Determine the incidence of venous thromboembolic (VTE) risk factors in elective lower extremity arthroscopy through standardized screening in the adolescent age group.

Compare the incidence of risk factors identified through standardized screening to a retrospective chart review without standardized screening.

Present an algorithm for VTE prophylaxis in a low risk age group.

A prospective collection of standardized VTE risk factor assessments (Figure 1) were obtained from all elective lower extremity arthroscopic patients in an orthopaedic practice that focuses primarily on pediatric sports medicine over a 12 month period. The standardized VTE assessment and prophylaxis algorithm was leveraged in a multi-disciplinary effort between orthopaedics and hematology based upon accepted risk factors. Lower extremity arthroscopic patients were categorized as low, moderate to high, and very high risk (Figure 2). Very high risk patients were referred to hematology for further evaluation and prophylactic recommendations. Very high risk factors include an acquired or inherited thrombophilic condition, previous history of a VTE, more than one family member with a known VTE, or a first degree relative with a VTE at an age less than 40 years old. Risk factors that were identified prospectively were compared to those identified in a retrospective chart review. The retrospective chart review consisted of orthopaedic initial evaluations, surgical histories and physical exams during the 24 months prior to the initiation of the prospective study. A statistical comparison was made utilizing a Fisher’s exact test.

RESULTS

Six (1.8%) of three hundred and forty elective lower extremity arthroscopies (mean age 14.9 years old; 174 male) met the criteria for very high risk compared to none that were identified as very high risk from the two years prior to creation of the screening protocol. Of the six patients referred to hematology, three required peri-operative VTE pharmacoprophylaxis and two were diagnosed with an inherited thrombophilic condition. Three hundred and ten patients (91.1%) were considered low risk while 7.1% were moderate to high risk. The most common risk factor was weight greater than 170 pounds (18.2%) while 5% had a known family history of a VTE and 3.9% were exposed to smoking. Nineteen patients (5.5%) had more than one risk factor. No subject developed VTE during the prospective data collection and one VTE was identified following the retrospective review. More risk factors were identified during the standardized prospective data collection as compared to the retrospective chart review (Figure 3) including the presence of a close relative with a history of a VTE (5.6% versus 0.4%, p<0.001) and current use of oral contraceptives (0.0% versus 2.1%, p<0.001).

Figure 3: Graphical representation of the venous thromboembolic event (VTE) risk factors that were identified during the prospective data collection as compared to the retrospective chart review. *Indicates a statistical difference (p<0.05) between the risk factors identified during the different time periods.

Figure 4: A proposed algorithm for VTE prophylaxis in the adolescent age group underwent arthroscopic lower extremity surgery as developed by a multi-disciplinary team.

DISCUSSION

In a previously considered risk-free cohort, standardized venous thromboembolic screening will help identify patients that may require thromboprophylaxis prior to elective lower extremity arthroscopy.

REFERENCES