

Editorial Commentary: Open Posterior Shoulder Stabilization—When Is It Needed? Glenoid Bone Loss Patterns Are Not Created Equal



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Abstract: Posterior shoulder instability remains a poorly understood pathologic entity. Our current treatment algorithm of simple posterior shoulder instability is fairly straightforward, with most patients receiving arthroscopic capsulorrhaphy with labral repair. However, in those with a failed arthroscopic intervention and/or with bony pathology, the optimal treatment is much less clear. As we move forward to evaluate how to optimally treat these patients, it will be critical to better understand the bony pathologies, including those with true posterior glenoid bone loss versus glenoid retroversion. Using novel methods to identify, measure, and quantify the different glenoid morphologies will be the foundation for improving the treatment of these complex and poorly understood pathologies.

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Posterior shoulder instability is a broad definition encompassing subtle subluxations to frank dislocations from a wide spectrum of pathologies.^{1,2} Less than 10% of all shoulder instability is isolated in the posterior direction, and it has been traditionally thought that a small subset of these patients have bone loss or abnormal glenoid morphology.²⁻⁵ This low incidence compared with anterior shoulder instability is associated with the robust literature focused on anterior instability and a resultant paucity of understanding regarding posterior instability. Often, surgeons therefore are left to extrapolate anterior shoulder instability principles to patients with posterior instability. The current article from Beaulieu-Jones, Peebles, Golijanin, Arner, Dekker, Sanchez, McClellan, Sanchez, Bradley, and Provencher,⁶ entitled “Characterization of Posterior Glenoid Bone Loss Morphology in Patients With Posterior Shoulder Instability,” is an important step in our understanding of glenoid morphologic changes in the setting of recurrent posterior instability. It not only provides a novel method for measuring bone loss but

also gives us insight into different patterns of posterior bone loss, from glenoid retroversion to the authors’ novel posterior defect angle. It is our hope that this article will serve as a foundation for future research, allowing patient pathologies to be better grouped when attempting to analyze the appropriate treatment algorithms.

In the setting of minimal to no posterior glenoid bone loss, the treatment algorithm seems to be relatively clear, at least for the initial steps. In our practice, after a failure of extensive nonoperative management or in the setting of recurrent dislocations, arthroscopic capsulorrhaphy and labral repair appear to comprise a reasonable and efficacious treatment, as supported by prior literature.^{5,7-11} Over 90% of patients in these studies returned to sport after this arthroscopic treatment, with recurrent instability rates between 5% and 8%. This first step is not apparently controversial and appears to be a well-accepted aspect of the treatment algorithm for posterior shoulder instability. However, it is either the patient in whom the arthroscopic procedures fail (e.g., contact sport related) or who presents initially with abnormal glenoid pathology that is much less clear.

As we previously showed, glenoid retroversion predicts posterior instability because there is a high incidence of glenoid retroversion in patients with posterior shoulder instability on the involved and contralateral sides.¹² Furthermore, it appears that the risk of posterior instability increases 17% for every 1° increase in

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glenoid retroversion.¹³ However, unlike anterior instability in which the extent of bone loss has been thoroughly studied and characterized,¹⁴⁻¹⁷ we do not know the amount of retroversion or posterior bone loss that is associated with increased failure rates. However, Beaulieu-Jones et al.⁶ have provided the field of shoulder instability an important first step in understanding the bony morphology associated with posterior shoulder instability. Furthermore, they have taught us that glenoid retroversion and posterior bone loss are distinct entities: "Retroversion cannot be used to predict the amount of posterior glenoid bone loss."

The distinction between glenoid retroversion and posterior bone loss is well noted in the article by Beaulieu-Jones et al.,⁶ in which they quantified using the posterior defect angle to help characterize the posterior defect. These 2 distinct posterior instability pathologies are likely both independent risk factors for the failure of arthroscopic soft-tissue stabilization procedures. However, the treatment of these 2 pathologies should be considered separately. Using the authors' novel methodology for quantifying traumatic posterior bone loss, we hope that future studies will enable us to understand what the amount of bone loss or posterior defect angle is for which a bony reconstruction should be performed. The same holds true with glenoid retroversion and associated posterior subluxation of the humeral head. Although the bony reconstruction procedures have shown promise, we have seen a high complication rate with both the bone block procedures¹⁸⁻²¹ to address bone loss and glenoid osteotomies²²⁻²⁵ to address retroversion. Therefore, an improved understanding of glenoid morphology and potential cutoff values for different procedures is one of the most important issues in shoulder instability today. Although this article may not change the way we practice today, it will certainly help us in the future to better think about glenoid morphology associated with posterior shoulder instability, as well as better study the optimal procedures to perform in the setting of glenoid retroversion and posterior glenoid bone loss.

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