



SURGERY

External Fixation of Hand Fractures

Pictures of Finger Joint External Fixator in place



What does this involve?

This involves using a small frame-like structure to hold broken bone fragments in place. The frame is attached to the bones either side of the fracture using pins or wires. These wires or pins are then joined to each other outside the finger. The frame is designed to pull on the finger which keeps the bone fragments lined up inside. The bone pins are put in to allow the affected joint to move after the operation. Various designs of this device are available but the picture below shows the type we use most frequently.

When is this surgery needed?

'The commonest injury to need this sort of operation is a break in the finger including the joint (see xray below). The broken bone fragments are too small to hold with screws and a plaster or strapping won't keep a pull on the bones to keep everything lined up while it heals.

Side view of finger fracture suitable for external fixation treatment



Small broken bone fragments not well lined up with next bone.

<i>Type of Operation</i>	Day case
<i>Length of Procedure</i>	Half an hour
<i>Anaesthesia</i>	Local Anaesthetic (finger numb) Regional Anaesthetic (whole arm numb) or (rarely) General Anaesthetic (asleep)



What are the main risks of this operation?

Swelling, Stiffness and Scar pain

This can be reduced by keeping the arm elevated and moving all the free joints as soon as possible. In most people the general swelling reduces dramatically in the first week after the operation.

The joint with the fracture should be able to move with the external fixator in place but it will be very stiff to start with. The hand therapists will help you with exercises for this.

Local swelling around the joint can persist for several months once the external fixator has been removed. Local swelling can be helped by massaging the tissues around the injured part.

Occasionally patients are troubled by more swelling and stiffness than average. In this case complex regional pain syndrome (CRPS) is sometimes the cause (see relevant information sheet in 'Conditions we Treat'). Severe CRPS occurs in less than 1% of cases.

Infection

Minor infections around the wires as they exit the skin are fairly common, occurring in up to 10% of patients. They can be minimised by keeping the pins dry and clean. Superficial infections can often be treated with oral antibiotics. Occasionally a significant infection around a K wire will mean that it has to be removed early. Very rarely a deep infection along the course of a pin will require more aggressive surgery.

Nerve Damage

The nerves most at risk with these operations are the small skin branches supplying sensation around the wires. If fixation has been very difficult the nerves supplying the tip of the finger might be damaged. Often this is just bruising around the nerve which will recover, but rarely numbness in the finger tip will persist after this sort of injury.

Metalwork problems

The wires used for the external fixator are strong enough to support fracture fragments but they can break if heavily loaded. The frame construct can also be disassembled or come apart which will stop it working. In either case more surgery might be required.

Loss of bony position

The external fixator wires are supporting the bony fragments, not rigidly fixing them. Sudden extra loads on the finger, particularly if the splint has been removed for some reason, can result in the bone fragments moving out of position. This can mean that more surgery is required.

Failure of Bone Healing, poor bone healing, arthritis

It is unusual for these fractures not to heal but it is not uncommon for the fragments to heal in a less than perfect position. This can lead to stiffness and pain in the longer term. A completely normal range of movement with no symptoms is rare after this sort of injury but most people manage to regain a good enough range of movement to function day to day. For those who become very stiff or very painful further surgery might be required.

Post Operative Course

Day 1 - 7

- Keep the pins clean – this will be explained to you by your surgeon
- Keep the arm higher than your heart as much as possible to reduce swelling
- Start moving the joints of your hand immediately to prevent stiffness, this includes the joint with the fixator across it.
- Take painkillers before the anaesthetic wears off and as necessary thereafter

In the first week

- An appointment will be made with the hand therapy team to check your pins and help you with your exercises.

Four Weeks

- A clinic appointment will be made for you to have your external fixator removed. The wires are cut close to the skin and pulled through. This is done with pliers only takes a few seconds.
- A check x-ray will usually be taken after the wires have been removed to look at the position of the bony fragments.
- Further rehabilitation will depend on your particular fracture. Your surgeon and hand therapist will advise you on your individual requirement.

Post Operative Difficulties

Contact your surgical centre or the hand therapy team at any stage if:

- Your fingers become more swollen, stiff or painful than you expect
- You see any discharge, wetness or detect any unpleasant smells from your pin sites
- You see the skin become red around the pin sites and/or redness spreading up the finger, particularly if you also feel unwell in yourself.

Outside normal working hours you may need to attend your local Accident and Emergency Department for help with these issues.

Driving

You may drive when you feel confident to control the car, even in an emergency.

Most people do not feel comfortable driving with the external fixator in place.

You should discuss it with your insurer if you are considering driving with the external fixator in place.

Time off Work

This will vary depending on the nature of your job. A light desk job might be possible after a week or so. Heavy jobs may require up to 3 months off work depending on how much load you will be putting on the finger.

Sick notes can be provided on the day of your operation, at your clinic visits and by your own GP.