



SURGERY

# K Wire Fixation of Hand Fractures

## What does this involve?

This involves using small, sharp wires to support broken bone fragments. The bones are first pulled into the right position ('Manipulation under Anaesthesia'). The wires are then driven between the two pieces of bone to be fixed using x-rays to check the wires are going in the right place. The wires are then cut off outside the finger and bent over so they don't catch too much. A padded dressing and plaster cast or splint is then applied.

## When is surgery needed?

Most hand fractures heal up well by themselves given time and appropriate support and exercises.

If the bones are very badly out of position after a fracture the finger may not work so well if the bones are left to heal where they are. K wire fixation is one option that may be considered in such circumstances.

## Which operation is the right one for me?

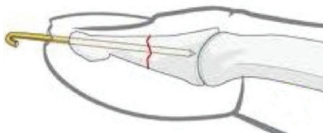
Other options for displaced fractures in the hand are:

- 'Manipulation under anaesthesia' (MUA) alone. This involves moving the broken bones about by pulling on the finger to try and realign them. The new position might be supported with tape between the fingers or a splint.
- Open Reduction and Internal Fixation (ORIF, plates and screws). This involves using small screws, and sometimes plates as well, placed on the bone to hold the bone fragments together. The metalwork is buried under the skin and is only visible on x-ray.

- External fixation. This involves pins into the bones connected together outside the finger. The connection pulls on the bony fragments to keep them lined up but the pins are carefully placed to allow joint movement.

Your surgeon will discuss the options with you.

## Diagram of K wire fixation of the end of a finger



Type of Operation	Day case
Length of Procedure	Half an hour
Anaesthesia	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.

Local swelling around the surgical site can persist for several months. Local swelling can be helped by massaging the tissues around the injured part.

The fingers are complex structures with many layers of tissue that normally glide smoothly over each other during motion. These smooth gliding layers can become stuck down after an injury and an operation. This will make the finger stiff and poorly mobile. Early exercises to regain normal gliding between the tissue layers is important but cannot start with K wire fixation until the wires are removed, usually 4 weeks after the surgery.

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 K 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 surgery.

### *Nerve Damage*

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

### *Metalwork problems*

The K wires used in hand fracture fixation are strong enough to support fracture fragments but not to resist bending and straightening of the finger. Sudden extra loads on the finger, particularly if the splint has been removed for some reason, can result in the wires breaking inside the finger or falling out. This can mean that more surgery is required.

### *Loss of bony position*

The K wires used in hand fracture fixation 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*

This is a rare complication for most hand fractures but does occasionally occur. If the bones do not heal up securely further surgery may be required.

## Post Operative Course

### *Day 1-7*

- A dressing and padded bandage with a splint or plaster cast incorporated is applied after the operation
- Keep the dressings clean and dry
- Keep the arm elevated in a sling or on pillows to reduce swelling
- Start moving any free joints immediately to prevent stiffness
- Take painkillers before the anaesthetic wears off and as necessary thereafter

### *One Week*

- An appointment will be made for a K wire check, dressing change and a new splint or plaster to be made.
- Exercises should continue on the joints left free.
- Do not load or move the joint or bones with the wires in place.

### *Four Weeks*

- A clinic appointment will be made for you to have your wire(s) removed. This is done with pliers but only takes a fraction of a second and is usually only transiently uncomfortable.
- A check x-ray will 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 will advise you on your individual requirement.

### *Plaster Cast Information*

Contact your surgical centre if:

- Your fingers become blue, swollen or numb and tingling with a plaster cast in place
- You see any discharge, wetness or detect any unpleasant smells from around your cast
- The cast becomes cracked, soft, loose or uncomfortable.

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.

It might be six weeks before you feel able to consider driving again but some patients and fracture types will recover more quickly than this. Your surgeon can advise you on your individual case.

You should discuss it with your insurer if you are considering driving with a splint in place.

### *Time off Work*

This will vary depending on the nature of your job and the exact nature of your surgery.

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

*These notes are intended as a guide and some of the details may vary depending on your individual circumstance and at the discretion of your surgeon.*