

OVERVIEW

Your child has a fracture involving one or both of the forearm bones, which are the radius and ulna. Fractures like this typically result in a fall. Treatment is usually needed to get the bones in good alignment and then to maintain good alignment with a cast. Fracture healing is usually good and takes 6-8 weeks. Treatment results are usually very good.

BACKGROUND

Children love to run, hop, skip, jump and tumble. But if they fall onto an outstretched arm, they could break one or both of the bones in the arm. Wrist and forearm fractures are the most common fractures in children and account for more than 28% of emergency room visits for fractures in children. Fractures can occur near the wrist or in the middle of the forearm, or near the elbow. Fractures come in different types, some unique to children. These types include buckle fractures, greenstick fractures, and Monteggia or Galeazzi fractures. Fractures can be open or closed. An open fracture is one with a laceration at the fracture site, which creates a risk of infection.



CLINICAL PRESENTATION AND DIAGNOSIS

The hand, wrist, arm and elbow can all be injured during a fall on an outstretched arm. To determine exactly what injuries occurred, the doctor will probably want to see X-rays of the elbow and wrist as well as the forearm. The doctor will also test to make sure that the nerves and circulation in the hand and fingers are not affected.



TREATMENT

Treatment depends on the type of fracture and the degree of displacement. If the bones do not break through the skin, the physician may be able to push or manipulate them into proper alignment without surgery. However, surgery to align the bones and secure them in place may be required if the skin is broken, the break is unstable or cannot be aligned properly through manipulation alone. If the fracture cannot be aligned or if there is a laceration at the fracture site, surgery is needed. If the fracture is open, it is important to aggressively clean the fracture site to reduce the risk of infection. Antibiotics may be given to reduce the risk of infection. A tetanus update may be needed as well. If the fracture is unstable or cannot be realigned with

manipulation, then it may be necessary to open the fracture site to obtain alignment and it may be necessary to use pins or plates and screws to maintain the alignment. After the bones are aligned, a temporary cast, sometimes called a splint, will be applied. This should not be removed or loosened. After the initial treatment, you will be discharged home with instructions for pain management and cast care.



CAST CARE AND ACTIVITY

Cast care is also important. A partial cast or splint is used initially to allow for swelling. It is usually put on with an ACE wrap, but it is not meant to be adjusted. If the temporary cast starts getting loose, tape can be applied to reinforce it.

For the first 48 hours, the arm should be elevated to minimize swelling and pain. It is possible for the swelling to increase to the point that the cast or the skin may get too tight. This is a serious problem. The first and most reliable sign of trouble is that the pain is not well controlled. If pain is severe and increasing over 2-4 hours despite elevation and appropriate pain medicine, it is very important to return to the hospital. Do not remove or loosen the cast, as this can make things worse.

It is also important to keep the cast clean and dry. If the cast gets wet, it will not dry well and it will start to irritate the skin. A wet cast usually needs to be replaced. Sponge baths are recommended to minimize risk of getting the cast wet in a shower or tub. While a plastic bag may protect the cast in the tub, if the plastic bag leaks and the cast gets wet, it typically takes hours and hours to get the cast replaced. The time and risk you take using a plastic bag to get into the tub are far greater than just doing a nice quick and safe sponge bath.



While in the cast, it is important to take it easy. The cast will protect the arm, but it is not strong enough for most physical activities. Sports and gym should be avoided. There should be no running, jumping, climbing, and definitely no falling. This includes staying off bikes, skates, skateboards, scooters, trampolines, monkey bars, slides, swings, etc. A general rule of thumb is to keep 2 feet on the ground at all times.

PAIN MANAGEMENT

Fractures hurt and appropriate pain management is important. With good pain management, children will eat better, sleep better, heal better, and have less apprehension when they have the cast removed and start working on motion. Ibuprofen and Tylenol codeine, when given together, work well and provide good pain relief for most children. It is worth while to set an alarm (even in the middle of the night) to stick to the schedule. It takes a few minutes to wake up and take the medicine,

as opposed to letting pain build up and spending hours trying to get it under control.

Ibuprofen is a non-steroidal anti-inflammatory medication, which has few side effects and low risk, but is usually not strong enough for the first few days. For best effect, it should be given every 8 hours for a least 5 days and as long as needed after that.

Tylenol codeine is a mild narcotic medication, which will provide better pain relief, but also has more side effects, which often include sleepiness, nausea, constipation, etc. Pain relief is best and side effects are minimized if dosing is adjusted based on the pain severity. Start by giving a full dose every 4 hours. If pain relief is good, continue at the same dose or decrease the dose by half. If pain relief is not adequate, increase the dose. You can use 4 dosing steps, which are a full dose, a half dose, a quarter dose, or nothing. It is best to not skip a dose and to not skip a step.



In summary, give ibuprofen every 8 hours for 5 days and on top of the ibuprofen, give the tylenol with codeine every 4, adjusting the dose based on the level of pain. Most kids are off the tylenol codeine within 2-3 days and off the ibuprofen by 5-7 days. Children usually do very well and are usually pain free within 5-10 days.

FOLLOW-UP CARE

After the initial treatment in the emergency department or operating, follow-up care is important. Your doctor will see you back in the clinic 5-10 days after the injury. Xrays will be taken to check the fracture alignment and it may be necessary to open up part of the cast to check for signs of infection. Provided everything is good, the temporary splint is over-wrapped into solid cast with a layer of fiberglass. This is usually the point where you get to choose a color.

After this initial visit, you will return to the clinic again in 3-4 more weeks to get the cast removed. After the cast has been removed, you will be instructed to wear a sling during the day to provide further time for healing while recovering motion and strength. After another 2 weeks, the fracture is healed and activities can be gradually increased. Physical therapy is usually not needed, but may be recommended if motion does improve with the cast off.

EXPECTED OUTCOMES AND POTENTIAL COMPLICATIONS

For children, forearm fractures are common and generally heal very reliably and without problems. Despite residual step-off or mild angular deformity, motion and function are usually good. Minor nerve injuries occur in a minority of patients. Fortunately, there is usually full recovery. Vascular injuries occur rarely but vascular compromise can occur due to swelling. Rarely, during the first 24-48 hours, swelling can increase to the point of blocking blood flow into the arm. This is called a compartment syndrome and typically is accompanied by severe pain. If pain is

not well managed despite elevating the arm and using appropriate pain medicine, the child should be urgently brought back to the hospital. With early treatment, a compartment syndrome can be effectively treated with surgery. However, prevention during the first 24-48 hours is even better and this is done by taking it easy, elevating the elbow above the heart, and appropriately managing pain.

MORE INFORMATION

Further information can be obtained on the internet. Your local public library can help you explore these sources if you are interested. Two good sites for expert and peer reviewed information are the American Academy of Orthopedic Surgeons at www.aaos.org and www.emedicine.com.



FEEDBACK

If you have questions or comments, please contact the office or submit them to the web site at www.pedortho.com.