Management of the Ruptured Quadriceps Tendon, 2010

A. Summary of Case

A 59 year old male patient slipped on ice while getting off of a bus and fell onto his left knee, suffering what would later be diagnosed as a left quadriceps tendon tear. He was evaluated in an emergency department by the emergency physician who noted that the patient was unable to extend his knee and was unable to bear weight. An orthopedist was contacted and evaluated the patient in the emergency department. The orthopedist performed an arthrocentesis, put the patient in a knee immobilizer, and gave the patient instructions for outpatient follow up.

Crutch training was performed by nurse and the emergency physician. During training at one point, the patient had some difficulty in ambulating, almost fell backwards, but maintained his balance using his injured leg. After 20 minutes of crutch training, the physician noted that "I think the patient will do well with crutch practice."

The patient later stated that he informed the hospital staff about concerns he had with his ambulation and with the bathroom in his home being on the second floor. He was advised that he would have to go up and down stairs in his home "on his butt."

The emergency physician discussed crutch use versus walker use versus wheelchair use with the patient and the patient decided to leave with crutches. The emergency physician gave the patient a prescription for a wheelchair if the patient became uncomfortable using crutches. The patient's pain rating on discharge was 3 of 10.

While getting out of his car after discharge, the patient slipped on the ice, fell backwards, and fractured his right ankle.

The patient filed a lawsuit against the hospital and the physician for failing to admit the patient to the hospital to repair his quadriceps injury on his first visit, alleging that the patient's "unsafe" discharge was a direct cause of the patient's ankle fracture.

B. Expert Witness Statements/Allegations About the Standard of Care

During trial, the following assertions were made by the emergency physician expert witness:

- Bad weather created an unreasonable risk of discharge and the patient should have been admitted to prevent injury. A physician doing crutch training prior to the patient's discharge was a "red flag" that the patient was at risk for a fall.
- Patients who may ultimately need surgery should be admitted to the hospital.
- Failure to admit the patient to the hospital for pain control and for repair of the left quadriceps tendon injury was a deviation from the standard of care.
- Before discharging a patient on crutches, patients must be shown how to get up and down, to turn, to go up and down steps, and to get in and out of a car, and must also be tested to make sure that they are capable of performing these tasks.

C. Issues considered by standard of care committee

Overview of quadriceps tendon ruptures

Rupture of the quadriceps tendon is a significant injury that may cause significant morbidity even with the best management. Tendon rupture may be caused by direct injury or by a sudden quadriceps muscle contraction. When caused by muscle contraction, the tendon structure itself is almost always abnormal – either from age or from systemic diseases such as systemic lupus erythematosis, diabetes, uremia, rheumatoid arthritis, or hyperparathyroidism. In addition, medications such as steroids and fluroquinolones can predispose to tendonopathy and tendon rupture. Spontaneous quadriceps tendon ruptures are more likely to occur in patients older than 40 years old and usually occur just proximal to the patella.

Diagnosis of quadriceps tendon ruptures may be challenging, with inital rates of misdiagnosis ranging from 10% to 50%. Complete ruptures may show clinical findings such as a low-riding patella or a palpable deficit in the tendon structure, but often these findings are obscured by a large joint effusion. Loss of leg extension is often seen in complete quadriceps tendon ruptures, but may not be evident in partial tears.

Radiographic findings are often nonspecific. A soft tissue mass proximal to the patella may represent the retracted quadriceps tendon. Soft tissue calcifications proximal to the patella may represent avulsed patellar bone fragments. When questions exist about the diagnosis, ultrasound and MRI both have a high sensitivity in evaluating quadriceps tendon injuries.

Management of partial quadriceps ruptures usually involves immobilization in extension for 3-6 weeks followed by progressive strengthening and range of motion exercises. Management of complete quadriceps tendon ruptures is less absolute. Some sources recommend surgical repair as soon as possible after an injury while other sources recommend surgical repair within 3-7 days of the injury. It is acceptable to manage complete quadriceps tendon ruptures with knee immobilization, crutches, and timely outpatient orthopedic follow-up. Patients who underwent delayed repair tended to have worse outcomes, although one study of 51 quadriceps tendon rupture repairs showed no correlation between length of time to repair and final tendon strength, functional score, or activity score.

More than half of patients who suffer a quadriceps tendon rupture will not return to their pre-injury activity level and 53% of such patients suffered from persistent quadriceps strength deficits when compared with the uninvolved leg.

Appropriateness of discharging a patient with a quadriceps tendon rupture

The medical literature recommends early surgical repair of complete quadriceps tendon ruptures. There is no standard on when that surgery must be performed. Some sources recommend immediate repair while other sources state that surgery may be delayed up to one week. Immobilization and close outpatient orthopedic follow up is appropriate even in patients who have suffered a complete quadriceps tendon rupture.

In this case, the patient was evaluated, diagnosed with a patellar tendon rupture, immobilized, and given crutch training. In addition, an orthopedist evaluated the patient in the emergency department, performed an arthrocentesis, and deemed the patient stable for discharge, instructing the patient to follow up in his office as an outpatient.

While the emergency physician expert in this case stated that the standard of care required admission of the patient for immediate surgery and pain control, delayed surgical care after brief outpatient management is common in community hospitals and the chart clearly shows that immediate repair of the quadriceps tendon rupture was not planned. Furthermore, the emergency department records showed that

the patient's pain rating at the time of discharge was a "3" on a 1-10 scale, refuting the expert's assertion that admission for “pain control” was warranted.

Appropriateness of discharging a patient in "bad weather"

The emergency physician expert in this case made statements to the effect that "bad weather" and a "snowy day" created an undue risk of injury to a patient and the standard of care therefore necessitated the patient's admission. The Standard of Care Committee was unable to find any literature advocating that patients be admitted due to bad weather. Requiring admission until weather was “acceptable” or until snow has melted from the ground could conceivably result in the requirement that all patients be admitted to hospitals for several months in some regions during winter to avoid a purported undue risk of injury.

Appropriateness of discharging a patient to a home in which he might have to ascend stairs.

The expert in this case stated that the patient should have been admitted to the hospital because he would have to ascend stairs in his home to use his bathroom. Again, the Standard of Care Committee was unable to find any literature suggesting that all patients with crutches should be admitted to the hospital if they might have to ascend stairs upon discharge. Taking this requirement to its logical conclusion would also require prolonged admissions of any patients on crutches who lived in multi-level housing.

Reasonable physician standard

In several instances, the expert witness in this case referred to what the expert personally would have done. Courts have universally rejected a standard based upon the expert witnesses' personal preferences. The standard of care should be based on what a reasonable physician would do under the same or similar circumstances - based upon the information known at a given time. Details about incidents occurring after a decision was made should never come into play when determining whether a provider's decisions were appropriate.

D. Conclusions of the Standard of Care Committee

1. The standard of care does not require that all patients with acute quadriceps tendon ruptures be admitted to the hospital.
2. While some may consider admission to a hospital a means to “protect” patients, admission to a hospital is not without both physical and financial risks. Patients can have bad outcomes related to inappropriate admissions. Patients may suffer complications from false-positive testing. Sleep/wake cycles and dietary routines may be disturbed. Patients are often exposed to virulent orgainisms in a hospital setting and are at risk for developing infections resistant to ordinary antibiotics. Costs of admission may not be paid by insurers if medical necessity is not demonstrated, leaving patients with large medical bills.
3. Although bad weather and a patient's living conditions may be considerations in a patient's ultimate disposition, neither factor should always be case-determinative.
4. The Standard of Care Committee unanimously concluded that the provider in this case met or exceeded the standard of care in managing this patient.