

CORR Insights™: Risk of Thromboembolism in Shoulder Arthroplasty: Effect of Implant Type and Traumatic Indication

Robert G. Marx MD, MSc, FRCSC

Received: 13 February 2013 / Accepted: 20 February 2013 / Published online: 1 March 2013
© The Association of Bone and Joint Surgeons® 2013

Where Are We Now?

Few data guide the decision regarding whether to anticoagulate patients undergoing shoulder arthroplasty. Navarro et al. found a risk of 0.5% for deep venous thrombosis and pulmonary embolism after shoulder arthroplasty. The largest study to date studied more than 300,000 patients using administrative data and found similar rates (0.5% and 0.23%, respectively) [2]. The risk of thromboembolic disease after shoulder arthroplasty is much less than after total hip or knee replacement, and therefore, it remains unclear whether patients should receive anticoagulants after shoulder replacement.

This CORR Insights™ is a commentary on the article “Risk of Thromboembolism in Shoulder Arthroplasty: Effect of Implant Type and Traumatic Indication” by Navarro and colleagues available at DOI [10.1007/s11999-013-2829-6](https://doi.org/10.1007/s11999-013-2829-6).

The author certifies that he, or a member of his or her immediate family, has no funding or commercial associations (eg. consultancies, stock ownership, equity interest, patent/licensing arrangements, etc) that might pose a conflict of interest in connection with the submitted article.

All ICMJE Conflict of Interest Forms for authors and *Clinical Orthopaedics and Related Research* editors and board members are on file with the publication and can be viewed on request.

This CORR Insights™ comment refers to the article available at DOI: [10.1007/s11999-013-2829-6](https://doi.org/10.1007/s11999-013-2829-6).

R. G. Marx (✉)

Hospital for Special Surgery, 535 East 70th Street,
New York, NY 10021, USA
e-mail: marxr@hss.edu

Where Do We Need to Go?

Since anticoagulation poses significant risks for the patient, including increased risks of surgical and medical complications, and the percentage of patients who might benefit seems small, we need more information to help us balance the risk-reward ratio [1, 3, 4]. The article by Navarro et al. confirms that patients undergoing arthroplasty for trauma are at higher risk. They found that trauma patients have double the risk for thromboembolic disease ($p = 0.055$). This risk difference is clinically significant and it was very close to statistically significant. Therefore, if any patients undergoing shoulder arthroplasty would benefit from anticoagulation, it appears that it might be patients undergoing the procedure for traumatic indications. The methods used in this study, including how the investigators accessed patient records to confirm the relevant exclusion criteria and also how they confirmed the outcomes (the diagnoses of thromboembolic disease) were strong, and they give us additional confidence in the results of this study.

How Do We Get There?

Studies evaluating thromboembolic disease after shoulder arthroplasty are hard to do because they are studying a low-frequency event. Furthermore, death from thromboembolic disease is even rarer, and it can be difficult or impossible to ascertain whether a postoperative death was caused by a pulmonary embolism. Ideally, larger, prospective studies using patient records will be done to further identify patient risk factors. Complications from anticoagulants include wound hematoma with increased risk of infection, other surgical complications related to bleeding (neurovascular

injury, joint stiffness related to excessive bleeding) and medical complications, such as intracranial hemorrhage or abdominal bleeding [1, 3, 4]. Since the risk of complications from anticoagulants may outweigh the benefits for many patients, it is crucial to know which patients are at greatest risk for thromboembolic disease. This study confirms that trauma patients are at increased risk, but we need further research to determine whether there are other subgroups of patients who also are at higher risk, and whether—even in trauma patients undergoing shoulder arthroplasty—the benefits of anticoagulation outweigh its risks.

References

1. Bloomfield MR, Patterson RW, Froimson MI. Complications of anticoagulation for thromboembolism in early postoperative total joint arthroplasty. *Am J Orthop*. 2011;40:148–151.
2. Lyman S, Sherman S, Carter TI, Bach PB, Mandl LA, Marx RG. Prevalence and risk factors for symptomatic thromboembolic events after shoulder arthroplasty. *Clin Orthop Relat Res*. 2006;448:152–156.
3. Parvizi J, Ghanem E, Joshi A, Sharkey PF, Hozack WJ, Rothman RH. Does “excessive” anticoagulation predispose to periprosthetic infection? *J Arthroplasty*. 2007;22:24–28.
4. Torn M, Bollen WL, van der Meer FJ, van der Wall EE, Rosendaal FR. Risks of oral anticoagulant therapy with increasing age. *Arch Intern Med*. 2005;165:1527–1532.