



## **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 specialised surgical method for removing certain types of skin cancer. It was first developed by Dr Frederic Mohs in the 1930s.

Traditionally, operations for treating skin cancer surgically have involved removal of the area affected by the skin cancer together with an area of healthy unaffected skin around and below the skin cancer in order to ensure that the entire cancer has been completely removed with suitable margins of excision. Once removed, the skin is sent to the laboratory for examination by a pathologist (a doctor who specialises in medical diagnosis by looking at the cells with a microscope) to confirm whether the operation has been successful or not. It usually takes about 2 weeks for pathology report to become available. If the report shows that the skin cancer has not been fully removed, a further procedure may be necessary.

During the procedure of Mohs micrographic surgery, the skin cancer is removed a thin layer at a time with a small margin of healthy skin surrounding it. Each layer is immediately checked under the microscope by either the surgeon or a pathologist. The layer of skin is examined in horizontal sections. A further layer is taken from any areas in which the tumour remains until all of the skin cancer has been fully removed. The advantage of removing the skin layer by layer in this way is that as little healthy skin around the skin cancer is removed, which keeps the wound as small as possible. Secondly, your dermatological surgeon can be almost certain that the skin cancer is fully removed on the day of the procedure.

## **Who performs Mohs micrographic surgery?**

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

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 cancer.

## **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 usually be fully awake during the procedure. The tumour is then removed with a small margin of healthy skin around and underneath it. A map of the surgical site and the sections of removed tissue is drawn by the surgeon. 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. While you wait the removed skin tissue is examined under the microscope to determine whether any of the tumour remains. It can take approximately one hour for the laboratory to process a small skin tissue sample; larger samples may take longer. If tumour is seen at in the skin examined under the microscope, a further layer will be removed from the corresponding area on the wound. The surgeon will know exactly where to find the remaining tumour from the map drawn of the location of tumour. It may be necessary to inject more local anaesthetic before further surgery.

This process is repeated as many times as is necessary until there is no tumour remaining. Sometimes the tumour can be much larger than is visible at first on the surface of the skin.

## **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. This is called healing by secondary intention. 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.

## **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 dermatologist 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?**

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?**

- Something to occupy your time whilst you await your result.
- Refreshments and sandwiches may be provided but you should check with the hospital team in advance in case you need to bring a packed lunch.

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.dermnetnz.org/procedures/mohs.html>

[http://www.mohssurgery.org/files/public/patient\\_information\\_brochure.pdf](http://www.mohssurgery.org/files/public/patient_information_brochure.pdf)

For details of source materials used please contact the Clinical Standards Unit ([clinicalstandards@bad.org.uk](mailto:clinicalstandards@bad.org.uk)).

**This leaflet aims to provide accurate information about the subject and is a consensus of the views held by representatives of the British Association of Dermatologists: individual patient circumstances may differ, which might alter both the advice and course of therapy given to you by your doctor.**

*This leaflet has been assessed for readability by the British Association of Dermatologists' Patient Information Lay Review Panel*

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