CHAPTER **17**

AN EDITORIAL ON DVT PROPHYLAXIS

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INTRODUCTION

We as surgeons realize the importance of thoroughly addressing the potential complication of thromboembolic events with our patients. Although this article is not meant to instruct the reader as to the specific techniques for DVT/PE prophylaxis, it is intended to challenge the reader to consider some of the controversies regarding the use of perioperative anticoagulants. The benefits of their use must be weighed against the complications they may cause.

While the diagnosis and treatment of DVT is to a degree straightforward, DVT prophylaxis is more controversial (especially for foot and ankle surgery). We all recognize that there is an abundance of literature that supports the use of pharmacologic anticoagulants in orthopedic procedures such as major joint replacement. Some studies show an incidence of thromboembolic events as high as 60% in these patients if not prophylaxed.[1,2] Over time, standardized protocols have been developed for the use of anticoagulants in patients who are to undergo procedures such as a total hip or knee replacement.

Unfortunately, this same abundance of literature does not exist for foot and ankle surgery, which contributes to the controversy. Without a large number of studies available, the foot and ankle surgeon is faced with drawing some conclusions about DVT prophylaxis (that in the future may or may not prove to be accurate). For example, few would disagree that some foot and ankle procedures are "major." The assumption however, is that "major" foot and ankle surgery poses the same risk for DVT as for example hip or knee arthroplasty. The surgeons who feel the risks are equivalent are more aggressive in their perioperative management of DVT prophylaxis than the surgeons who don't agree with this position. They former group feel that patients undergoing major rearfoot or ankle surgery, needing long-term cast immobilization, and having multiple "risk" factors should be given perioperative DVT prophylaxis. This sometimes includes 2-3 months of closely monitored Coumadin therapy. The latter group feel that the cost and risks of anticoagulation pose more risks than the potential benefit provided.

THE LITERATURE

As stated previously, there are very few controlled studies regarding the actual incidence of thromboembolic events following foot and ankle surgery. One of the largest studies evaluating thromboembolic events specifically following foot and ankle surgery was written in 1998 and published in *Clinical Orthopedics and Related Research*.[3] The senior author is Mark Mizel, a foot and ankle orthopedist. It is a prospective multi-center study among fifteen major institutions across the country and included 2,733 patients. An orthopedic surgeon from each of these institutions filled out a one page questionnaire on every patient having foot or ankle surgery during the year of 1995. Patients with major trauma were excluded. A number of preoperative parameters were studied and included general demographic information, current medical disorders, history of DVT, and current medications. Intraoperative parameters included the type of surgery, use of tourniquet, and tourniquet site. Postoperative parameters evaluated the use of DVT prophylaxis, immobilization, and weight bearing status. There were a number of other issues studied that can be found in the article.

Among the 2,733 patients in the study there were 6 postoperative thromboembolic events (0.23%) including 4 non-fatal pulmonary emboli. No postoperative anticoagulation was given to 2504 (92%) of the patients. In this group there were 4 postoperative detectable DVT's (0.16%). Of the patients that received postoperative prophylaxis, the incidence was 2 events in 218 patients (0.92%). One criticism that can be made about the study is the manner in which DVT's were documented. Neither venous ultrasounds nor venography were routinely performed to help document the presence of a DVT. Understandably, the cost of such testing would be very expensive, but there certainly could have been DVT's that were not diagnosed merely on the individual physician's clinical impression.

Furthermore, the authors didn't find any of the parameters that we normally assume to be associated with DVT risk to actually increase the incidence of postoperative thromboembolic events.

These included tourniquet use, major rearfoot or ankle surgery versus forefoot surgery, lack of DVT prophylaxis, even a history of previous DVT. The only factors that in any way increased the incidence of postoperative DVT were non-weightbearing status and long term cast immobilization. Even considering these 2 parameters the incidence was increased only a small fraction of a percentage. Moreover, in the article's discussion the authors state that "Given the low incidence of deep vein thrombosis after foot ankle surgery and the costs and potential complications involved, the authors of this study think that the risks and costs of thromboembolic prophylaxis and screening are not justified for the small gain that may accrue."

I questioned whether over the past 6 years since the article was published if the authors still had the same opinions toward the infrequent use of pharmacologic prophylaxis. I spoke to the senior author as well as the primary foot and ankle orthopedist from Campbell's Clinic in Memphis, Tennessee, who was also a contributing author to the study. Both stated that they neither provide nor recommend routine postoperative DVT prophylaxis even for major rearfoot or ankle surgery. There are of course always exceptions such as known coagulopathies. They feel that the potential complications and cost from long-term pharmacologic prophylaxis therapy outweigh the potential benefits. Unquestionably, this is different than the way many of us practice.

THE "RISK FACTORS"

The evaluation of risk factors is sometimes confusing in the assessment of patients, as well as our decision to utilize various forms of DVT prophylaxis (including both mechanical and pharmacologic forms of treatment). There are articles[4,5] that recommend placing patients in certain risk groups based on various "risk factors" the patient may have. Some of the many reported risk factors for the development of DVT include obesity, age greater than 40, tourniquet use, estrogen use, general surgery, major orthopedic surgery (such as total hip or knee replacement), surgery over 2 hours, use of general anesthesia (some studies state times greater than 30 minutes), history of DVT, and various coagulopathies.[4,5]

As an example, consider a patient who is to have an upcoming ankle fusion. She is obese; a thigh tourniquet is to be used; the procedure will last longer than 2 hours and will be performed under general anesthesia; she will be non-weight bearing after the surgery and will be cast immobilized for 8-10 weeks. In this example at least 7 risk factors are present (and eight if you consider being female a risk factor) and would easily put the patient in a "high" risk category. Most would agree that some form of preoperative prophylaxis would be appropriate, and might consist of compression stockings, a pneumatic compression pump, and mini-dose heparin. However, patients in the "high" risk category are also felt by many to receive post-operative treatment as well. This would normally be in the form of monitored Coumadin while the patient is non-weightbearing and cast immobilized. Realize, however that there are some (including the authors of the aforementioned study) who would disagree with this position and would not keep the patient on long-term anticoagulants.

Furthermore, depending on how you interpret the risk factors, will determine which patients will be prophylaxed and for how long. There seems to be less controversy over the use of short-term perioperative anticoagulation such as with a low molecular weight heparin product. But two of the risk factors always listed are non-weightbearing and cast immobilization. If you accept this then it would seem by necessity that we would need to keep a patient anti-coagulated until the cast is removed and the patient is ambulatory. But how far do you carry this thought process? What about an obese patient with a closed fracture who is to be treated conservatively for 6 weeks in a non-weightbearing cast?

SUMMARY

Many of us as foot and ankle surgeons have dealt with patients who have experienced DVT's and/or PE's. While thromboembolic prophylaxis in the preoperative and/or postoperative setting is an option, clearly realize that the issue is controversial. Furthermore, the institution of medical prophylaxis itself can result in complications and therefore, the risk/benefit analysis should be given careful consideration with each patient. An honest discussion with the patient and the patient's family during the preoperative consultation regarding these issues is extremely important. This will involve the patient in the decision making process regarding whether or not to institute medical