

Editorial Commentary: Classic and Congruent-Arc Latarjet Techniques Are Equally Safe and Effective Procedures, so Choose Whichever Technique Works Best in Your Hands for Your Patients



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Abstract: The classic and congruent-arc Latarjet techniques are equally safe and effective in restoring glenohumeral stability, even when performed as a revision of a failed stabilization. The classic technique provides a broader contact area for healing and facilitates and improves screw fixation. The congruent-arc technique theoretically optimizes glenohumeral contact forces because of the matched radius of curvature, provides better restoration of glenoid depth, and restores larger glenoid defects. However, rotating the coracoid graft for the congruent-arc technique eliminates the possibility of imbricating the coracoacromial ligament stump to the capsule. Surgeons have little reason to change from one technique to the other; both techniques result in successful outcomes.

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Latarjet¹ described the coracoid bone block technique to prevent anterior glenohumeral dislocation in 1954, and Patte and Debeyre² subsequently proposed the triple-blocking effect, in that the transferred coracoid bone extends the glenoid arc, the attached conjoined muscles provide a dynamic sling in abduction and external rotation, and the coracoacromial ligament stump reinforces the capsule. Walch and Boileau³ described transferring the coracoid so that the posterior surface of the coracoid is applied to the anteroinferior scapular neck; this is referred to as the “lying” or “classic” position.

Over the past 2 decades, the Latarjet procedure has gained in popularity worldwide, after the landmark study by Burkhart and De Beer⁴ that raised awareness of the detrimental effect of glenoid bone loss and the engaging Hill-Sachs lesion on the success of arthroscopic capsulolabral repair. Studies into coracoid morphology revealed that the inferior coracoid surface closely matches the glenoid radius of curvature, so

Burkhart et al.⁵ modified the Latarjet procedure by rotating the coracoid graft 90° to provide a congruent arc.⁶

Several anatomic and biomechanical studies have compared the classic and congruent-arc techniques. The classic technique provides a broader contact area for healing^{7,8} and facilitates and improves screw fixation.^{8,9} The congruent-arc technique theoretically optimizes glenohumeral contact forces because of the matched radius of curvature,⁶ and anatomic studies have shown that the congruent-arc technique provides better restoration of glenoid depth.^{8,10} However, rotating the coracoid graft for the congruent-arc technique loses 1 of the 3 aforementioned blocking effects because it eliminates the potential to imbricate the coracoacromial ligament stump to the capsule. Several studies have shown that the congruent-arc technique restores larger glenoid defects,^{8,11,12} with 1 study noting that the classic technique did not restore adequate bone stock consistently for glenoid defects greater than 20%.¹²

However, biomechanical studies have shown equivalent effects of the classic and congruent-arc techniques on restoring stability. In 1 cadaveric study using a 25% glenoid bony defect, both the classic and congruent-arc techniques showed nearly identical force to dislocation after reconstruction.¹³ In a cadaveric model of 30% glenoid bone loss, another study showed

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similar restoration of joint stability with the classic and congruent-arc techniques.¹⁴

Numerous reports have highlighted the excellent clinical results with both the classic¹⁵⁻¹⁷ and congruent-arc^{5,18-20} techniques. However, despite the substantial interest in understanding the anatomic and biomechanical differences between the classic and congruent-arc techniques, there has been a dearth of clinical comparative study. The article "Similar Results in Return to Sports, Recurrences and Healing Rates Between the Classic and Congruent Arc Latarjet for Athletes With Recurrent Glenohumeral Instability and a Failed Stabilization" by Rossi, Tanoira, Gorodischer, Pasqualini, and Ranalletta²¹ bridges this knowledge gap. The authors compared their results using the congruent-arc technique between 2009 and 2015 with their results using the classic technique more recently, between 2015 and 2017. One of the elegant features of this study is the consistent surgical method so that the differences between their classic and congruent-arc techniques relate mainly to graft rotation and preparation of different coracoid surfaces for bone healing. The capsule was not repaired with either technique, with or without the coracoacromial ligament stump. Rossi et al. noted that they switched from the congruent-arc technique to the classic technique because of concerns over high graft nonunion rates, which they related to the diminished surface area available for healing.

The senior author, Dr. Ranalletta, and his associates have written extensively on their vast experience with the congruent-arc Latarjet procedure. In a previous study of 68 athletes undergoing this procedure after failed stabilization, Ranalletta et al.¹⁸ reported no recurrent subluxations or dislocations, with a reoperation rate of 3% and graft-healing rate of 92%. Moreover, in a study of 100 athletes, including overhead, contact, and collision athletes, they reported no recurrent instability, with a graft-healing rate of 91% and return-to-sport rate of 96%, including a 91% rate of return to the preinjury level of play.¹⁹ They also reported no recurrent instability, with a graft-healing rate of 88% and return-to-sport rate of 94%, in a series of 50 rugby players undergoing the congruent-arc Latarjet technique as either a primary procedure or a revision of a failed stabilization.²⁰ Their experience in rugby players is noteworthy because these collision athletes are notorious for sustaining high-energy shoulder dislocations and often present in a delayed manner with attritional and substantial glenoid bone loss and large, often engaging Hill-Sachs defects.¹⁶

I was not surprised to learn that Rossi et al.²¹ reported excellent outcomes and low rates of recurrent instability and serious complications because this experience mirrors their previous experience. Remarkably, they reported only a single case of graft resorption and a single case of nerve injury, a musculocutaneous neurapraxia. An interesting finding is that, despite their impetus to

change to the classic technique, Rossi et al. observed nearly identical graft nonunion rates: 9% for the classic technique and 8% for the congruent-arc technique. Besides the consistent surgical technique, the strengths of this study include robust clinical and radiographic surveillance and meticulous follow-up, with only 6 of 141 patients (4%) excluded from the study for failure to achieve 2-year follow-up. Although the congruent-arc cohort represents a historical control group, its follow-up was only 7 months longer than that in the classic cohort, limiting the potential for selection bias.

Rossi et al.²¹ acknowledge several study limitations, including their focus on failed stabilizations, but I contend that this is another study strength rather than a limitation. A failed stabilization is a common indication for the Latarjet procedure, given that it has a less favorable complication profile than arthroscopic capsulolabral repair, so it is important to evaluate its safety and effectiveness when performed as a revision procedure. However, the most important and practical limitation may be the difficulty to generalize or extrapolate from this study. Most surgeons experienced with the Latarjet procedure have not performed 140 such operations, let alone as revision procedures. So the safety and effectiveness shown by the authors may not extend to less experienced surgeons.

Nonetheless, the study by Rossi et al.²¹ delivers an important take-home message: Experienced Latarjet surgeons can obtain equivalent results with both the classic and congruent-arc techniques. Both techniques restore stability and enable return to sport predictably, even when performed as a revision procedure in high-demand athletes including rugby players and other collision athletes. This study should serve as a benchmark for surgeons performing both open and arthroscopic Latarjet procedures and further illuminates the enduring benefits of Dr. Michel Latarjet's procedure nearly 70 years after his initial report on *traitement des luxations récidivante de l'épaule*.¹

The corollary to the aforementioned message is just as important: Surgeons should choose the Latarjet technique that works best in their hands for their patients. I completed orthopaedic residency training in the 1990s with mentorship by Dr. Romeo and 2 consecutive shoulder fellowships with Dr. Matsen and Dr. Gartsman, ending in 2000. Despite learning so much in training from these master surgeons, I did not encounter a single Bristow or Latarjet procedure because, at the time in the United States, these procedures had fallen out of favor. Instead, I learned the classic Latarjet technique during a handful of surgical skills labs in the years that followed and from a pre-production review of a wonderful video of the coracoid transfer as performed by Dr. Edwards,²² who learned the technique from Dr. Walch, who in turn refined the techniques developed by Drs. Patte and

Latarjet. I have followed the same method, with nominal modifications, for nearly 15 years because it is safe and effective. Dr. Matsen's dictum "The surgeon is the method" certainly applies to the Latarjet procedure,²³ so I am emboldened to stay the course and continue to polish my own "classic" technique.

References

- Latarjet M. A propos du traitement des luxations récidivantes de l'épaule. *Lyon Chir* 1954;49:994-1003 [in French].
- Patte D, Debeyre J. Luxations recidivantes de l'épaule. *Encycl Med. Chir. Paris-Technique Chirurgicale Orthopedie* 1980;44265:4.4-02.
- Walch G, Boileau P. Latarjet-Bristow procedure for recurrent anterior instability. *Tech Shoulder Elbow Surg* 2000;1:256-261.
- Burkhart SS, De Beer JF. Traumatic glenohumeral bone defects and their relationship to failure of arthroscopic Bankart repairs: Significance of the inverted-pear glenoid and the humeral engaging Hill-Sachs lesion. *Arthroscopy* 2000;16:677-694.
- Burkart SS, De Beer JF, Barth JRH, Cresswell T, Roberts C, Richards DP. Results of modified Latarjet reconstruction in patients with anteroinferior instability and significant bone loss. *Arthroscopy* 2007;23:1033-1041.
- DeBeer J, Burkhart SS, Roberts CP, van Rooyen K, Cresswell T, du Toit DF. The congruent arc Latarjet. *Tech Shoulder Elbow Surg* 2009;10:62-67.
- Dumont GD, Vopat BG, Parada S, et al. Traditional versus congruent arc Latarjet technique: Effect on surface area for union and bone width surrounding screws. *Arthroscopy* 2017;33:946-952.
- Montgomery SR, Katthagen JC, Mikula JD, et al. Anatomic and biomechanical comparison of the classic and congruent-arc techniques of the Latarjet procedure. *Am J Sports Med* 2017;45:1252-1260.
- Giles JW, Puskas G, Welsh M, Johnson JA, Athwal GS. Do the traditional and modified Latarjet techniques produce equivalent reconstruction stability and strength? *Am J Sports Med* 2012;40:2801-2807.
- Noonan B, Hollister SJ, Sekiya JK, Bedi A. Comparison of reconstructive procedures for glenoid bone loss associated with recurrent anterior shoulder instability. *J Shoulder Elbow Surg* 2014;23:1113-1119.
- Bhatia DN, Kandhari V. Bone defect-induced alteration in glenoid articular surface geometry and restoration with coracoid transfer procedures: A cadaveric study. *J Shoulder Elbow Surg* 2019;28:2418-2426.
- Gregori M, Eichelberger L, Gahleitner C, Hajdu S, Pretterklieber M. Relationship between the thickness of the coracoid process and Latarjet graft positioning-an anatomical study on 70 embalmed scapulae. *J Clin Med* 2020;9:207.
- Prinja A, Raymond A, Pimple M. A biomechanical comparison of two techniques of Latarjet procedure in cadaveric shoulders. *Adv Orthop* 2020;2020:7496492.
- Boons HW, Giles JW, Elkinson I, Johnson JA, Athwal GS. Classic versus congruent coracoid positioning during the Latarjet procedure: An in vitro biomechanical comparison. *Arthroscopy* 2013;29:309-316.
- Young AA, Maia R, Berhouet J, Walch G. Open Latarjet procedure for management of bone loss in anterior instability of the glenohumeral joint. *J Shoulder Elbow Surg* 2011;20:S61-S69 (suppl).
- Neyton L, Young A, Dawidziak B, et al. Surgical treatment of anterior instability in rugby union players: Clinical and radiographic results of the Latarjet-Patte procedure with minimum 5-year follow-up. *J Shoulder Elbow Surg* 2012;21:1721-1727.
- Bhatia S, Frank RM, Ghodadra NS, et al. The outcomes and surgical techniques of the Latarjet procedure. *Arthroscopy* 2014;30:227-235.
- Ranalletta M, Rossi LA, Bertona A, Tanoira I, Maignon GD, Bongiovanni SL. Modified Latarjet procedure without capsulolabral repair for the treatment of failed previous operative stabilizations in athletes. *Arthroscopy* 2018;34:1421-1427.
- Rossi LA, Bertona A, Tanoira I, Maignon GD, Bongiovanni SL, Ranalletta M. Comparison between modified Latarjet performed as a primary or revision procedure in competitive athletes: A comparative study of 100 patients with a minimum 2-year follow-up. *Orthop J Sports Med* 2018;6:2325967118817233.
- Ranalletta M, Rossi LA, Bertona A, et al. Modified Latarjet without capsulolabral repair in rugby players with recurrent anterior glenohumeral instability and significant glenoid bone loss. *Am J Sports Med* 2018;46:795-800.
- Rossi LA, Tanoira I, Gorodischer T, Pasqualini I, Ranalletta M. Similar results in return to sports, recurrences and healing rates between the classic and congruent arc Latarjet for athletes with recurrent glenohumeral instability and a failed stabilization. *Arthroscopy* 2020;36:2367-2376.
- Edwards TB, Gartsman GM, Elkousy HA. The Latarjet procedure for recurrent anterior shoulder instability. In: Nicholson GP, Edwards TB, eds. *The masters experience: Arthroscopic surgical techniques—Anterior glenohumeral instability*. Rosemont, IL: Arthroscopy Association of North America and American Academy of Orthopaedic Surgeons, 2008.
- Gilmer BB. *Editorial Commentary: The surgeon is the method: Be thoughtful and methodical when adopting new techniques.* *Arthroscopy* 2020;36:950-951.