

MOHS MICROGRAPHIC SURGERY

What are the aims of this leaflet?

This leaflet has been written to help you understand more about Mohs micrographic surgery. It tells you what it is, what is involved and what the potential complications are.

What is Mohs micrographic surgery?

Mohs micrographic surgery is a highly specialised surgical method for removing certain types of skin cancer. It was developed by Dr Frederic Mohs in the 1930s.

Traditionally, operations for treating skin cancer have involved removal of the affected area (also known as a tumour), along with an area of healthy skin around and below it in order to ensure that the entire cancer has been fully removed. Once removed, the affected area is sent to the laboratory for examination by a pathologist (a doctor who specialises in medical diagnosis by looking at tissue cells under the microscope) to confirm whether the operation has been successful or not. It may take about 2 weeks for the report to become available. If the report shows that the cancer has not been fully removed, a further procedure may be necessary. Also, with this method only a small sample of the margin of the skin cancer can be examined.

With Mohs micrographic surgery, the skin cancer is removed a thin layer at a time with a very small margin of healthy skin around it. Each layer is immediately checked under the microscope by the surgeon. With this method 100% of the skin margin is examined. A further layer is taken from any areas in which the tumour remains, if necessary, until all of the skin cancer has been fully removed. This allows for removal of as little healthy skin around and below the cancer as possible, which keeps the wound as small as possible. This makes it almost certain that the skin cancer is fully removed on the day of the procedure.

Who performs Mohs micrographic surgery?

Only dermatologists or surgeons who are trained in Mohs micrographic surgery can perform this procedure. This training is additional to that required to become a dermatologist or a surgeon.

Occasionally, support may be given by other specialists, e.g. a plastic surgeon to reconstruct the wound, or a head/neck surgeon to treat the deep component of the tumour.

What does the procedure involve?

The visible skin cancer is outlined with a marker pen and the skin is numbed with a local anaesthetic injection; you will be fully awake during the procedure. The tumour is then removed with a very small margin of healthy skin around and underneath it. A map of the surgical site and the sections of removed tissue is drawn. This allows the surgeon to know exactly how the removed skin tissue corresponds to the wound so that the correct place for any further surgery can be identified. A dressing is applied and you will be asked to wait whilst the removed skin tissue is examined.

Whilst you are waiting, the removed skin tissue is examined under a microscope to determine whether any of the tumour remains at the edges of the skin tissue that has been removed. It can take approximately 30 minutes for the laboratory to process a small skin tissue sample; a larger sample will take longer. If any of the tumour is seen at the edge, a further layer will be removed from the corresponding area on the skin. This process is very similar to the first stage of surgery; however, the surgeon knows exactly where to find the remaining tumour from the map. More anaesthetic will be injected before surgery.

The process is repeated as many times as necessary until there is no further tumour remaining. Sometimes the tumour can be much larger than is visible at first.

What happens when the entire tumour has been removed?

There are three main options:

1. At some sites the wound can be left to heal naturally leaving a perfectly good result. If this is done you will be shown how to look after the wound and will be provided with aftercare advice on how to apply or arrange further dressings.
2. The surgeon may close the wound directly edge to edge with stitches or use a piece of skin from another area as a graft to cover the wound.
3. The wound may need to be repaired by another surgeon, e.g. a plastic surgeon or an oculo-plastic surgeon (a doctor who specialises in surgery of the eye and face). This is usually planned before you attend your surgery and may be performed on the same day or within a few days. If the repair surgery is at a later date, dressings will be applied and wound care advice will be given. You will be allowed to go home and return for surgery at a later date.

Which conditions can be treated with Mohs micrographic surgery?

Mohs micrographic surgery is most often used for the removal of a type of common skin cancer known as a basal cell carcinoma (BCC). Your dermatologist may also recommend this technique for the removal of other types of skin cancer, for example squamous cell carcinoma (SCC). These skin cancers most frequently arise in the head and neck region where minimising surgical wounds is particularly important in order to ensure a good cosmetic outcome. Mohs surgery is sometimes used for other skin cancers.

Who is suitable for Mohs micrographic surgery?

Mohs micrographic surgery is particularly useful in the following circumstances:

Recurring or previously incompletely removed basal cell carcinomas.

Infiltrative basal cell carcinomas (where the edges of the skin cancer can be difficult to see so traditional methods risk incomplete removal).

Basal cell carcinomas in areas where it is cosmetically better to remove as little healthy skin as possible e.g. eyelids, nose, ears, lips.

Basal cell carcinoma at the site of previous surgery or radiotherapy.

Very large tumours (where removing as little healthy skin as possible can help minimise the size of the wound).

How effective is this treatment?

The cure rate for Mohs micrographic surgery is high for both primary (new) tumours (up to 99%) and recurrent tumours (up to 95%). This compares to a cure rate of approximately 90% for a primary tumour removed by the traditional surgical methods.

Advantages of Mohs Surgery

Mohs surgery is unique and so effective because of the way the removed tissue is microscopically examined, evaluating 100% of the surgical margins. The pathologic interpretation of the tissue margins is done on site by the Mohs surgeon, who is specially trained in the reading of these slides and is best able to correlate any microscopic findings with the surgical site on the patient.

Advantages of Mohs surgery include:

- Ensuring complete cancer removal during surgery, virtually eliminating the chance of the cancer growing back
- Minimizing the amount of healthy tissue lost
- Maximizing the functional and cosmetic outcome resulting from surgery
- Repairing the site of the cancer the same day the cancer is removed, in most cases
- Curing skin cancer when other methods have failed

What are the complications of this treatment?

All surgical procedures carry some risk. For Mohs micrographic surgery the main risks are listed below:

Bleeding / bruising. Bleeding will be stopped during the surgery but can restart afterwards. It is normal to have bruising that may persist for a while. If you take a blood thinning medication, such as warfarin or aspirin, or if you have a medical condition that causes you to bleed more easily, this should be discussed with your doctor before the surgery as it may require additional care during the surgery. It is not always necessary to discontinue your medication but you may be asked to have a blood test before the day of your surgery.

Wound infection: There is a very small risk of developing an infection in your wound. You may be prescribed antibiotics at the time of the surgery if your doctor thinks there is a high risk of infection.

Nerve damage: Small nerves may be cut during the surgery to remove the skin cancer. This can result in numbness which improves over weeks or months as the new nerves grow. Every effort is made to avoid this when removing the tumour; however, in some circumstances it may be unavoidable. Rarely, a nerve that supplies movement to a muscle can be affected resulting in weakness or paralysis of that muscle.

How long will I need to stay in hospital?

Mohs micrographic surgery is a relatively short procedure, which means that you will usually be discharged home on the day of your procedure.

The amount of time that you spend in the hospital on the day will depend on how many layers have to be removed before the skin cancer is fully removed. Another point to consider is how big the tumour is, as very large tumours will take longer to be looked at. You can expect to spend most of a morning or afternoon in the hospital as a general rule.

What should I bring with me on the day?

Find something to occupy your time whilst you await your result. You should inform your doctor of any current medications you are taking, as well as any allergies you may have.

How should the treated area be cared for when I get home?

You will be provided with verbal and written instructions on how to care for your wound.

Are there alternative treatments?

Yes. Before arranging Mohs micrographic surgery, your doctor will explain the alternative treatment options that are available for your type of skin cancer. These may include:

Traditional surgical skin cancer removal (excision)

Radiotherapy

Where can I get more information about Mohs micrographic surgery?

- <http://www.skincancermohssurgery.org>
- <http://www.dermnetnz.org/procedures/mohs.html>
- http://www.mohssurgery.org/files/public/patient_information_brochure.pdf