Commentary on: Analysis of the American Society of Anesthesiologists Physical Status Classification System and Caprini Risk Assessment Model in Predicting Venous Thromboembolic Outcomes in Plastic Surgery Patients

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A retrospective chart review for venous thromboembolism (VTE) of a significant cohort of 1598 patients was analyzed with 2 different risk assessment models. The charts analyzed represented general, breast, reconstruction, and cosmetic surgery patients but were a skewed partial hospital, partial surgery center patient group. The patients included from Parkland Hospital in Dallas, Texas, may represent a cohort with more comorbidities than mainstream aesthetic patients. The risk assessments were the American Society of Anesthesiologists’ (ASA) score and Caprini score and compared with incidence of VTE to identify the cut off in risk level. A Caprini score for high-risk patients was set at different levels of 5+ and 6+ looking for significance. Of the 1598 patients, 1.5% developed VTE. In this study, ASA scores differed significantly between ASA (1-2) low vs (3+) high. The Caprini model captured more patients with VTE in the high-risk group but showed no significant difference between individual groups. The article stated that a higher Caprini score was shown to be associated with increased risk, but group stratifications were not statistically significant. In conclusion, the authors felt it was effective to combine the two models for a more holistic approach to risk assessment.

A total of 24 of the 1598 patients (1.5%) developed VTE, all while on sequential compression devices (SCD) and 80% while taking anticoagulation medication. Median ASA score for VTE patients was 3 and for Caprini was 6. The authors felt an ASA classification of 3+ (“severe systemic disturbance”), while a subjective rating by anesthesiologists, should be used for patients with more advanced disease states, particularly by experienced practitioners.

I always applaud any study on VTE, as it is a study on complication, which costs some personal pride. Any worthwhile attempt to make our specialty safer is worthy of publication. As such, the most glaring statistic out there for anyone who still is a naysayer is that despite all of the patients being on SCD and 80% anticoagulated, this cohort had 1.5% incidence of VTE. The rate is not zero in our specialty. The other studies that report abdominoplasty (1.4%), belt lipectomy (9%), and head and neck surgeries (1%), are all consistent with this study.

This issue comes down to what kind of model you employ for assessing risk. There are two alternatives: a risk assessment model that analyzes each patient and a procedure-based approach that analyzes the procedure being done. Our original approach was an adapted Caprini

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risk assessment, modified to make it simpler to use. Our second approach blended Caprini RAM with procedure weighting. A procedure-based approach would ignore the patient and treat the procedure (i.e., circumferential body lift, free flaps, trauma cases). This article attempts to identify a usable risk assessment model, ASA vs Caprini. To us, it doesn’t matter which you use as long as you use something to make an educated decision. If ASA has a higher correlation—excellent!—it has already been graded by anesthesia for you. All that is required is applying a rule such that an ASA greater than 3+ gets chemoprophylaxis.

As ever, nothing is that simple. This study was retrospective using a level-one city hospital population, which tends to be at a higher risk of VTE. This was not a study of untreated vs treated but rather a hybrid of both. What would the VTE rate in these 2 groups be without anticoagulation is the real question. How much had risk assessment helped? A problem in establishing absolute risk ratio using ASA vs Caprini scores is that this studies patients who had a VTE, mostly while anticoagulated, using a risk assessment model to identify those who need anticoagulation. The purist study would be assessing ASA vs Caprini models for patients without prophylaxis. With our current understanding of this risk, this alternative is no longer possible and in violation of *primum non nocere*.

The Caprini model has always been a graduated risk assessment, and as such, where you put the division will always be important. As this study shows, a Caprini score with a patient in the highest risk is more sensitive. Some plastic surgery applications of the Caprini RAM is too aggressive; for example, we do very few cases shorter than their 45-minute cut off, and in plastic surgery, short cases are in-office procedures without anesthetic. The hardest problem we have seen over the last decade is finding a model we can consistently apply to plastic surgery—maybe ASA is it.

In conclusion, VTE remains a risk; here, it occurs in 1.5% of patients on some form of prophylaxis. Consider a RAM or procedure-based process to assign risk of VTE. If the ASA score is easier to use as the anesthesiologists have already assessed your patients, use 3+ ASA as a risk for VTE, treat them with chemoprophylaxis, and have a low postoperative threshold for suspecting complications from VTE.

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