Cast Treatment of Fractures. What are the Risks?

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One of the most commonly used methods used by orthopaedic surgeons for treating fractures is a cast. Typically, casts are made from either fiberglass which is more lightweight, resistant to water and easier to roll, or plaster, which is heavier, sensitive to water, pliable, messier and more difficult to roll. So why should anyone ever use plaster? The simple answer is that plaster is easier to mold properly enabling the provider to hold fractures in the correct position more easily. On review of the medical literature, the incidence of cast treatment is not reported. Likewise, the rate of complications of cast treatment is poorly documented. One of the main points of this article to walk away with is that cast treatment is not without risk. There can be severe complications of a poorly applied cast.

I draw attention to this for all patients who are placed into a cast after a reduction (moving of a fracture into a better position) of a fracture. Due to a broken bone there is often swelling, and with further manipulation of the fracture, the swelling typically increases. Keep in mind a cast is circumferentially closed around an extremity and differs from a splint or “soft cast”. These splints allow expansion for increased swelling. This makes a huge difference in treatment and in the potential for complications. With a hard circumferential cast in place the swelling has no room to expand and the pressure can continue to increase, slowing the removal of fluid from the extremity by venous drainage. The pressure can continue to increase until the arteries and nerves stop moving blood and nerve signals respectively. This can potentially lead to compartment syndrome or nerve injury. These findings can happen in arms as well as legs. Some of these changes can be long lasting or even permanent in the affected body part.

Less severe, but perhaps more common cast complications include pressure sores, stiffness, skin irritation and burns from cast removal. Casts are especially problematic in patients who lack cognitive function and proper communication skills (intubated or sedated patients) as well as, patients with spasticity, spinal cord injury, diabetes and poor nutrition.

Due to various factors, casts are now being placed by non-physician healthcare providers (cast technician, resident, nurse and physician assistant) with less training. It is therefore necessary for physicians and other providers to be diligent in warning patients about the risks of cast treatment. Although not surgical, casts carry an associated risk and patients must be aware of these risks prior to and during the course of treatment. With proper training, patients can make better educated choices on when to seek urgent attention for potential problems.
For patients treated with a cast they should consider seeking rapid medical attention when:

- When the cast feels too tight
- When the fingers or toes are very swollen and worsening
- When the pain in the affected area is increasing despite elevation
- When numbness begins or progressively worsens
- When the cast feels very loose

References