Editorial Commentary: Beach Chair Versus Lateral Decubitus for Arthroscopic Posterior Shoulder Stabilization—Here We Go Again

Rachel M. Frank, M.D.

Abstract: Recent literature has suggested that patient positioning matters when it comes to arthroscopic anterior shoulder stabilization. Although advocates of the lateral decubitus position argue that only in this position can the anteroinferior and posteroinferior aspects of the glenoid be adequately visualized and instrumented, outcomes following posterior shoulder stabilization appear independent of patient position.

See related article on page 214

Recent literature has suggested that patient positioning matters when it comes to arthroscopic anterior shoulder stabilization, with the lateral decubitus (LD) position resulting in lower recurrence rates when compared with the beach chair (BC) position.[1] In this month's issue, de SA, Sheean, Morales-Restrepo, Dombroski, Kay, and Vyas[2] attempt to determine if patient position is equally as important a factor in outcomes following posterior shoulder stabilization in their article, "Patient Positioning in Arthroscopic Management of Posterior-Inferior Shoulder Instability: A Systematic Review Comparing Beach Chair and Lateral Decubitus Approaches."

The authors performed a systematic review of clinical outcomes, complications, and recurrence rates of all available literature pertaining to patients undergoing arthroscopic posteroinferior shoulder stabilization performed either in the BC or LD positions.[2] A total of 25 studies comprising 1,085 patients were included, with 140 patients (13%) undergoing surgery in the BC position and 945 patients (87%) in the LD position. At a mean 3.1 years after surgery, the authors found no differences in overall outcomes based on patient position. Although not able to be statistically compared, both postoperative satisfaction levels and failure rates were noted to be higher in patients undergoing surgery in the LD position. The authors concluded that the current data prevent any definitive conclusions regarding if 1 position is superior relative to the other.

Posterior shoulder instability is relatively rare, accounting for approximately 10% of all shoulder instability pathology.[3-5] Accordingly, the majority of studies available in the literature focus on anterior shoulder pathology, making it difficult to lean on the literature to guide clinical and surgical decision making for patients with posterior labral and capsulolabral pathology. As with anterior shoulder stabilization surgery, once indicated for surgery, the technique of choice for the vast majority of patients with minimal to no glenoid bone loss is arthroscopic stabilization.[6-13] Once the decision to proceed with arthroscopic stabilization is made, the number of available surgical techniques and implants is substantial and often comes down to surgeon training, experience, and preference. One of the first decisions to be made is patient position.

Both the BC and LD positions have proven safe and reliable for the majority of arthroscopic shoulder surgeries, and there are a variety of advantages and disadvantages associated with each.[14-22] In the BC position, the shoulder is anatomically oriented, making it easier to teach others and easier to convert to an open procedure if needed. In addition, the BC position may be more ergonomic and comfortable for the surgeon and the assistant. In the LD position, it is easier to get traction across

University of Colorado School of Medicine

The author reports that she has no conflicts of interest in the authorship and publication of this article. Full ICMJE author disclosure forms are available for this article online, as supplementary material.

0749-8063/181184/$36.00

https://doi.org/10.1016/j.arthro.2018.09.025

the glenohumeral joint, improving visualization of, and instrumentation to, the inferior aspect of the glenoid, particularly the posteroinferior aspect. Of note, the potential for cerebral hypoperfusion is a concern in the BC position but not in the LD position.[23-28] For advocates of the LD position, this setup is critical for accessing the inferior aspect of the shoulder when performing a stabilization because it allows successful placement of inferior and posteroinferior anchors.[29] Achieving adequate inferior and posteroinferior anchor placement in the BC position, with appropriate anchor trajectory and without causing iatrogenic damage to the articular cartilage, is much more difficult and may explain at least in part why recurrence rates following anterior stabilization in the BC position are higher than in the LD position.[1] The LD position allows for an easier ability to exert traction on the arm, improving visualization of the entire glenoid, particularly the inferior and posteroinferior glenoid; such visualization in turn allows for easier instrumentation and anchor insertion. To achieve a similar view of the glenoid in the BC position, it is often necessary to apply substantial abduction and traction to the arm, and even then, the ability to place anchors in the appropriate trajectory is challenging. As de SA et al.[2] report, fortunately, even if substantial traction is required in the BC position to achieve anchor placement, no neurapraxias or other nerve injuries were noted for patients in any of the studies.

It is interesting that of all available literature on arthroscopic posterior shoulder stabilization in the PubMed, Medline, and EMBASE databases from 2000 to 2018 (as of the time of publication of the original article), 87% of patients had surgery in the LD position versus 13% in the BC position. These numbers alone lead me to conclude that most surgeons "believe" the LD position is "better" than the BC position for posterior shoulder stabilization; yet, like many topics of interest in orthopaedic surgery, the data supporting the LD position being "better" are simply not there. The disparity in numbers and the heterogeneity between studies, unfortunately, make it very difficult to draw conclusions, and as the de SA et al.[2] noted, true statistical analysis of this body of literature is simply not possible. It is curious that when looking at all 25 studies, regardless of the position, the mean number of portals placed (2.7 in BC, 2.8 in LD) and mean number of anchors used (2 in BC, 1.8 in LD) are lower than one might expect for a typical shoulder stabilization procedure, regardless of the position of the patient. It is also curious that of the 4 BC studies, only 3 reported on failure rates; of the 21 LD studies, only 13 reported on failure rates. Taken together, it is very difficult to interpret the literature in general on arthroscopic posterior shoulder stabilization and thus is not surprising that a factor such as patient positioning was not found to play a role in overall outcomes.

In summary, de SA et al.[2] have set the stage for us to better study the effect of patient positioning on outcomes following arthroscopic posterior shoulder stabilization. For now, it is safe to say that, for both anterior and posterior stabilization surgery, surgeons should use the technique that works best in their hands, including their preferred patient position.

References

1. Frank RM, Saccomanno MF, McDonald LS, Moric M, Romeo AA, Provencher MT. Outcomes of arthroscopic anterior shoulder instability in the beach chair versus lateral decubitus position: A systematic review and meta-regression analysis. *Arthroscopy* 2014;30:1349-1365.
2. de SA D, Sheean AJ, Morales-Restrepo A, Dombroski M, Kay J, Vyas D. Patient positioning in arthroscopic management of posterior-inferior shoulder instability: A systematic review comparing beach-chair and lateral decubitus approaches. *Arthroscopy* 2019;35:214-224.
3. Bradley JP, Arner JW, Jayakumar S, Vyas D. Risk Factors and outcomes of revision arthroscopic posterior shoulder capsulolabral repair. *Am J Sports Med* 2018;46:2457-2465.
4. Frank RM, Romeo AA, Provencher MT. Posterior glenohumeral instability: Evidence-based treatment. *J Am Acad Orthop Surg* 2017;25:610-623.
5. Provencher MT, LeClere LE, King S, et al. Posterior instability of the shoulder: Diagnosis and management. *Am J Sports Med* 2011;39:874-886.
6. Ee GW, Mohamed S, Tan AH. Long term results of arthroscopic Bankart repair for traumatic anterior shoulder instability. *J Orthop Surg Res* 2011;6:28.
7. Tokish JM, McBratney CM, Solomon DJ, Leclere L, Dewing CB, Provencher MT. Arthroscopic repair of circumferential lesions of the glenoid labrum. *J Bone Joint Surg Am* 2009;91:2795-2802.
8. Tokish JM, McBratney CM, Solomon DJ, Leclere L, Dewing CB, Provencher MT. Arthroscopic repair of circumferential lesions of the glenoid labrum: Surgical technique. *J Bone Joint Surg Am* 2010;92:S130-S144 (suppl 1).
9. van der Linde JA, van Kampen DA, Terwee CB, Dijksman LM, Kleinjan G, Willems WJ. Long-term results after arthroscopic shoulder stabilization using suture anchors: An 8- to 10-year follow-up. *Am J Sports Med* 2011;39:2396-2403.
10. Owens BD, DeBerardino TM, Nelson BJ, et al. Long-term follow-up of acute arthroscopic Bankart repair for initial anterior shoulder dislocations in young athletes. *Am J Sports Med* 2009;37:669-673.
11. Brophy RH, Marx RG. The treatment of traumatic anterior instability of the shoulder: Nonoperative and surgical treatment. *Arthroscopy* 2009;25:298-304.
12. Archetti Netto N, Tamaoki MJ, Lenza M, et al. Treatment of Bankart lesions in traumatic anterior instability of the shoulder: A randomized controlled trial comparing arthroscopy and open techniques. *Arthroscopy* 2012;28:900-908.
13. Bishop JA, Crall TS, Kocher MS. Operative versus nonoperative treatment after primary traumatic anterior

glenohumeral dislocation: Expected-value decision analysis. *J Shoulder Elbow Surg* 2011;20:1087-1094.
14. Skyhar MJ, Altchek DW, Warren RF, Wickiewicz TL, O'Brien SJ. Shoulder arthroscopy with the patient in the beach-chair position. *Arthroscopy* 1988;4:256-259.
15. Terry MA, Altchek DW. Diagnostic shoulder arthroscopy technique: Beach chair position. In: Tibone JE, Savoie FH, Shaffer BS, eds. *Shoulder arthroscopy*. New York: Springer-Verlag, 2003;9-15.
16. Arrington ED, Parada SA, Marchant BG. Beach chair and lateral decubitus setup—Pros and cons. In: Provencher MT, Romeo AA, eds. *Shoulder instability: A comprehensive approach*. Philadelphia: Elsevier, 2012;33-42.
17. Coudane H, Hardy P. [Shoulder arthroscopy: Setting, portals and normal exploration]. *Chir Main* 2006;25: S8-S21 (suppl 1) [in French].
18. Peruto CM, Ciccotti MG, Cohen SB. Shoulder arthroscopy positioning: Lateral decubitus versus beach chair. *Arthroscopy* 2009;25:891-896.
19. Provencher MT, McIntire S, Gaston TM, Salata MJ, Frank RM, Solomon DJ. Avoiding complications in shoulder arthroscopy: Pearls for lateral decubitus and beach chair positioning. *Techniques Shoulder Elbow Surg* 2010;11:1-3.
20. Provencher MT, Solomon DJ, Gaston T. Positioning for shoulder arthroscopy: Beach chair and lateral decubitus. In: Andrews JR, David TS, eds. *Arthroscopic techniques of the shoulder: A visual guide*. Philadelphia: SLACK, Inc, 2008;1-16.
21. Wakim E, Beaufils P. [Arthroscopy of the shoulder with the patient in beach-chair position]. *Rev Chir Orthop Reparatrice Appar Mot* 1991;77:577-580 [in French].
22. Rains DD, Rooke GA, Wahl CJ. Pathomechanisms and complications related to patient positioning and anesthesia during shoulder arthroscopy. *Arthroscopy* 2011;27: 532-541.
23. Lee JH, Min KT, Chun YM, Kim EJ, Choi SH. Effects of beach-chair position and induced hypotension on cerebral oxygen saturation in patients undergoing arthroscopic shoulder surgery. *Arthroscopy* 2011;27:889-894.
24. Salazar D, Sears BW, Aghdasi B, et al. Cerebral desaturation events during shoulder arthroscopy in the beach chair position: Patient risk factors and neurocognitive effects. *J Shoulder Elbow Surg* 2013;22:1228-1235.
25. Salazar D, Sears BW, Andre J, Tonino P, Marra G. Cerebral desaturation during shoulder arthroscopy: A prospective observational study. *Clin Orthop Relat Res* 2013;471:4027-4034.
26. Murphy GS, Szokol JW, Marymont JH, et al. Cerebral oxygen desaturation events assessed by near-infrared spectroscopy during shoulder arthroscopy in the beach chair and lateral decubitus positions. *Anesth Analg* 2010;111:496-505.
27. Dippmann C, Winge S, Nielsen HB. Severe cerebral desaturation during shoulder arthroscopy in the beach-chair position. *Arthroscopy* 2010;26:S148-S150 (9 suppl).
28. Pohl A, Cullen DJ. Cerebral ischemia during shoulder surgery in the upright position: A case series. *J Clin Anesth* 2005;17:463-469.
29. Roth CA, Bartolozzi AR, Ciccotti MG, et al. Failure properties of suture anchors in the glenoid and the effects of cortical thickness. *Arthroscopy* 1998;14:186-191.