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Medicine for attorneys: Fractures

How to present fractures and associated injuries at trial

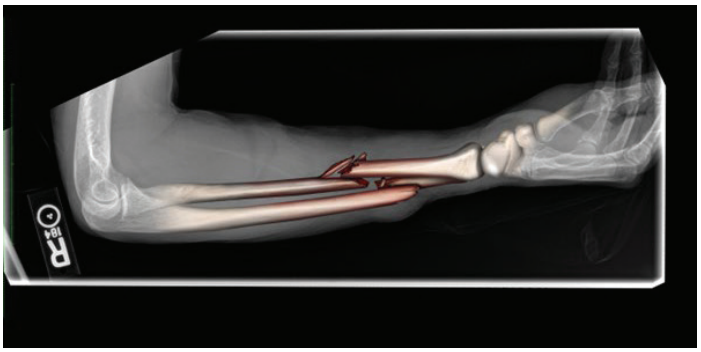
By Olivia K. Leary & Eustace de Saint Phalle

Frequently, personal-injury matters deal with plaintiffs who have experienced one or more fractures due to trauma. A fracture can occur throughout various areas of the body and, therefore, can present unique issues with regard to adequate diagnoses, treatment, potential complications, healing, and ongoing limitations. While this article is not intended to cover all aspects of personal injury cases involving fractures, it will provide a foundational understanding and structure of the most important components to look out for when your client has fracture injuries.

There are various types of fractures, each of which can present their own issues with regard to diagnosis, complications, treatment, and subsequent conditions. Diagnosis of the fracture(s) usually requires imaging, generally X-rays and, for more complex breaks, an MRI or CT scan may be necessary. Sometimes, the presence of a fracture goes undiagnosed initially following trauma and may be indicated by acute pain in the area, trouble using the affected limb or joint, limited weight-bearing, swelling and/or bruising.

Types of fractures commonly encountered include:

- **Stable** – the broken ends of the bone line up and are barely out of place.
- **Open (compound)** – the bone pierces the skin and or a deep wound exposes the bone.
- **Displaced** – pieces of the bone have moved so that a gap is formed around the fracture.



Example of a displaced fracture (Trial Templates LLC).

- **Transverse** – the break is in a straight line across the bone.
- **Oblique** – the break is in a diagonal line across the bone.
- **Spiral** – the break spirals around the bone.



- **Comminuted** – the bone has broken into three or more pieces and there are fragments at the break site.
- **Segmental** – the bone is fractured in two places, so that there is a "floating" or disconnected piece of bone.
- **Greenstick** – the bone is not broken completely, such that the bone bends to one side.
- **Avulsion** – the bone breaks near an attached tendon or ligament, resulting in the tendon or ligament pulling away the fractured piece of bone.

Treatments for fractures range based on the type and area of the fracture. Commonly,



Example of a transverse fracture (Trial Templates LLC).

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fractures may require splinting or casts, medication to control pain and/or swelling, traction treatment to stretch muscles and tendons around the healing bone, and, potentially, surgery to correct the placement of the fractured bone, sometimes requiring the use of internal fixation devices that later need to be removed after the bone has properly healed.

If a fracture is located at a joint, this can present further complications with regard to healing outcomes and future limitations. Joints that are frequently at issue in personal-injury matters are joints located in the shoulder, elbow, wrist, thumb, hip, knee, ankle and phalangeal (toe) joints. Often a traumatic event in which severe force is applied to a joint can result in a fracture to the joint. Even if set properly and with surgical intervention, it is not uncommon that a fractured joint will not properly heal, resulting in traumatic arthritis, mobility problems and pain with use. Often, revisionary surgeries are necessary, although due to the complex systems at issue these procedures are not always successful.

Fractures are traumatic experiences not only for the affected bone, but also the structures around the bone. It is not uncommon for a patient who has suffered a fracture to also experience other complications, like damage to the nearby nerves, including causalgia and complex regional pain syndrome, damage to the vascular structures, including vascular necrosis, and avulsion injuries, which cause damage to the bone as well as the attached tendon or ligament, among other conditions. These complications will be explored below and should be assessed in each personal-injury case involving fracture, both when reviewing medical records and interviewing your client on their developing condition.

Nerves travel close to the bone and can often become impacted by displaced bone or during a crush injury. As fractures present their own immediate pain and symptoms, often, nerve injuries can be masked and remain undiagnosed initially. Should your client experience severe electric pain (causalgia), tingling or numbness, or weakness, be on the lookout for a nerve injury as these are common signs.

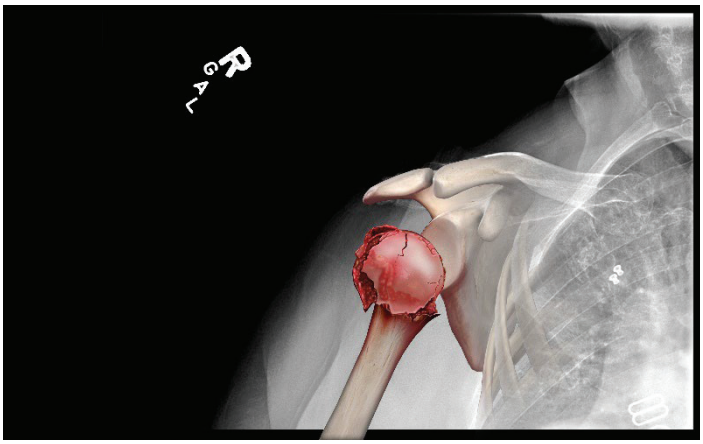
Often, if a fracture occurs in the lower extremities, nerve injuries can result in problems with weight-bearing and stability, and can present as falling, repeated sprains and even foot drop. Unfortunately, while some nerve injuries heal, often the issue will never fully resolve and can become a lifelong burden. Treatments for nerve injuries include stimulation, physical therapy and pain management. However, often only time and luck will result in the difference between a permanent nerve injury and one that eventually completely regenerates.

Complex Regional Pain Syndrome (CRPS) is a condition that includes a myriad of symptoms, including continuous burning or throbbing, increased sensitivity, swelling, temperature, color or texture changes to skin, spasms, tremors or weakness and decreased mobility. Frequently, this syndrome occurs in upper or lower extremities and its cause is not clearly understood, although this syndrome is associated with trauma to the area. Consequently, it is often not diagnosed and disregarded by the defense when assessing a plaintiff's damages. However, this is a serious condition and if treatment is not begun early, CRPS can progress and become irreversible. Treatment includes medications and physical therapy, topical treatments and use of a TENS unit for nerve stimulation.

Damage to vascular structures often occurs with displaced, comminuted and compound breaks. Vascular injuries with these types of fractures can be as relatively clear cut as excess bleeding due to severed vessels, resulting in concerning blood loss and extensive hematomas. Due to the nature of crush injuries, the associated vascular structures are frequently impacted.

The most concerning, compartment syndrome, occurs after a sudden uptake of fluid into the muscle cells, and can cause increased pressure in an affected area. Compartment syndrome can result in serious muscle, nerve, blood vessel and tissue damage, and may even result in death. Other concerning vascular injuries common with fractures include avascular necrosis, which is the death of bone tissue due to a lack of blood supply. This process can take months or years to occur, and eventually tiny breaks in the bone multiply to eventually result in bone death and collapse. If a plaintiff is exhibiting symptoms of avascular necrosis, including increasing pain, even at rest and limited range of motion, the condition can be detected with imaging and nonsurgical treatment can slow the progression.

Avulsion injuries, in which a piece of the bone is broken off and pulled away by attached tendons or ligaments, can present complications not only to a potentially challenging fracture but also to the connective tissue structures located around it, including nerves, tendons and ligaments. Tendons connect bone to muscle whereas ligaments connect bone to bone, and usually serve to keep the bones stable.



Example of a fracture to the shoulder joint that would likely result in avulsion, ligament issues and traumatic arthritis (Trial Templates LLC).

Avulsion fractures commonly occur with acute trauma, such as a fall, sudden acceleration and deceleration, or an impact, and

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are generally more common in minors rather than adults. Injuries to these areas, particularly at joints, can often result in instability, dislocation, and an inability to use the affected joint. In some avulsion fractures, injury to associated areas can occur, for instance a Segond fracture in which an avulsion fracture at the tibia, is very often indicative of an ACL tear. Further, although not common, avulsion injuries can be associated with compartment syndrome and will need to be evaluated.

As is likely obvious based on the name alone, severe crush injuries are particularly damaging, and especially when they occur at a joint. Crush fractures to a joint often result in injury to the articular surface of the joint, causing problems with joint movement, damage to the cartilage lubricating the joint, and can cause traumatic arthritis and chronic pain. A revisionary surgery may occur to address the traumatic arthritis and other alignment issues; however, these procedures do not always fully resolve the patient's problems.

Frequently, surgical intervention is required to set a joint fracture properly, however complete recovery in this situation is less likely than fractures in other non-joint areas. With plaintiffs suffering from joint fractures, often only time will tell whether the joint will heal adequately or will require future treatment, including revisionary surgeries and steroid injections.

As an attorney representing a plaintiff with these injuries, it is paramount to be aware of the complications and conditions that may present. Understanding the type of fracture at issue and the possible conditions that each injured plaintiff may develop will allow you to sufficiently understand their medical care, treatment needs and future outlook as their case progresses.

Introducing demonstrative evidence into trial

Demonstrative evidence is very helpful to explain to the jury important aspects of the plaintiff's case. Some jurors may be more visual rather than auditory learners, a visual representation may better assist in explaining a complex area of the case, and demonstrative materials can often hold the jurors' interest better than other forms of evidence.

With regard to fractures, demonstrative evidence is often used to demonstrate the event leading to the fracture, a re-creation of the fracture occurring, the normal function of the limb or joint and how the plaintiff is limited with their own function through animations of movement.

Demonstrative evidence can be admitted for use at trial if a foundation for its accuracy is laid by a treating physician during their deposition. A treating doctor can testify that certain records accurately depict an injury to create the foundation for demonstrative evidence that can be used later at trial. After establishing through testimony that the physician has direct knowledge of the plaintiff's medical conditions at issue, a well-prepared plaintiff's attorney can then introduce images of the injury or area as exhibits and request that the physician agree to the accuracy and even add their own indications to the record for later use. Highlighted aspects of medical imaging, including X-rays, MRIs and CT scans, that show the area of the injury at issue can be admitted when accompanied by foundational authentication for its admissibility. (*Sinz v. Owens* (1949) 33 Cal.2d 749, 759.) In particular, well-highlighted imaging can assist a jury in making sense of often difficult-to-interpret MRIs, CT scans and X-rays. Once a foundation is appropriately laid, these substantiated records and additional drawings can then be utilized by an expert witness for their own opinion without running afoul of the ruling in *People v. Sanchez* (2016) 63 Cal.4th 665.

Conclusion

Should a fracture be a critical injury at issue in your case, strong presentation through medical records, including imaging, and other demonstrative evidence can provide the jury with insight and understanding of the cause of the injury, the effect of the fracture on plaintiffs and the connected systems, and plaintiff's condition before and after, among other relevant issues. Treating doctors can lay the foundation for this demonstrative evidence to be admissible at trial.

Although this overview does not include every medical possibility that may present when a plaintiff is suffering with a fracture, this does provide the common issues to look out for when representing a person with this type of injury and how to assess your client's recovery. Having an understanding of the medical terminology and the possible outcomes that may occur with fracture injuries will allow you to review treatment notes and watch your client's symptoms to determine whether their injuries will resolve or may be long-lasting. This primer provides you with the ability to adequately assess the seriousness of your client's damages to provide for a robust presentation at trial.


Leary

Olivia K. Leary is a member of the Rains Lucia Stern St. Phalle & Silver, PC *Personal Injury Group. She represents people who have suffered serious injury as a result of automobile accidents, defective products, dangerous premises, negligence, and intentional torts.*


de Saint Phalle

Eustace de Saint Phalle is a partner with Rains Lucia Stern St. Phalle & Silver, PC *in San Francisco. He manages the Personal Injury and Worker's Compensation Practice Groups for the firm statewide. The firm's personal injury practice focuses on civil litigation in a variety of areas, including industrial accidents, product liability, exceptions to workers' compensation, premises liability, professional malpractice, auto accidents, maritime accidents and construction defect accidents. He is happy to provide additional materials for briefs or motions in limine upon request.*

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