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Invited Commentary

Commentary for ""Worth Looking" Venous Thromboembolism in Patients Who Undergo Preperitoneal Pelvic Packing Warrants Screening Duplex"

Hemodynamic instability in the setting of pelvic fractures can require a wide array of therapeutic treatments. One of the more commonly used approaches is preperitoneal pelvic packing (PPP). PPP with external fixation (EF) is an accepted approach that is often very successful for controlling pelvic hemorrhage, and as has been previously described by the Denver group, it may also be used in combination with REBOA and angiography depending on available resources and expertise. While the focus of PPP/EF in the acute setting is centered on controlling the hemorrhage, this work by Heelan et al. entitled "Worth Looking! Venous Thromboembolism in Patients Who Undergo Preperitoneal Pelvic Packing Warrants Screening Duplex", addresses the other side of the question, namely, what is the risk of thrombosis?[1]

This study is a retrospective, single center, review of venous thromboembolism (VTE) complications in a population that exclusively received PPP/EF ± adjuncts. In this unstable population, the authors did an excellent job at controlling hemorrhage, as seen by the zero-mortality rate for deaths associated with pelvic hemorrhage. That said, this study identified 79 patients who met inclusion criteria and they report 32% of the study population developed a VTE complication.[1] Since 34 patients never received imaging, we believe this number is likely closer to 23% of the study population. Still, this number is enlightening but not surprising given the multiple risk factors for each of the patients. Previous work by Wang et al. assessed patients with either pelvic fractures or acetabular fractures, and even without PPP/EF, 29% of patients developed deep vein thromboses. This suggests that the added stasis from PPP/EF may not be the driving force behind the elevated VTE risk.[2]

The authors conclude with a recommendation for screening duplex ultrasound in the PPP/EF population so that the identification and treatment may be initiated in a timely manner. While this recommendation is modest, we find it difficult to make any clinical practice change given that the reported VTE rate is lower than what has previously been published with pelvic fractures alone.[2] That aside, we do question two of the choices made by the authors. First, the authors stated that VTEs were most commonly found in the femoral and superficial femoral veins, but they treated calf vein VTEs similarly with therapeutic anticoagulation and included these patients in their VTE group. The American College of Chest Physicians suggests that below knee VTEs should be treated only if symptomatic.[3] It is unclear why this distinction was not followed and how much it may have further decreased the clinically relevant VTE incidence. Second, the data is a mixture of screening bilateral versus diagnostic unilateral duplex studies that is further complicated by the lack of a standardized time of imaging. In fact, some of the patients still had packs in place at the time of screening. It is very disconcerting to know a patient may have a femoral VTE that is being "unoccluded" at the time of unpacking. Does this suggest that an IVC filter be placed or anticoagulation be initiated prior to removal of packs to prevent periprocedural pulmonary embolism? If the VTE is found to be "resolved" on imaging after unpacking, what would the authors recommend with respect to the duration of anticoagulation? Ultimately, it seems unlikely that the very early duplex ultrasound would significantly change the anticoagulation treatment since it is noted that patients were often not even cleared for chemical prophylaxis at the time of diagnosis. This does leave the possibility of early placement of inferior vena cava (IVC) filters, which is not without its own risks.

We commend the authors for taking on this question, but before a change in practice can be made, a larger standardized study is required. Additional insight into which patients were diagnosed on screening versus diagnostic imaging, and at what point in the hospital stay may be helpful. Additionally, more clarification on other injuries, risk factors, coagulopathy, type and number of blood products or tranexamic acid used would help elucidate many potential confounders. That said, the authors state it will when they say, "… although PPP/EF may lead to increased VTE risk, it is still a life-saving technique for this critically ill population."[1] We will add to this by saying that any provider who may be caring for these patients post-operatively should be keenly aware of this increased risk so as to best mitigate preventable complications.

Conflicts of interest

The authors have no conflicts of interest with this manuscript.

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