

# Mohs Surgery

## Microscopically Controlled Serial Excision for Skin Cancer

### What is Mohs Surgery?

In the early 1940's, Dr Frederick Mohs, Professor of Surgery at the University of Wisconsin USA, developed this treatment for skin cancer. The technique has since become known as "Mohs Surgery". Mohs surgery is a highly specialized treatment for the total removal of skin cancers, in which excision; mapping and microscopic pathology examination is used to determine the extent of the tumor and to guide the excision.

The major advantage of Mohs Surgery over other surgery is that the tumor is completely removed with minimal loss of normal skin. The alternative is often deep and wide excision resulting in larger loss of normal tissue.

### Surgical Procedure

The treatment is done under local anesthetic in the Operating Rooms at Oxford Day Surgery with occasional sedation for comfort. The visible tumor is surgically removed in the first stage. A pressure dressing is then applied and the patient waits comfortably in the Recovery Room Chairs while the slides are being processed.

The removed tissue is carefully divided into pieces that will sit on a microscope slide. The edges are then marked with specially coloured dyes and a map of the tissue removed is made, the tissue is then frozen by the technician. Thin slices can then be made from the frozen tissue and examined microscopically by the doctor who is now able to visualize any residual cancer.

If cancer cells remain, another stage of surgery is carried out. The procedure is repeated until no cancer cells remain. This process preserves as much normal, healthy, surrounding skin as possible.

### Duration of Surgery

The removal of each layer of tissue take approximately one hour. On average it takes 2 stages (occasionally more) to complete the surgery. The starting times for Mohs Surgery are staggered to minimize waiting times and start at 6:45am with the last appointment usually at 12.30pm. You can expect to stay with us at Oxford Day Surgery for 2-4 hours after commencement to complete your Mohs Surgery.

### Rate of Cure

Reported cure rates for Mohs Surgery are from 94% to 99%, even if other forms of treatment have failed. A study of more than 10,000 Australian patients treated with Mohs Surgery has confirmed cure rates in this range.

### The Mohs Surgery Team

On the day of the surgery a number of people will be involved in your treatment. These will include 1-2 Mohs Surgeons (both of whom may be involved in performing the surgery at varying times during the day), up to 4 nurses, nurse assistants and 2 pathology technicians.

### **How do I prepare for the day of surgery?**

The best preparation for Mohs Surgery is a good night's rest followed by a normal breakfast unless you have specifically been given instructions to fast. Take all medications as usual unless instructed otherwise.

### **Please follow our Mohs Surgery dos and don'ts:**

**Do** expect to be with us for 2-4 hours. Depending on the complexity of your case it may be less than 2 hours or very rarely longer than 4 hours.

**Do** tell us if you are on aspirin, Astrix, Cardiprin, Warfarin, Plavix, Iscover, Assasantin, Dipyridamole, or any other blood thinner. You may need a blood test prior to treatment on our advice

**Do** arrange for someone to drive you home. It is not usually safe to drive yourself especially with surgery around the eyes.

**Do** bring a book, iPod, laptop or similar devices to pass the time if you wish

You will be allocated a small locker to put any valuables in e.g. Wallet

**Do** wear comfortable, casual, loose fitting clothing that can be unbuttoned rather than clothing which needs to be pulled over the head as you may need to partly undress.

**Do** try to stay in Perth overnight if you are a country patient from a remote area

**Do** wash your hair before the surgery as you may have a heavy dressing on which may make this difficult for several days to a week after surgery

Any scripts received from us need to be filled and bought with you on the day of surgery.

### **Don't wear ANY make-up or Jewellery to the surgery**

**Don't** drive home from surgery unless approved by your doctor

**Don't** stop any medication before surgery unless instructed to do so

**Don't** skip breakfast unless instructed to fast

**Don't** bring the family for the day. You will be in a restricted Surgery and Recovery zone that cannot be accessed by your family. Special needs patients may be exempted from this requirement

**Don't** expect to go back to work the next day or to play golf, swim, run, go to the gym, cycle or party for at least a week in most cases. Medical certificates will be willingly provided.

## **What happens to the wound after the Mohs surgery is completed on the day and all the cancer cleared?**

After the cancer is cleared you will be left with a defect at the surgical site which might only involve skin but in some cases may be so deep as to involve loss of cartilage or exposure of bone. There are several options for repair and reconstruction to provide the best possible results. These will be discussed with you at the time.

The possibilities include:

- (1) Direct (primary) closure of the wound or part of the wound with stitches
- (2) Skin grafts or flaps or a combination of these
- (3) Natural healing by allowing the wound to fill in without any stitching (granulation)
- (4) Referral for reconstruction by another surgeon

## **What is involved if the wound is closed with stitches?**

Repair with stitches is usually performed. This involves some adjustment and stretching of the wound and stitching the edges together and provides optimal results in most cases. The scar can usually be hidden in a facial line or wrinkle line.

With a **flap** a larger wound needs to be created temporarily to allow movement of skin. This leads to more stitches than you may have anticipated. The final cosmetic outcome is usually very good.

With **grafts** a second wound is created to obtain extra skin (donor site). This is usually taken from a "non cosmetic" site to minimize scarring and can include sites such as in front of or behind the ear, the collarbone area, the inner or outer upper arm or even the thigh.

The stitches can remain in place for 5-14 days depending on a number of factors. While the stitches are in place, you should refrain from activities that might pull on the sutures. You will be given detailed wound care instructions on the day.

## **What is Spontaneous Granulation?**

Healing by spontaneous granulation involves letting the wound heal by itself. Experience has taught us that there are certain areas of the body where nature will heal a wound as nicely as any further surgical procedure. If the wound is allowed to granulate in, it usually heals in 4 to 8 weeks and requires daily dressing changes.

## **Will I be referred elsewhere for repair and reconstruction?**

In more than 99% of cases repairs are undertaken immediately by the Mohs Surgeon. However all eyelid cancers are treated in combination with an oculoplastic surgeon who is an eye specialist with advanced training in eyelid reconstruction. The Mohs Surgeon will undertake the tumor removal at Oxford Day Surgery. On completion, a dressing and eye pad is applied to the wound and the patient attends to oculoplastic surgeon within 48 hours for repair. This surgery is usually performed at another surgery facility usually within a hospital. These arrangements are always coordinated well in advance by our staff. The oculoplastic surgeon always assesses the patient fully for eye disease prior to the Mohs Surgery being performed.

In very occasional cases a plastic surgeon may undertake the reconstruction following Mohs Surgery by prior arrangement.

## **What can I expect after the surgery and what are the risks and complications?**

### **Pain**

You will always experience some discomfort after your surgery. We request that you buy Panadol, Panamax or Panadine. Occasionally it will be necessary to have stronger pain killers such as Panadine Forte or Tramal which require a prescription.

### **Bleeding**

Bleeding can occur following surgery. Generally this is mild. If you become worried the bleeding can usually be controlled by the use of pressure. You should take a gauze pad, lie down, and apply constant pressure over the bleeding point for 20 minutes. Sometimes the dressing is soaked and that is why it appears that you are bleeding. A simple dressing change with new pressure application may be all that is required. If all these measures fail, please contact the doctor's after hours phone numbers.

### **Swelling or Bruising**

These are very common following Mohs Surgery, especially around the eyes. It usually subsides within 2 to 5 days after the surgery and may be decreased by sleeping with the head slightly elevated and by using an ice pack for short periods of time during the first 24 hours.

### **Infection**

Uncommonly infection may occur. The reported infection rate is 1-2% of all cases. This shows as increasing redness surrounding the wound, pain, throbbing, tenderness, heat and discharge of fluid or pus. This may be seen in the 3-5 day period following surgery. If any of these symptoms develop you should notify our office immediately so that swabs can be done and antibiotics prescribed.

As ears and some parts of the nose and lips are prone to infection or if you are on drugs to suppress the immune system or have a transplant, heart valve disease or leukemia/lymphoma, you may be asked to start antibiotics at home 2 hours before the surgery and to continue them for 2-5 days following the surgery in order to prevent infection.

### **Nerve damage and numbness**

Nerve damage (commonly numbness around the scar) is usually temporary and recovers in days to months. In some cases it can be permanent if the cancer is extensive and the nerve is involved.

### **Scarring**

Scarring from the surgery is usually limited and settles very well. Flaps and grafts take weeks rather than days to settle but improve significantly with time. All scars can look swollen and red, feel hard and lumpy and be tender for weeks after surgery. Be reassured that scars soften, mature and improve with time and this process continues for up to 12 months.

Scars may require massage, cortisone injections, further surgery or laser surgery to improve them. Sometimes the extent of the skin cancer and the complexity of the wound may require a larger reconstruction which can leave more obvious scarring for some time before settling.

### **What restrictions are there after surgery?**

Generally 1 week off work is recommended and restricted activities including all sporting activities is required until sutures are removed.

**What follow up is required?**

The wound dressing nurses will see you for any problem in the days following your surgery. At 5-7 days you will see the nurses for a wound review, stitch removal and dressings. The nurse will arrange further wound dressings as requires and will book a Mohs Surgery follow up appointment with your Mohs Surgeon usually 1 month following the surgery.

If the wounds have all healed well you may be returned to your referring Doctor for regular review or you be seen on an ongoing basis at Oxford Dermatology once or twice a year.

For further information visit the American College of Mohs Surgery website [www.mohscollege.org](http://www.mohscollege.org) – all our doctors are Fellows or training towards membership of this college set up by the founder of Mohs Surgery – Dr Frederick Mohs.