DEEP VEIN THROMBOSIS (DVT) occurs in 67 of every 100,000 Americans each year.\(^1\)\(^2\) It can lead to development of a pulmonary embolism, which results in death for up to 8\% of such cases.\(^3\)\(^-\)\(^5\) DVT can result from prolonged immobilization, traumatic injury, post-surgical complications, or advanced age (Figure 1).\(^6\)\(^7\) The purpose of this report is to present the unique case of a male recreational racquetball player who developed a femoral vein thrombosis and bilateral pulmonary emboli after suffering a patellar subluxation. An exhaustive search of PubMed did not reveal any reported cases of DVT related to a patellar subluxation. Search terms included patellar subluxation, patellar dislocation, patellar subluxation complications, patellar subluxation, AND deep vein thrombosis, patellar subluxation AND pulmonary emboli. This case report presents several distinctive characteristics, which resulted in a delayed diagnosis and the necessity of subsequent treatment.

**Case History**

A 54-year-old male recreational athlete presented to the athletic trainer stating he had “dislocated his left kneecap after slipping on ice” 5 days earlier. The patient drove himself to an emergency room on the night of the incident. X-rays were negative and an orthopedic physician’s examination ruled out ligament damage. A knee immobilizer and crutches were given to the patient. He reported having worn the knee immobilizer continuously since the emergency room visit. The patient denied any history of previous knee injuries. His preinjury physical activity included cardiovascular training 3–4 times per week, light strength training workouts 3–4 times per week, and recreational racquetball once per week.

Upon removal of the knee immobilizer, the left knee was observed to be swollen on its medial aspect and mild ecchymosis was evident. Quadriceps atrophy was apparent, which was confirmed by measurement of a 3 cm bilateral difference in thigh circumference at a point 10 cm proximal to the mid-point of the patella. The patient complained of moderate tenderness at the medial border of the patella and over the distal portion of the quadriceps. Active range of motion for knee flexion was 92\(^\circ\) and severely painful. The patient was capable of full active knee extension, but it also elicited severe pain. Manual muscle testing of the quadriceps revealed major weakness (Grade 2/5), whereas responses of the sartorius, hip adductors, psoas major, tensor fascia latae, hamstrings, and gastrocnemius were rated as strong and forceful (Grade 5/5). The patellar apprehen-
sion test, patellar grind test, ballotable patella test, and sweep test were positive. The patient was treated with transcutaneous electrical nerve stimulation for muscle reeducation, followed with the application of cryotherapy to the distal quadriceps and antero-medial portion of the knee. A rehabilitation program was initiated to restore quadriceps strength, full range of motion, and a normal gait pattern. The patient’s age and quadriceps atrophy presented concern, which generated referral to an orthopedic surgeon. The appointment scheduled by the patient, however, delayed the orthopedic evaluation until two weeks later.

Magnetic resonance imaging (MRI) supported a diagnosis of a medial retinaculum tear and quadriceps atrophy. The patient was instructed to continue his rehabilitation program with the athletic trainer to increase knee range of motion and quadriceps strength. Supervised rehabilitation sessions were conducted three times per week. Active-assisted range of motion exercises, stationary cycling, and stretching exercises were performed to increase knee extension and flexion. Quadriceps sets, short-arc quadriceps activation, and straight-leg raises were performed to increase quadriceps strength. The patient was instructed to use crutches for ambulatory assistance. Transcutaneous electrical nerve stimulation was administered for 20 minutes during each rehabilitation session for a period of six weeks; quadriceps atrophy was still evident. Ice packs were applied at the end of each rehabilitation session, but they provided minimal pain relief. The orthopedic surgeon prescribed hydrocodone for pain relief, but the patient chose to administer the oral medication only three times to address intense pain.

At two months postinjury, the patient complained of severe pain in the proximal quadriceps that subsided over a three-day period, but it was associated with development of moderate edema in the left calf and foot. The orthopedic surgeon reevaluated the patient, concluded that the symptoms were idiopathic and prescribed massage and a compression sleeve for management of the edema. One month later, the patient experienced chest pain that increased over a four-day period and ultimately caused him to seek emergency medical attention.

The following day, an electrocardiogram, a computerized tomographic (CT) angiogram of the chest, and diagnostic ultrasound of the left quadriceps were performed. The patient was diagnosed with deep vein thrombosis (DVT) of the femoral vein and bilateral pulmonary emboli. The CT scan revealed an embolus in the right lung that was nearly twice the size of the embolus in the left lung. The patient was admitted to the hospital, anticoagulant therapy with Coumadin was administered, and he was referred to a vascular surgeon. Two days later, the patient underwent placement of a catheter and an inferior vena cava filter.