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The Medico-Legal Aspects of Acute Compartment Syndrome—Avoiding the Sequelae of a Delayed Diagnosis

By William C. Collins, MD

Compartment syndrome is a medical term referring to the compression of nerves, blood vessels and muscle inside a closed space (compartment) within the body. Because the connective tissue that defines a compartment does not stretch, failure to relieve the pressure can result in tissue death occurring due to lack of oxygenation as the blood vessels are compressed by the raised pressure within the compartment. Compartment syndrome most commonly involves the forearm and lower leg. The most common etiology of compartment syndrome includes tibia or forearm fractures, ischemic reperfusion following injury, hemorrhage, vascular puncture, intravenous drug injection, casts, prolonged limb compression, crush injuries and burns.

Compartment syndrome may be either acute or chronic. Acute compartment syndrome is a surgical emergency. There is no effective nonsurgical treatment. Unless the pressure is relieved quickly, permanent disability and tissue death may result. Delays in diagnosing compartment syndrome with subsequent injury, have given rise to medical malpractice claims.

Sixty-four (closed) compartment syndrome claims over sixteen years were reviewed from MAG Mutual's database. Thirty-six (56 percent) of these claims were settled. Twenty-six (41 percent) of the closed claims involved the lower extremities. Seventeen out of 64 (27 percent) claims resulted in settlements or trial verdicts of over \$9,000,000, representing over \$500,000 dollars per case. While malpractice claims involving compartment syndrome are low frequency, damages sustained in these claims are high severity.

Compartment Syndrome Case Study

An orthopedic surgeon evaluated a man in the emergency department who had sustained a severely painful injury to his left calf earlier that day. The patient was playing softball when another player slid into him.

The patient complained to the surgeon that his pain was 10/10. He could not weight bear, and his left calf measured at 19 inches compared with a right calf measurement of 16 inches. He had

strong pedal pulses with a positive Homan's sign, and a large bruise over the left calf at the point of impact. After DVT was ruled out by ultrasound, the surgeon released the patient with a diagnosis of "large hematoma." He was given a prescription for Percocet and discharge instructions to return in two days for an office visit.

The patient returned to the surgeon's office as directed. At this visit his left calf was edematous with ecchymosis. He experienced pain with dorsiflexion of the left foot. A repeat ultrasound showed no evidence of DVT, but did show evidence of a residual large hematoma.

Four days later, on Saturday, the patient contacted the on-call orthopedic surgeon, requesting an additional prescription for Percocet. The on-call surgeon instructed the patient to go to the emergency department for reevaluation. The patient did go to the emergency department, but to one at a different hospital (hospital #2).

The ED physician at hospital #2 consulted an orthopedic surgeon at that hospital. The surgeon's clinical impression included left calf hematoma, with possible compartment syndrome. The patient was discharged with a Percocet refill, instructions to keep his left leg in an ace wrap, apply a heating pad, and to return to his regular orthopedic surgeon on Monday. Bothered by the possible diagnosis of compartment syndrome, the ED physician called the on-call orthopedic surgeon at hospital #1. That surgeon requested the ED physician call the patient at home, directing him to report to the ED at hospital #1, as he had instructed the patient that morning. Upon the patient's return to ED #1, the on-call orthopedic surgeon, with the assistance of a manometer system for monitoring compartment pressures, did diagnose anterior compartment syndrome, and admitted him for immediate surgery.

The patient underwent fasciotomies, with subsequent necrotic muscle debridement and evacuation of the large hematoma. Seven days later he was discharged home.

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After discharge, the patient continued to have some problems with cellulitis; he was not taking his oral antibiotic as prescribed. He subsequently required a flap and skin grafts. He now has a permanent, marked decrease in muscle function in his left leg. He also has permanent foot drop, walks with an impaired gait, and has work restrictions.

Allegations: The Plaintiff alleged the first orthopedic surgeon deviated from the standard of care by failing to consider the possibility of compartment syndrome during the ED visit and subsequent office visit, failed to order the necessary test to rule in or rule out compartment syndrome, failed to respond to the plaintiff's continuous phone calls regarding his pain, and failing to perform tests which would have recognized compartment syndrome.

Defense: Experts provided only "thin" support, in part due to lack of documentation by the first orthopedic surgeon, and some classic findings signaling the development of compartment syndrome.

Disposition: The case was settled after mediation for a moderate to large amount.

Risk Management Commentary & Advice

This classic case emphasizes that compartment syndrome must be thought of early and often in any injury to an arm or leg, with or without fracture, particularly when pain is out of proportion to the injury. One has approximately six hours to make the diagnosis, and treat the condition before unfortunate complications such as tissue necrosis occur, leading to severe functional impairment and/or amputation.

- Fasciotomy in the upper and lower extremities, if done early, can usually be a minor procedure with a small incision; the incision often can be closed loosely by skin alone, with a low risk of infection.
- Late closure is very difficult, and late fasciotomy generally does not serve to preserve muscle function after tissue necrosis has occurred.
- By the time pulselessness, paresthesia or paralysis has resulted, musculature in the extremity has been destroyed, and normal function preservation is often not possible.
- Compartment syndrome should be ruled out in an arm or leg injury evaluation; do not hesitate to obtain a consultation to confirm or to discount the diagnosis.
- Document your rationale if you do not believe that compartment syndrome is apparent.

Out of the five P's proposed as signs of compartment syndrome in patients with fracture or injury to an extremity, the one "P" that must be dealt with decisively is PAIN OUT OF PROPORTION TO THE INJURY!

William C. Collins, MD is a retired orthopedic surgeon. Dr. Collins is one of MAG Mutual's founding Board of Director's, having served on the Board since 1981.

Chart Documentation of Patients Leaving Without Being Seen or Against Medical Advice

By Charles B. Koval, Deputy General Counsel, Shands Healthcare System, Gainesville, Florida

Despite improvements in patient flow, the creation of "fast track" services and other quality initiatives, a significant number of patients choose to leave hospital emergency departments prior to being seen by a physician or receiving treatment. There are no state statutes or regulations on point, and case law dealing with this specific question is virtually non-existent. The federal Emergency Medical Treatment and Active Labor Act, (EMTALA) establishes requirements for processing and evaluating patients who present for care or treatment for emergency medical conditions at Medicare participating hospitals. It is one of the few Medicare provisions that pertain to all patients, not just Medicare beneficiaries.

EMTALA regulations do not, however, specifically address what to do if the patient walks out of the facility's emergency department without being seen. The most relevant guidance on

the issue can be found in the Medicare Interpretative Guidelines of the State Operations Manual (SOM), Appendix, Responsibilities of Medicare Participating Hospitals in Emergency Cases. The SOM guidelines are used by investigators to assist them in evaluating alleged EMTALA violations. The guidelines state that EMTALA is not violated if a patient leaves against medical advice (AMA) or leaves without being seen (LWBS), as long as the patient leaves of their own free will, without suggestion or coercion. It does not matter when in the standard emergency department process the patient leaves (i.e. before or after initial triage; the performance of a medical screening examination or treatment).

The medical record should reflect that screening, further examination and/or treatment were offered to the individual, if it was possible to do so. If the patient simply leaves without notice

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Chart Documentation of Patients Leaving Without Being Seen or Against Medical Advice *(continued from page two)*

to any physician or hospital personnel, that fact should be documented in the emergency room record. If the patient approaches anyone and states their intent or desire to leave, reasonable efforts should be made to advise the patient of the benefits of receiving appropriate examination and treatment, and the risks associated with leaving without them. Ideally, the patient should receive that information from a physician; however, it may not always be possible to find a physician not involved in the examination or treatment of another patient. A nurse or other healthcare worker can advise the patient of the general benefits to be derived from waiting to receive medical evaluation and treatment they sought in coming to the emergency department in the first place.

Any information that is conveyed to the patient should be documented in the medical record, as well as any statements the patient made prior to leaving. Documentation should include a

description of the examination or treatment that was offered and the “Refusal of Hospitalization or Medical Treatment Against Medical Advice” form should be completed whenever possible which provides a good template for recording that information.

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Editor's note: Patients who leave the hospital AMA typically differ from the general patient population, and are considered “high risk.” In this population we generally see a higher proportion of males, mentally ill and/or substance abusers. Potential interventions are limited, but influence strategies may play a role. Early identification of patients at risk may facilitate this process, thereby decreasing the occurrence of AMA discharges, and improving health outcomes. More consistent and comprehensive documentation is needed for these patients, especially with respect to patient competency and referral.

Physician Liability for Shared Records in a Group EMR System

By Todd Bartos, JD

Question:

A specialist orders a test. Due to a shared EMR, all of the patient's doctors receive a test result alert, although they may not be actively engaged in that patient's care at the time.

Are those physicians liable to respond to diagnostic test results (e.g. Lab, imaging studies, etc. received in the medical record), if they are not the “ordering physicians?”

Answer:

Yes, but the degree of liability shared will be fact-specific.

The issue of whether one can be sued should be tempered with whether one can ultimately prevail at trial. This depends not as much on the plaintiff's theories, but more on the facts of the case. Thus, the primary care physician (PCP) may be held liable for seeing the test result, and declining to act upon it; even though someone else ordered it. However, certain facts could temper the PCP's liability, or even shield the doctor.

The shared EMR presents an interesting scenario with a twist on an older issue. Prior to EMRs, one of the issues for PCPs was what to do with test results ordered by a specialist, but carbon copied to the PCP. Typically PCPs took the position that they relied on specialists to review the results and subsequent treatment plan with the patient, and therefore they did nothing with them. This issue arose in a Pennsylvania medical malpractice claim where the PCP ordered a test for the

oncologist (due to insurance issues). The oncologist received the results, but did not act on them. The PCP received the results, as well, assumed the oncologist was going to advise the patient, and proceed with a treatment plan. Therefore, the PCP did not address the results with the patient at any of his subsequent four visits. Finally the oncologist acted upon the test results, but because treatment had been delayed, the patient's prognosis was poor. Both the oncologist and PCP were held liable; and large settlements were paid out on behalf of both of them.

If there is good documentation and communication of physician's responsibility and the roles of each provider (specialist consultant versus PCP), then there can be positive evidence that there was no expectation that the PCP follow-up with anticoagulant

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Physician Liability for Shared Records in a Group EMR System *(continued from page three)*

management, renal dialysis labs, or labs pursuant to a medication regimen, etc. In other words, is there documented communication in the medical record and referral indicating which provider is expected to follow-up on all ordered tests, etc.? Is the patient clear on the roles of each provider? The key is to create positive evidence that also involves the patient in the chain of discussion so that the patient is informed of the expectations, and can act accordingly.

Either typing or dictating referral expectations in front of the patient can assist in creating more defined lines of responsibility, preventing the patient from stating that she/he did not know who was responsible, and providing positive evidence that the PCP took appropriate steps to ensure that the specialist was the person to whom the issues were tasked. This technique is a simpler approach, and will yield evidence from which defense counsel can posture and defend.

Another option is to have a staff member call the patient to indicate that the results are available, and to contact the ordering physician to get the results. The downside to this approach is that (1) it tasks a current or new staff member with new responsibilities, creating a logjam in the practice and (2) it requires the patient to make a second phone call to another physician. While a viable option, it is not one we recommend.

Finally, some practices have created on-line access points for patients to access all test results (current, pending and past). Access information provided the patient is documented, and the patient signs an acknowledgement of having received access instructions. The benefit to this approach is that the patient can be notified via e-mail of the result, log in to view the result, and then call the physician with any follow-up questions.

Some multi-specialty physician groups have discussed “splitting

the record.” However, decoupling the record could limit the benefits to be gleaned from an EMR, and create inefficiencies regarding lack of pertinent information that had once been part of a shared record. Further, when health information exchanges gain traction, these issues will become more important.

Implementing risk reduction strategies now, may be a better approach over the long run than decoupling the EMR systems.

While EMR systems solve some problems, they do create new ones, and expand on previously existing ones. There is no “silver bullet” to fix the issues, and guarantee good outcomes, but good risk management strategies may minimize the risk.

Todd R. Bartos, Esq. is a shareholder in the firm of Stevens & Lee, located throughout Pennsylvania, New Jersey, New York and Delaware. He is a trial lawyer who focuses exclusively on protecting the rights of healthcare providers in state and federal courts, as well as, administrative agencies. He lectures frequently on risk management, issues of patient involvement and accountability, informed consent issues in private practice, hospital settings and EMR risk issues.

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