track/off-track concept was 4.3% at 2-year follow-up. These results seem to indicate the validity of the on-track/off-track concept in surgical decision making to prevent recurrent instability after surgery.

Hatta T, Yamamoto N, Shinagawa K, Kawakami J, Itoi E. Surgical decision making based on the on-track/off-track concept for anterior shoulder instability: a case-control study. JSES Open Access. 2019;3(1):25–28. Published 2019 Mar 9. doi:10.1016/j.jses.2018.10.001





Latarjet: indications

Decision making instrument!

Missing the glenoid defect is the most important factor to recurrence!

young men
competitive sport
multiple dislocations
some glenoid defect (> 20%)

Levy, 2016



Latarjet procedure

David M. Levy, Brian J. Cole, Bernard R. Bach Jr, History of surgical intervention of anterior shoulder instability, J Shoulder Elbow Surg, 2016



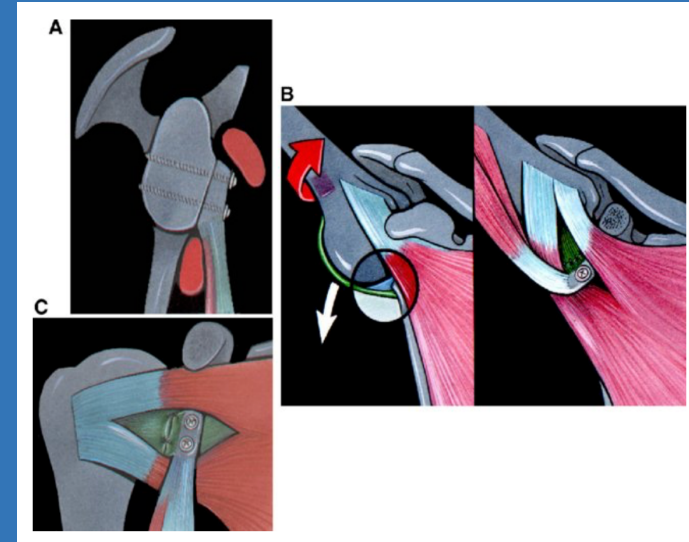
Latarjet



- **Latarjet procedure**

- Coracoid osteotomy
- Transferred to the anterior and inferior glenoid neck
- “Triple effect”

- (A) A bone block effect occurs by use of the coracoid graft to restore glenoid bone loss.
- (B) A sling effect occurs through the conjoint tendon, which limits anterior translation in a position of abduction and external rotation
- (C) A ligament effect occurs through the use of the coracoacromial ligament stump to reattach the medial capsule



Lafosse L, Lejeune E, Bouchard A, Kakuda C, Gobezie R, Kochhar T. The arthroscopic Latarjet procedure for the treatment of anterior shoulder instability. *Arthroscopy*. 2007;23(11):1242.e1-5.
Boileau P, Mercier N, Roussanne Y, Thélu CÉ, Old J. Arthroscopic Bankart-Bristow-Latarjet procedure: the development and early results of a safe and reproducible technique. *Arthroscopy*. 2010;26(11):1434-50.
Gracitelli MEC, Ferreira Neto AA, Benegas E, Malavolta EA, Sunada EE, Assunção JH. Arthroscopic Latarjet procedure: safety evaluation in cadavers. *Acta Ortop Bras*. [online]. 2013;21(3):139-43
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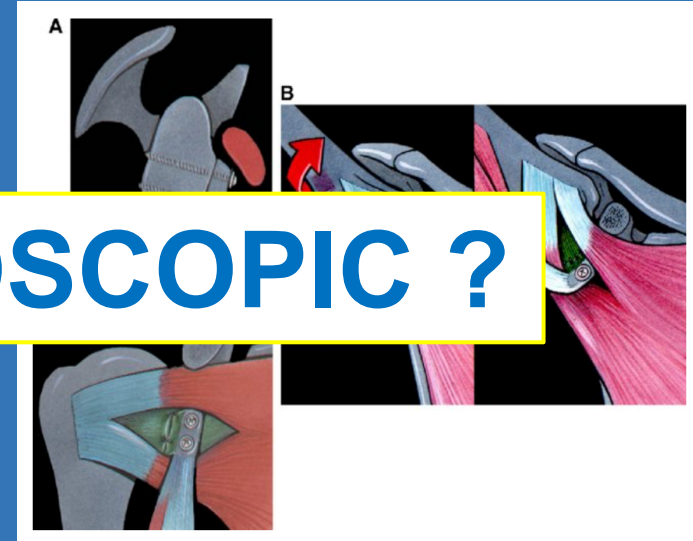
Latarjet



- **Latarjet procedure**
 - Coracoid osteotomy
 - Transferred to the anterior and inferior glenoid neck

OPEN or ARTHROSCOPIC ?

- (B) A sling effect occurs through the conjoined tendon, which limits anterior translation in a position of abduction and external rotation
- (C) A ligament effect occurs through the use of the coracoacromial ligament stump to reattach the medial capsule

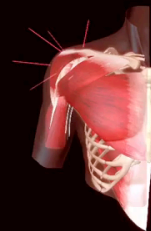
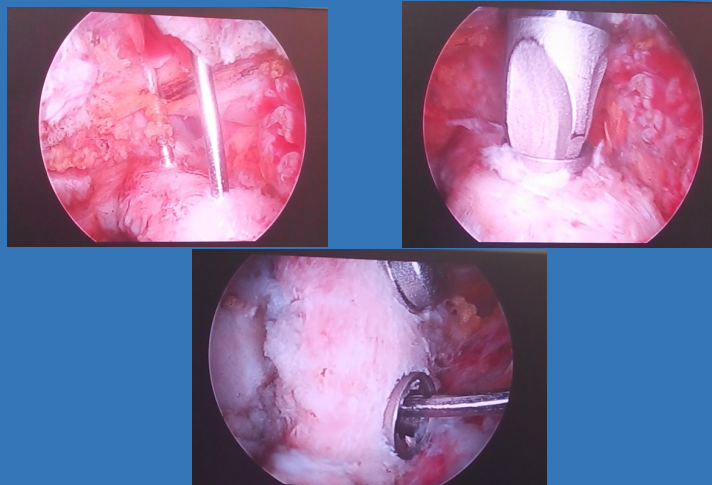


Lafosse L, Lejeune E, Bouchard A, Kakuda C, Gobezie R, Kochhar T. The arthroscopic Latarjet procedure for the treatment of anterior shoulder instability. *Arthroscopy*. 2007;23(11):1242.e1-5.
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@ Latarjet

- Lafosse, 2007



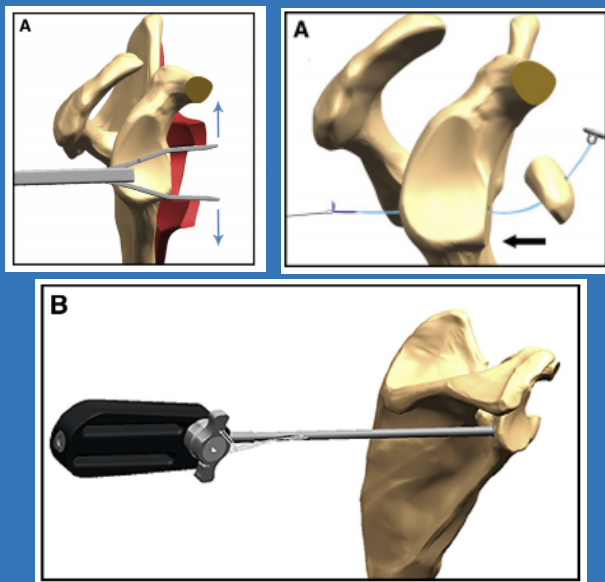
Lafosse L, Lejeune E, Bouchard A, Kakuda C, Gobezie R, Kochhar T. The arthroscopic Latarjet procedure for the treatment of anterior shoulder instability. *Arthroscopy*. 2007;23(11):1242.e1-5.



@ Latarjet



- Boileau, 2010



91% bone healing after 6 months
Boileau, 2015



Boileau P, Mercier N, Roussanne Y, Thélu CÉ, Old J. Arthroscopic Bankart-Bristow-Latarjet procedure: the development and early results of a safe and reproducible technique. *Arthroscopy*. 2010;26(11):1434-50



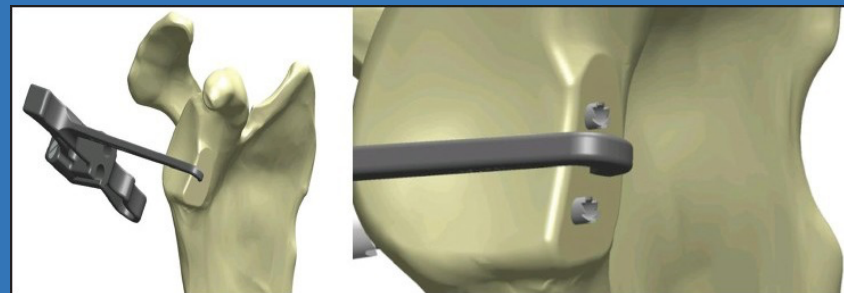
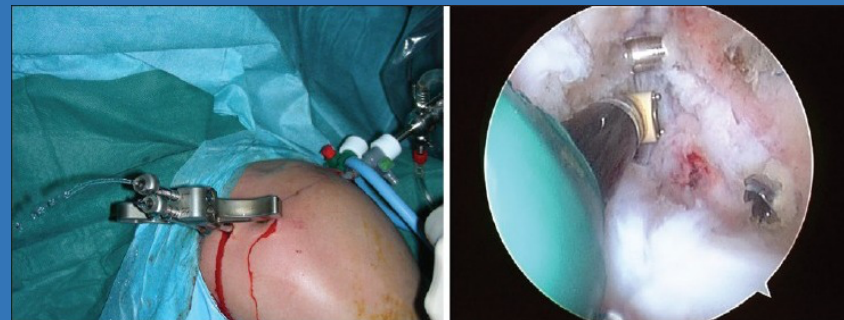


@-assisted Latarjet

- **Taverna, 2013**

- Open technique: 16 patients
- Arthroscopically-assisted technique: 22 patients
- Graft correctly placed
 - Open group: 18.8%
 - Arthroscopically-assisted group: in 72.7%
- Clear benefit for the use of a guide with an arthroscopically-assisted technique in terms of graft and hardware placement

Shoulder Elbow. 2018 Apr; 10(2): 99–106



@ Latarjet

- Valenti, 2018
 - A guiding system to optimize the positioning of the coracoid bone block and 2 cortical buttons to facilitate its fixation.

Table 2. Advantages and Disadvantages

Advantages

- Fully arthroscopic procedure
- Arthroscopic assessment and treatment of associated lesions (e.g., associated Bankart repair)
- No suicide portal medial to coracoid process
- Control of rotation of bone block with 2 cortical buttons

Disadvantages

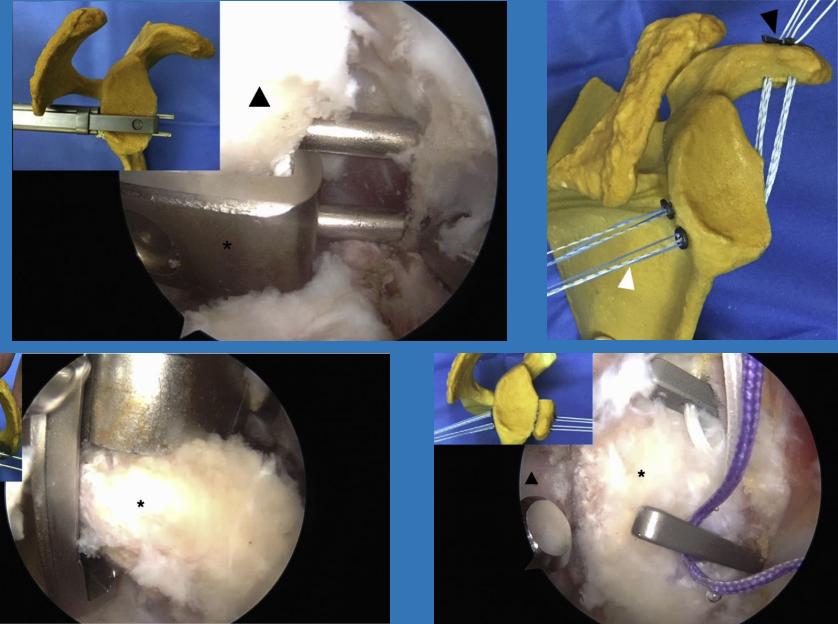
- Risk of lesion of axillary and musculocutaneous nerves during dissection
- Technically demanding: perfect knowledge of anatomy of nerves of shoulder is mandatory
- More expensive than open procedure
- Long learning curve

No Results

Technical Note

Arthroscopic Latarjet Procedure Combined With Bankart Repair: A Technique Using 2 Cortical Buttons and Specific Glenoid and Coracoid Guides

Philippe Valenti, M.D., Charbel Maroun, M.D., Eric Wagner, M.D., and Jean-David Werthel, M.D.




@ Latarjet: outcome

- **390 patients, FU 27 m, 2016**

- **Open surgery with screw fixation**
- **Arthroscopy with screw fixation**
- **Arthroscopy with endobutton fixation**


- **Results**

- Motion range restriction was minimal with all three techniques
- Apprehension in ER was noted at 90° of abduction in 11% of cases and at 140° of abduction in 4% of cases
- The mean total Walch-Duplay score improved from 46 to 90.6 and the mean total modified Rowe score from 46 to 91.1
- ER at 90° of abduction and IR at 0° of abduction were better after open surgery, but the differences were of limited clinical significance.
- Recurrence: in 3.3% of cases, nerve injury in 0.8%, and infection in 1.5%
- **The 3 techniques produced similar clinical outcomes, with a stable shoulder and no joint stiffness**



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Original article 2016 Elsevier Masson SAS

Preliminary clinical outcomes of Latarjet-Patte coracoid transfer by arthroscopy vs. open surgery: Prospective multicentre study of 390 cases

P. Metais^{a,*,}, P. Clavert^b, J. Barth^c, P. Boileau^d, R. Broszka^e, G. Nourissat^f, J. Leuzinger^g, G. Walch^h, L. Lafosseⁱ, the French Arthroscopic Society





Arthroscopic versus open Latarjet: a step-by-step comprehensive and systematic review

Michael-Alexander Malahias¹ · Emmanouil Fandridis² · Dimitrios Chytas³ · Efstathios Chronopoulos³ · Emmanouil Brilakis¹ · Emmanouil Antonogiannakis¹

Received: 31 August 2018 / Accepted: 9 February 2019
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@ Latarjet: outcome

- **694 patients: 239 open vs 455 arthroscopic**
- **Duration**
 - Significantly longer in the arthroscopic group (Zhu et al. 122.8 and 89.3 min, Mrion et al. 76.8 min and 61.6 min)
However, Kordasiewicz et al. found no significant difference (110 and 120 min, respectively)
- **Recurrence Rate**
 - Overall, the recurrence rate was very low - 2.2%
 - All studies (100%) illustrated that there were not any significant differences
- **Infection**
 - 4/5 studies (80%) did not report any postoperative infection. 1 study (20%): 2 cases in the open group and 4 in the arthroscopic group
- **Wound healing**
 - 1 study (20%) documented 2 patients (open procedure) - postoperative haematoma requiring surgical irrigation





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@ Latarjet: outcome

- **694 patients: 239 open vs 455 arthroscopic**
- **Osteolysis and graft resorption**
 - Zhu et al. documented significantly less graft resorption in the arthroscopic group one year postoperatively
- **Non-union of the coracoid autograft**
 - Kordasiewicz et al. - significantly higher with the open
- **Fractures of the coracoid autograft**
 - Overall, there were 11 arthroscopically treated and 2 patients who underwent an open
- **Medial–lateral position of the graft**
 - Zhu et al. - optimal, in both the open and the arthroscopic groups
 - Marion et al. - significantly more lateral with the arthroscopic Latarjet procedure
 - Kordasiewicz et al. inadequate medial positioning of the graft - 14.6% in the open group versus 41.7% in the arthroscopic one. Lateral graft overhanging was found insignificant between the two groups





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@ Latarjet: outcome

- **694 patients: 239 open vs 455 arthroscopic**
- **Superior–inferior position of the graft**
 - 2 of them (50%), the open was characterized by significantly better subequatorial positioning of the graft
 - 1 out of the four papers (25%), the arthroscopic was accompanied by significantly better equatorial position
- **Screw orientation**
 - Kordasiewicz et al. noted that the screws were more parallel to the glenoid in the arthroscopic group
 - Insignificant difference in terms of screw divergence
- **Posterior protrusion of the screw**
 - Did not demonstrate any significant difference
- **Postoperative osteoarthritis**
 - No significant differences were found



@ Latarjet: outcome

- 694 patients:
239 open vs 455 arthroscopic
- Clinical and functional subjective scores

European Journal of Orthopaedic Surgery & Traumatology
<https://doi.org/10.1007/s00590-019-02398-3>

GENERAL REVIEW • SHOULDER - ARTHROSCOPY



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Author(s)	Clinical scores	Preoperative clinical score	Postoperative clinical score	Significant difference
Kordasiewicz et al. [19]	Rowe, Walch–Duplay, VAS pain	Rowe: 25 (open) 27 (arthroscopic) Walch–Duplay: 15 (open): 20 (arthroscopic)	Rowe: 87.8 (open) 78.9 (arthroscopic) Walch–Duplay: 83.9 (open): 76.7 (arthro- scopic) VAS pain: 0.77 (open): 1.38 (arthroscopic)	Rowe score: significantly higher with the open technique
Zhu et al. [2]	ASES, Constant–Murley, Rowe	ASES: 77.6 (open) 86.4 (arthroscopic) Constant–Murley: 89.5 (open): 93.1 (arthro- scopic) Rowe: 39.8 (open): 43.9 (arthroscopic)	ASES: 93.3 (open): 93.0 (arthroscopic) Constant–Murley: 96.5 (open): 95.0 (arthro- scopic) Rowe: 97.1 (open): 95.4 (arthroscopic)	Insignificant difference between the open group and the arthroscopic group regarding any of the clinical scores
Marion et al. [20]	WOSI, VAS pain	–	WOSI (total): 78.5%(open): 82.3%(arthroscopic) WOSI (symptoms): 80.5% (open): 83.6% (arthro- scopic) WOSI (sports): 79% (open): 80.7% (arthro- scopic) WOSI (daily life): 82.2% (open): 85.8%(arthro- scopic) WOSI (emotional): 66.2%(open): 75.2%(arthroscopic) VAS pain: 2.5 (open): 1.2 (arthroscopic)	Total WOSI score and its emotional component: significantly better in the arthroscopic group VAS pain score: significantly better in the arthroscopic group (7 days postopera- tively)
Metais et al. [21]	Walch–Duplay score Modi- fied Rowe	Walch–Duplay score: 46 (open: 36.4 arthroscopic with screw: 49.3) Modified Rowe score: 46 (open: 40.5 arthroscopic with screw: 47.9)	Walch–Duplay score: 90.6 (open: 85.9, arthroscopic with screw: 91, arthro- scopic with endobutton: 97.5) Modified Rowe score: 91.1 (open: 83.9, arthroscopic with screw: 92.8, arthro- scopic with endobutton: 95.3)	Significant difference across groups

VAS visual analogue scale; ASES American Shoulder and Elbow Surgeons; WOSI: Western Ontario Shoulder Instability Index





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@ Latarjet: outcome

- **694 patients: 239 open vs 455 arthroscopic**
- **Pain**
 - Kordasiewicz et al. there was insignificant difference between the groups postoperatively
 - Marion et al. found a significant superiority of the arthroscopic group
- **Postoperative positive apprehension test**
 - 2 out of the 3 studies (66.6%) did not report any significant difference
 - Kordasiewicz et al. showed that the arthroscopic group demonstrated significantly higher rate
- **Postoperative fatty infiltration of the subscapularis muscle**
 - There were not any significant differences





Arthroscopic versus open Latarjet: a step-by-step comprehensive and systematic review

Michael-Alexander Malahias¹ · Emmanouil Fandridis² · Dimitrios Chytas³ · Efstathios Chronopoulos³ · Emmanouil Brilakis¹ · Emmanouil Antonogiannakis¹

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@ Latarjet: outcome

- **694 patients: 239 open vs 455 arthroscopic**
- **Conclusions**
 - **Arthroscopic Latarjet procedure was not inferior:**
 - Recurrence rate, infection rates, soft tissue healing, the positive postoperative apprehension test, the postoperative mean ASES and mean Walch–Duplay scores, the fatty infiltration of the subscapularis muscle, posterior protrusion of the screw
 - **Arthroscopic technique led to superior results:**
 - Non-union rate of the graft, the total graft osteolysis and graft resorption, the mean WOSI score and the early (first week) post-operative pain
 - **The outcomes were conflicting:**
 - Superior–inferior position of the graft, screw orientation, duration of surgery, mean Rowe and VAS scores



@ Latarjet: outcome

- **942 patients: 580 arthroscopic and 362 open**

- **Conclusions**

- Arthroscopic procedures (112.2 min) take longer than open procedures (93.3 min)
- Operative times and complication rates decrease with surgeon experience with the arthroscopic procedure
- Post-operative complications: 3.8% arthroscopically and 6.4% open

- **Both open and arthroscopic Latarjet procedures can be used to effectively treat shoulder instability**
- **Similar low rates of complications, recurrent instability and need for revision surgery**
- **@ Latarjet associated with less early post-operative pain but require increased operative time**
- **No any significant difference in graft or screw positioning between the two techniques**

- **At this time neither procedure shows clear superiority over the other**

RESEARCH ARTICLE

Open Access



Open versus arthroscopic Latarjet procedures for the treatment of shoulder instability: a systematic review of comparative studies

Nolan S. Horner¹, Paul A. Moroz², Raman Bhullar³, Anthony Habib¹, Nicole Simunovic⁴, Ivan Wong⁵, Asheesh Bedi⁶ and Olufemi R. Ayeni^{1*}



@ Latarjet: learning curves

- Surgical time decreased significantly from an average of 123.8 minutes (range 70 to 210) to 92.6 minutes (range 50 to 160) from the first 5 cases to the last 5 cases of each surgeon
- X Ray showed the bone-block in ideal positioning in 93 cases (74.4%), flush with the glenoid in a true anteroposterior view
- The overall rate of 17.6% events requiring additional treatment (4% problems, 9.6% complications, and 4% traumas)
- **Recurrence rate of 4.8%**

Arthroscopy

The Journal of Arthroscopic
and Related Surgery



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Learning Curves in the Arthroscopic Latarjet Procedure: How Steep Are They Really? An International Multicenter Analysis of the First 25 Cases of 5 Surgeons

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XIV SPAT CONGRESS
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29 BRAGA'19**

@ Latarjet: learning curves

- Surgical time decreased significantly from an average of 123.8 minutes (range 70 to 210) to 92.6 minutes (range 50 to 160) from the first 5 cases to the last 5 cases of each surgeon
- X Ray showed the bone-block in ideal positioning in 93 cases (74.4%), flush with the glenoid in a true anteroposterior view
- The overall rate of 17.6% events related to treatment (4% problems, 9.6% complications, 4.0% infections, 4.0% traumas)
- [unclear] of 4.8%

Comparable to the current literature

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@ Latarjet: learning curves

- **Cunningham et al. 2016, 28 patients**

- Average operative time of 146 minutes (+51) for arthroscopic and 82 minutes (+24) in the open setting
- Complication rates were 29% and 11%, respectively
- Surgical time in the arthroscopic setting dropped remarkably from 183 to 95 minutes within 28 cases

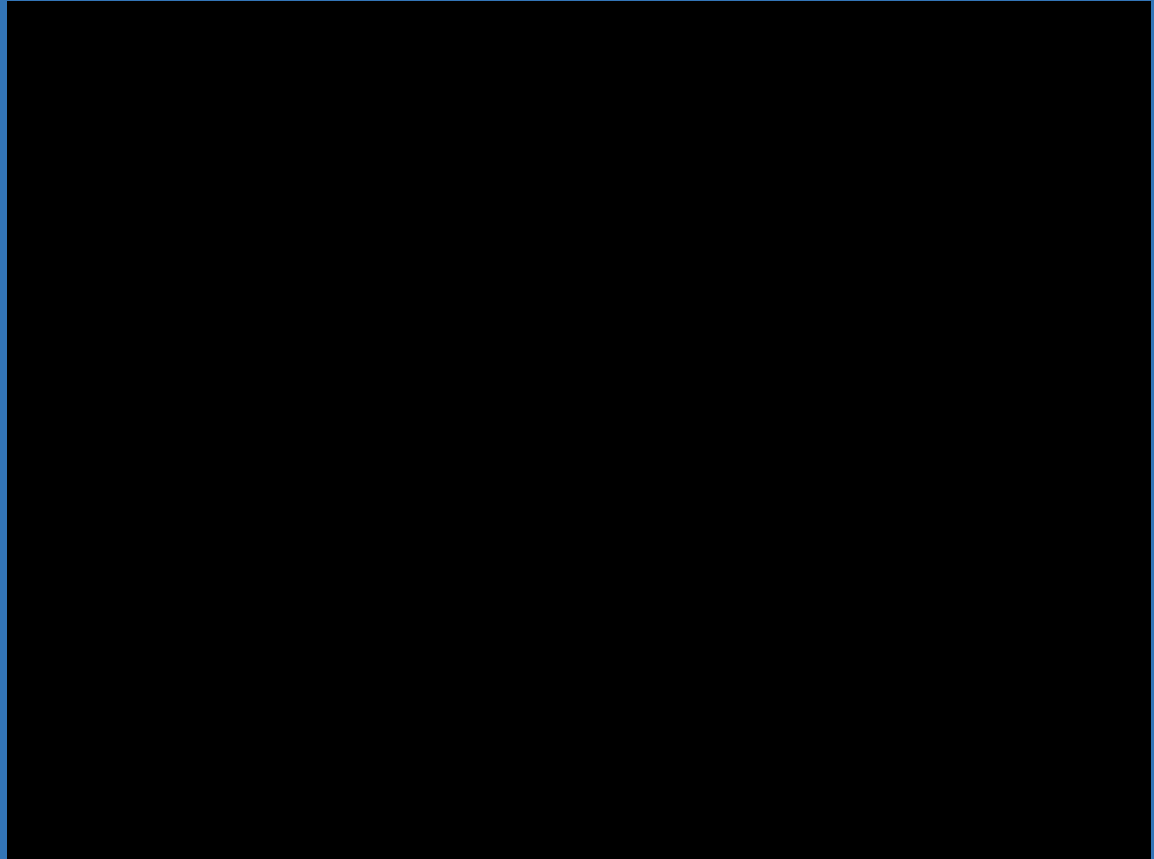
- **Bonnevialle et al. 2018, 88 patients**

- Surgery time dropping from up to 193 min to 76 min in 88 patients and 4 participating surgeons.
- Complications occurred in 10.1% of the patients, 3.3% of which were intraoperative and 6.8% postoperative.
- Recurrent subluxation was found in 2 cases, and bone-block migration in another 4. No patient required revision.



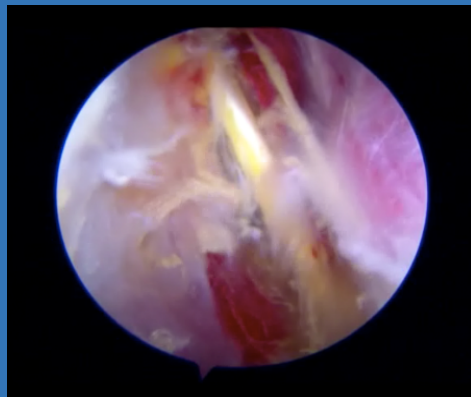
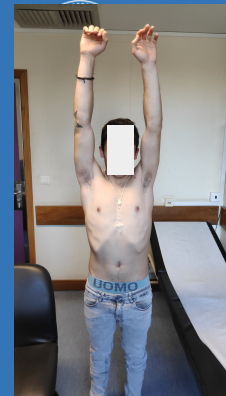
@ Latarjet: What we do

- Boileau procedure



@ Latarjet: What we do

- Boileau procedure





@ Latarjet: What we think about

JISAKOS 2017;0:177–184. doi:10.1136/jisakos-2017-000124.

Arthroscopic and open repair of massive rotator cuff tears have similar results: a systematic review

Nuno Seivas,^{1,2,3,4} Nuno Ferreira,^{3,4} Renato Andrade,^{4,5} Pedro Moreira,^{1,2} Nuno Sousa,^{1,2} António J Salgado,^{1,2} J Espregueira-Mendes^{1,2,4,5,6}

Arthroscopy, Vol 33, No 12 (December), 2017: pp 2139-2143

Editorial Commentary: The Wake of the Dragon: Will the Orthopaedic Community Adopt the Shoulder Arthroscopic Latarjet Procedure as We Adopted the Arthroscopic Rotator Cuff Repair?



Pascal Boileau, M.D., and David Saliken, M.D., F.R.C.S.(C.)

Arthroscopy, Vol 35, No 11 (November), 2019: pp 3019-3024

Arthroscopic and Open or Mini-Open Rotator Cuff Repair Trends and Complication Rates Among American Board of Orthopaedic Surgeons Part II Examinees (2007-2017)



Blane C. Kelly, M.D., David S. Constantinescu, B.S., and Alexander R. Vap, M.D.

85.2% (n = 27,189) arthroscopic | 14.8% (n = 4,718) open or mini-open
Rate of arthroscopic RCR increased from 73% in 2007 to 90% in 2017
Rates of reported annual complications were significantly lower for arthroscopic RCR (7.4%-16.2%) than for open or mini-open RCR (12.9%-30.3%) for each of the past 6 years (2012-2017)

- Surgeons should visit an experienced surgeon and take a course to practice on cadavers first
- Among the strongest reasons to perform the Latarjet procedure arthroscopically are the accuracy of graft placement, the safety for neurovascular structures provided by direct visualization and magnification, and the excellent clinical results allowing young people to go back to sport, including high-risk (contact, overhead) sports
- **There is no reason that in the near future the orthopaedic community does not adopt the arthroscopic Latarjet procedure, as we adopted the arthroscopic rotator cuff repair and other complex surgical procedures**



Bone block: Anterior

- **Eden-Hybbinette**

- Bicentric prospective randomized study
- 60 patients, 2y FU
- Open Latarjet or Open ICBGT

- **None of the clinical scores showed a significant difference between the 2 groups**
- Diminished internal rotation capacity in the Latarjet group at every follow-up time point
- Donor-site sensory disturbances were observed in 27% of the ICBGT patients



Neer Award 2019: Latarjet procedure vs. iliac crest bone graft transfer for treatment of anterior shoulder instability with glenoid bone loss: a prospective randomized trial

Philipp Moroder, MD^{a,*}, Eva Schulz, MD^b, Guido Wierer, MD^b, Alexander Auffarth, MD^b, Peter Habermeyer, MD^c, Herbert Resch, MD^b, Mark Tauber, MD^c



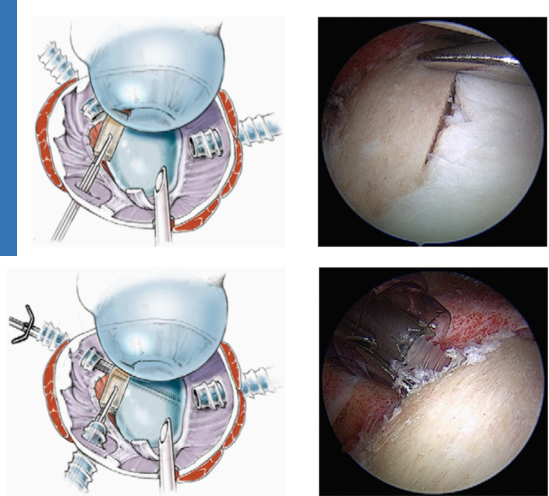
Bone block: Anterior

- @ Eden-Hybbinette
 - 15 patients, FU 20.6 m
 - No recurrent subluxations or dislocations were observed and the apprehension sign tested or negative in all patients
 - **Good to excellent results were achieved**
 - Arthroscopic reconstruction of anteroinferior glenoid defects using an autologous tricortical iliac crest bone graft represents a reproducible and reliable technique

SUBSPECIALTY PROCEDURES

ARTHROSCOPIC GLENOID RECONSTRUCTION FOR CHRONIC ANTEROINFERIOR SHOULDER INSTABILITY USING A TRICORTICAL ILIAC CREST BONE GRAFT

Elisabeth Boehm, Christian Gerhardt, MD, Natascha Kraus, MD, Markus Scheibel, MD



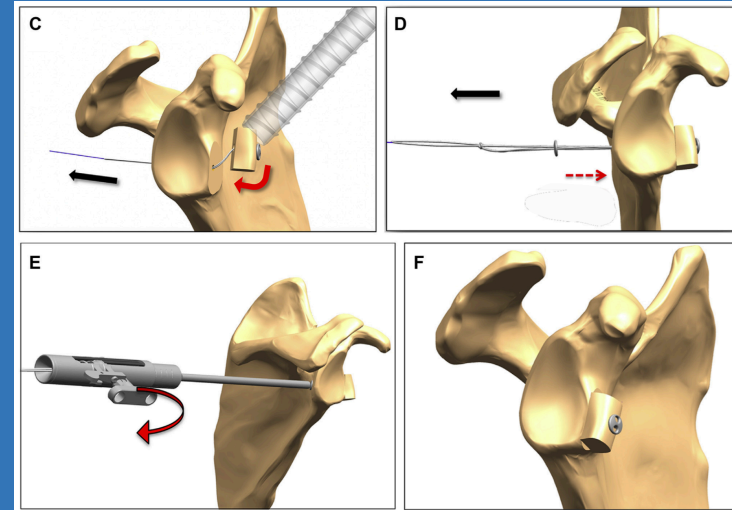
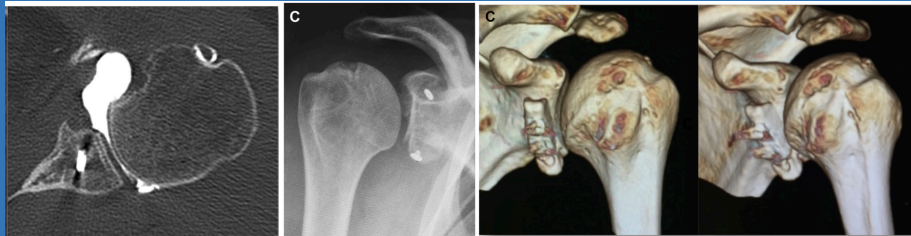
Bone block: Anterior

- @ Eden-Hybbinette

- 7 patients, FU 21m
- @ Eden-Hybbinette with suture-button fixation for revision of failed Latarjet is safe and reliable
- Successful reconstruction of the anterior glenoid rim and treatment of all associated instability lesions (capsular deficiency, humeral bone loss)
- Suture-button fixation and specific drill guides enables accurate graft placement and consistent bone graft healing

All-arthroscopic, guided Eden-Hybbinette procedure using suture-button fixation for revision of failed Latarjet

Pascal Boileau, MD, PhD^{a,*}, Christophe Duysens, MD^b, David Saliken, MD, FRCS(C)^a, Devin B. Lemmex, MD, FRCS(C)^a, Nicolas Bonneville, MD, PhD^c



Bone block: Anterior

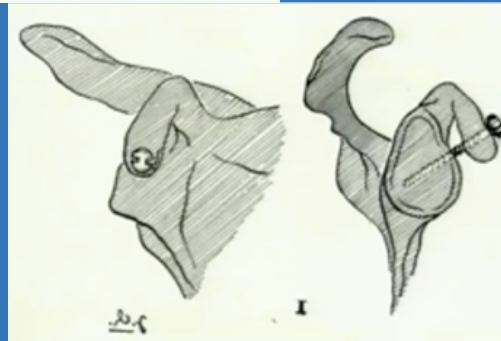


- Trillat

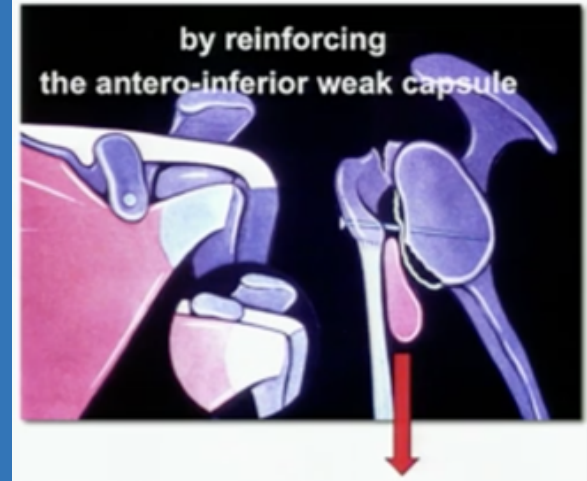
EXTRAIT DU « LYON CHIRURGICAL »
Tome 49 — N° 8 - Novembre-Décembre 1954

Traitement de la luxation récidivante de l'épaule
Considérations techniques

par A. TRILLAT



**Lowering the subscapularis
provides anterior stability**



Bone block: Anterior



- **Trillat**

- 52 cases, FU 69 m
- Results in 73% of shoulders were excellent, 10% were good, 7% fair and 10% poor
- Dislocation recurred in 4%, but a positive apprehension sign was present in 10 other shoulders
- **Some degenerative changes were seen in 62% of shoulders, a complication known to be associated with bone-block procedures**
- **The most important reason for loss of lateral rotation was iatrogenic impingement of the coracoid**
- This frequent and potentially serious complication can also cause posterior subluxation of the humeral head and osteoarthritis.

J Bone Joint Surg Br. 1988 Jan;70(1):130-4.

The Trillat procedure for recurrent anterior instability of the shoulder.

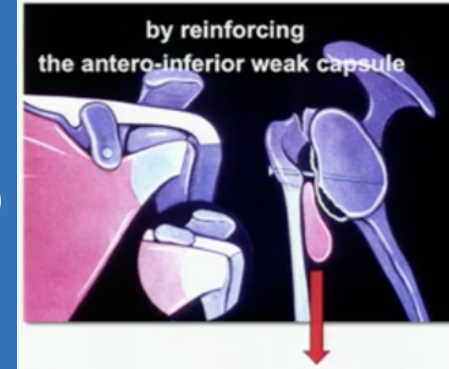
Gerber C¹, Terrier F, Ganz R.



Bone block: Anterior

- Rotator cuff tears associated with anterior instability
 - Walch and Boileau proposed an stabilization by coracoid transfer (Trillat procedure)

Lowering the subscapularis provides anterior stability



[Orthop Traumatol Surg Res.](#) 2018 Oct;104(6):811-816. doi: 10.1016/j.otsr.2017.12.022. Epub 2018 Mar 22.

Arthroscopy-assisted Trillat procedure for anterior shoulder instability: Surgical technique and preliminary clinical results.

Labattut L¹, Bertrand V¹, Reybet Degat PY², Arcens M³, Trouilloud P¹, Baulot E⁴, Martz P⁵.

[Arthrosc Tech.](#) 2019 Feb; 8(2): e199–e204.

PMCID: PMC6410926

Published online 2019 Jan 28. doi: [10.1016/j.eats.2018.10.013](#)

PMID: 30899670

Arthroscopic Trillat Coracoid Transfer Procedure Using a Cortical Button for Chronic Anterior Shoulder Instability

Philippe Valenti, M.D.,^a Charbel Maroun, M.D.,^a Bradley Schoch, M.D.,^c Santiago Ordoñez Arango, M.D.,^a and Jean-David Werthel, M.D.^{a,b,*}

Walch G, Boileau P: Rotator cuff tears associated with anterior instability; in Warner JJ, Iannotti JP, Gerber C (eds): Complex and Revision Problems in Shoulder Surgery. Philadelphia, Lippincott- Raven, 1997





Bone block: Posterior

- Posterior glenohumeral dislocation account for **only 5% of shoulder dislocations**

Robinson MC, Aderinto J. Recurrent posterior shoulder instability. J Bone Joint Surg [Am]. 2005;87-A:883e892

- Procedures that address the bony anatomy:

- Glenoid osteotomy
- Bone block procedures

- Fried A. Habitual posterior dislocation of the shoulder-joint: a report on five operated cases. Acta Orthop Scand. 1948;18:329e345.
- Fronek J, Warren RF, Bowen M. Posterior subluxation of the glenohumeral joint. J Bone Joint Surg [Am]. 1989;71-A:205e216.
- Jones V. Recurrent posterior dislocation of the shoulder: report of a case treated by posterior bone block. J Bone Joint Surg [Br]. 1958;40-B:203e207.
- Mowery CA, Garfin SR, Booth RE, Rothman RH. Recurrnt posterior dislocation of the shoulder joint: treatment using a bone block. J Bone Joint Surg [Am]. 1985;67e A:777e781.

- Rocher, 1931 - rib graft

Rocher H. Butée glénoïdienne postérieure par greffon costal dans une subluxation habituelle del'épaule dué a une paralysie obstétricale.ParisChir. 1931;2:33e43

- Ilfield, 1943 - iliac crest graft

Ilfield F, Holder H. Recurrent dislocation of the shoulder joint. J Bone Joint Surg. 1943;25:156.





Bone block: Posterior

- **Gosset, 1976 - screw fixation with a larger U-shaped graft**

Gosset J. Luxations récidivantes postérieures de l'épaule. Technique de butée osseuse scapulaire postérieure. À propos de quatre cas personnels. Ann Chir. 1976;30:569e572.

- **Fronek, 1989 - combining with a procedure of the posterior capsule**

Fronek J, Warren RF, Bowen M. Posterior subluxation of the glenohumeral joint. J Bone Joint Surg [Am]. 1989;71-A:205e216.

- **Kouvalchouk, 1993 - bone block procedure using the posterior portion of the acromion with a deltoid flap, thereby providing triple posterior restraints, similar to Latarjet procedure for anterior instability**

Kouvalchouk J, Coudert X, Watin Augouard L, Da Siva Rosa R, Paszkowski A. Le traitement des instabilités postérieures de l'épaule par butée acromiale pédiculée à un lambeau deltoïdien. Rev Chir Orthopédique. 1993;79:661e665.



Bone block: Posterior



Available online at
ScienceDirect
www.sciencedirect.com

Elsevier Masson France
EM|consulte
www.em-consulte.com/en



Original article

Clinical outcomes of posterior bone block procedures for posterior shoulder instability: Multicenter retrospective study of 66 cases



P. Clavert^{a,*}, E. Furioli^a, K. Andieu^b, F. Sirveaux^c, M.B. Hardy^d, G. Nourissat^e, Y. Bouju^f, J. Garret^g, A. Godenèche^h, P. Mansatⁱ, the French Arthroscopy Society

- 2017, Clavert et al.
- Multi-center retrospective study, 66 patients, 3.7 years
 - Iliac crest posterior bone block procedure with screw fixation, with or without capsulolabral reconstruction
 - **Good overall outcome** with significant improvement in the constant and Walch-Duplay scores and a high satisfaction rate
 - Complications included a 12% recurrence rate and 18% persistent pain
 - These include poor control of posterior translation (when the posterior capsule is not addressed), posterior chondral lesions, reverse Hill-Sachs lesion which alters joint kinetics and proprioception
 - **Effective technique with good subjective and objective outcomes**
 - **The possibility of complications can not be ignored**



Bone block: Posterior @

- Schwartz et al., 2013, 19 shoulders

- First case series of arthroscopic posterior bone block augmentation
- The results were comparable to the results of open techniques
- **Complications requiring reoperation including hardware removal occurred in 7 of 19 shoulders**

Learning curve?



Bone block: Posterior @

- Boileau et al., 2013, 15 patients

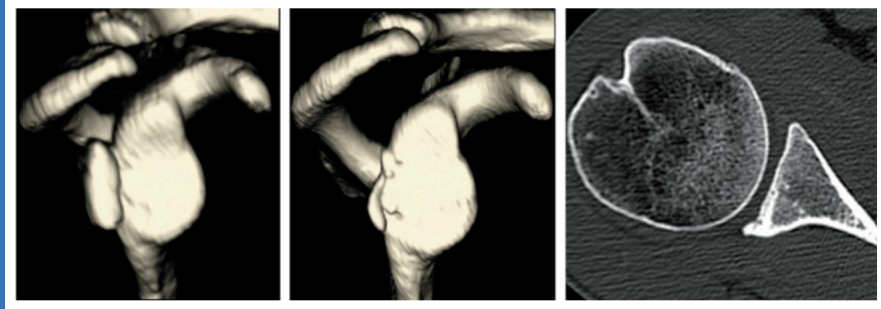
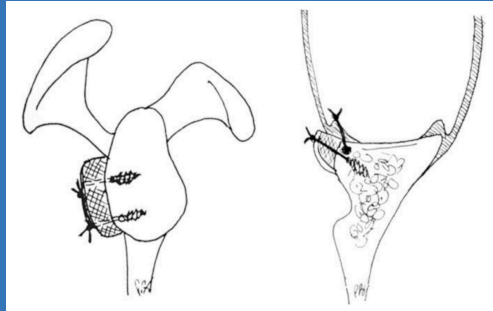
- They described an all-arthroscopic technique of posterior shoulder stabilisation using suture anchors for both bone block fixation and capsulolabral repair.
- **Advantageous because it does not use screws for fixation and may be safer for the patient**



Technical Note

Arthroscopic Posterior Bone Block Procedure: A New Technique Using Suture Anchor Fixation

Pascal Boileau M.D. ✉, Marie-Béatrice Hardy M.D., Walter B. McClelland Jr. M.D., Charles-Edouard Thélu M.D., Daniel G. Schwartz M.D.



Bone block: Posterior @

- Boileau et al., 2013, 15 patients



Arthroscopy Techniques
Volume 2, Issue 4, November 2013, Pages e473-e477



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THM | Conclusion



- The **Latarjet** procedure
 - Provides excellent long-term outcomes in the treatment of recurrent anterior glenohumeral instability
- There is no reason that in the near future the orthopaedic community does not adopt the **arthroscopic Latarjet procedure**, as we adopted the arthroscopic rotator cuff repair and other complex surgical procedures
- (@) **Eden-Hybbinette** represents a reproducible and reliable technique
- (@) **Iliac crest posterior bone block** procedure
 - Is an effective technique with good subjective and objective outcomes





Thank you all
for coming
to Braga!



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