Background context: Numerous articles have reported pulmonary embolism (PE) as a complication of spine surgery, but to our knowledge no publication has investigated the genetic factors associated with PE after spine surgery.

Purpose: To assess the prevalence of genetic abnormalities for thrombophilia and hypofibrinolysis in patients in whom pulmonary embolism developed after spinal surgery, in comparison to a matched control group of patients who did not develop PE.

Study design/setting: Spinal surgery patients with post-operative pulmonary embolism and matched control patients who had spinal surgery without any clinical indication of thromboemblism were evaluated for risks of thrombophilia and hypofibrinolysis.

Patient sample: There are total twenty five spinal surgery patients in which thirteen patients had pulmonary embolism and twelve patients had no indication for pulmonary embolism.

Outcome measures: The patients pulmonary embolism were evaluated or ruled out by spiral computed tomography. Both groups patients were evaluated for thrombophilic and hypofibrinolytic risk factors.

Methods: All of patients were evaluated for risks of thrombophilia and hypofibrinolysis. All of the subjects had been evaluated for risks of thrombophilia and hypofibrinolysis tests included: homocysteine, Antithrombin III, Protein C, ACT protein, Plasminogen activator inhibitor-1 4G/4G, and Prothrombin 3' UT gene mutation.

Results: The total number of genetic thrombophilic abnormalities identified was higher in the pulmonary embolism group (thirteen abnormalities) than in the control group (seven abnormalities). Only patient with pulmonary embolism were found to have heterozygosity for the plasminogen activator inhibitor-1 (two of thirteen patients; p=0.05 compared with the control group). Patients with pulmonary embolism were much more likely than control group patients to have at least one thrombophilic abnormality (nine of thirteen) compared with control group (six of twelve).

Conclusions: Genetic thrombophilia and hypofibrinolysis were more frequent in patients who had PE after spinal surgery than in those who had not. The presence of prothrombin 3' UT gene mutation appears to be risk factor for PE in patients undergoing spinal surgery. Currently these tests are rarely available and costly. In the near future they will become available and affordable. Their routine use will help in the preoperative identification of patients with predisposition for PE after spinal surgery, who may require prophylactic anticoagulation and intermittent pneumatic compression of the lower extremities.

FDA device/drug status: This abstract does not discuss or include any applicable devices or drugs.