

# Supracondylar Humerus Fracture

## OVERVIEW

Supracondylar fractures are the most common fractures about the elbow in children. They usually occur with a fall onto the arm. If the fracture is displaced, surgery is often required. This type of fracture generally heals reliably over 6-8 weeks. The elbow is often a little stiff after removal of the cast, but loosens with a home therapy program. Prognosis is usually very good.

## BACKGROUND

This fracture occurs most commonly in the 3 - 11 year old age group. The usual mechanism is a fall with an extended elbow causing the arm to bend backward. About 30% of these fractures show little or no displacement and another 25% bend or crack without breaking. The fracture occurs partially through growing cartilage, but if the fracture heals with good alignment, growth problems are uncommon.



## CLINICAL PRESENTATION AND DIAGNOSIS

Children who present with nondisplaced fractures may initially have minimal swelling. A young child may present with vague pain which can confuse the diagnosis with nursemaid's elbow, other subtle fractures, or infection in the joint. Children with displaced fractures may show obvious deformity and swelling. Xrays are usually diagnostic. A non-displaced fracture may not show a fracture line, but blood inside the joint will expand the joint capsule and displace the anterior and posterior fat pads on the lateral xray.



## TREATMENT

Non-displaced fractures are protected with a splint. Displaced fractures will require surgery, which typically involves closed manipulation of the arm to realign the fracture. Occasionally, the fracture cannot be realigned by manipulating the arm, and an incision is needed to get the fracture back in place. Once the fracture is realigned, pins are placed across the fracture site to hold it in place. A temporary cast is also applied to hold the fracture. After 5-7 days, an xray is

obtained to confirm that the fracture is still properly aligned. The temporary cast is then

converted into a solid cast. After 4 weeks, the cast and pins are removed so that motion exercises can be started. Use of the arm is limited by wearing a sling during the day. After 6 weeks, the fracture is well healed and activities can be gradually increased.



### **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 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 are usually pain free within 5-10 days.

### **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 should be applied to reinforce it as needed.

For the first 48 hours, the elbow 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.

### **EXPECTED OUTCOMES AND POTENTIAL COMPLICATIONS**

For children, elbow fractures are common and generally heal very reliably and without problems. Minor nerve injuries occur in up to 12% of patients. Fortunately, there is usually full recovery. Arterial injuries occur rarely but usually do not cause problems because of good collateral blood flow. It is uncommon, but possible for growth to be impaired and may lead to a "gunstock" deformity. Despite deformity, motion and function are usually good. Surgery can be done to realign the joint to correct the cosmetic problem. 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](http://www.aaos.org) and [www.emedicine.com](http://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](http://www.pedortho.com).