

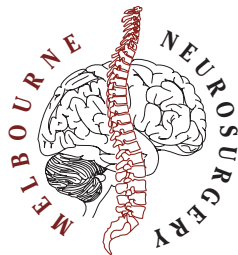
MELBOURNE NEUROSURGERY

SURGICAL PROCEDURE INFORMATION

Prepared
For

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CRANIOTOMY FOR REMOVAL OF MENINGIOMA



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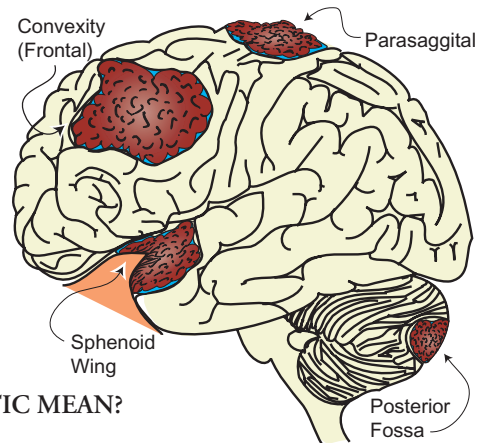
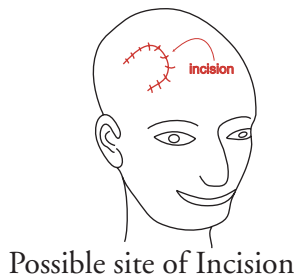
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WHAT IS A MENINGIOMA ?

This is a tumour that has grown from one of the tissues that line the brain (called meninges). The particular layer of the meninges is said to be the Arachnoid Layer (called this because it is spider web like in appearance). It is probably the most common type of primary brain tumour at about 17% of the total. It is unclear what causes the meningioma to occur. It does not usually spread to other parts of the body. It has usually grown in the one place and indents the brain. It may invade the brain or its blood vessels or coverings. Sometimes it will invade the bone of the skull. It generally grows as a lump (like a golf ball) and this will indent the brain (like a finger pushing on the white of a hard boiled egg). It may grow over the surface of the brain (between the brain and the skull) and this is called an en-plaque meningioma.

WHAT IS A CRANIOTOMY?

This is where a disc of bone is removed from the skull with a special tool to allow access to the brain. A scalp flap is opened before this and the lining of the brain opened after. Everything is put back together at the end of the operation



WHAT DOES STEREO-TACTIC MEAN?

This is when a computer and associated equipment is used to help locate the lesion inside the brain. A CAT scan or MRI scan is performed before the surgery and this information is fed into a computer that is used during the surgery. The computer can have accuracy down to one millimeter.

WHAT ARE THE REASONS FOR THE SURGERY?

The commonest reason is the lesion is producing significant pressure on the brain or important structures within the brain. Part of the brain is not working or that the lesion is so large that it is compressing the brain to produce drowsiness. If it is not removed it can increase in size to produce death. Your X-rays and MRI have shown an area that is abnormal within the brain. This may need to be removed or a biopsy taken. The exact diagnosis is not always clear on the imaging alone. In this case it is felt based on the pictures that the most likely diagnosis is of a meningioma. Surgery may be able to remove the lesion. A biopsy at the time of removal may be able to tell us exactly what the lesion is but also how it may behave in the future. It may also help in deciding the best treatment choices. If the lesion can be completely removed then a cure can be obtained.

If the tumour is so large that you are drowsy or unconscious then a relative will be contacted to give consent for the procedure.

WHAT HAPPENS PRIOR TO SURGERY?

What happens depends on the size and location of the tumour. If it is a large tumour and it is causing swelling in the brain you are started on DEXAMETHASONE. This is a steroid drug that will reduce the swelling of the brain around the tumour. Some of its' side effects are to make you hungry, difficulty sleeping and also to give you the hiccups. Your symptoms of e.g. headache / weakness usually improve on these. The other drug we may give you is an ANTI - EPILEPTIC. This is because the tumour may irritate the brain and cause a seizure (fit). The fit may have been the reason the lesion was found in the first place.

If it is a small tumour and not causing any significant pressure on, or swelling in, the brain then you are not started on any steroid medications.

WILL IT BE ABLE TO BE REMOVED COMPLETELY?

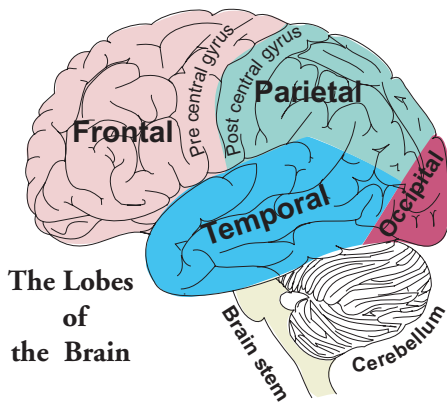
There is always a balance between the risks of removing the lesion and doing harm. If at the time of surgery the lesion involves a major vessel or other important structure we need to make a decision at the time as to the effect that removing or damaging this may have. If this is not felt safe then some may need to be left behind.

If the lining of the brain is involved then we may not be able to completely cure the lesion. In some cases the lining of the brain can be removed with the tumour so that a cure is likely. This is usually the case if the tumour is over the top or outside of the brain. If the lesion cannot be completely removed we will may observe the tumour and plan further surgery in the future if further growth occurs.

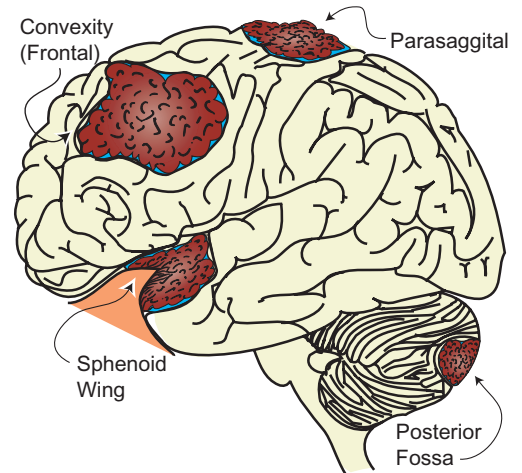
Lesions can be of a few types and these can depend on the location. If it is over the top of the brain it tends to indent the brain and to push things out of the way. If it is around the base of the brain it can grow around the important structures that we find there. The location, texture, and degree of invasion of structures by the tumour will dictate if it can be totally removed. If it is solid this means complete removal is more likely. If the lesion is cystic the wall of the cyst is the part that needs to be removed and this may not be possible. If the lesion is in an area that is very important (e.g. brainstem or optic nerve) and we cannot take peel the tumour from either an important artery or nerve without producing a stroke then the chance of leaving some behind is higher.

WHAT WILL HAPPEN IF I DO NOT HAVE THE SURGERY?

If the lesion grows it will produce a worsening of your symptoms and may eventually lead to death. The exact local effect of the lesion depends on where it is inside the head. Lesions in the area of the brain called the posterior fossa have a greater tendency to deteriorate rapidly. Those in the other areas of the brain cause local affects. The temporal lobe may cause problems with speech or memory. The frontal lobe may cause weakness or confusion (see picture).



SIDE VIEW
showing locations
and naming of
some tumours



WHAT OTHER CHOICES DO I HAVE?

In small heavily calcified lesions observation is an option. If the lesion is clearly a meningioma on the imaging and is not accessible to surgery radiation therapy may be an option. The usual choices would be stereotactic radiotherapy or local irradiation if surgery is not possible.

HOW LONG DO I HAVE TO DECIDE?

This will depend on how big the lesion is or what it may be pressing on. Generally the smaller the lesion the less parts of the brain it will involve and the easier it will be to remove it all. Sometimes the surgery will need to be done urgently as the pressure has built up to a point where it is immediately life threatening. If the lesion is small we may elect to watch it for a while with serial images and see if it grows. If the lesion is small or not applying much pressure on the brain we will plan to remove it at your convenience.

WILL THE BRAIN BE DAMAGED IN REMOVING THE LESION and

COULD I BE WORSE OFF FROM THE SURGERY?

The aim in all brain surgery is to do no harm. We plan the approach to the lesion so as not to affect anything. If the lesion is in that part of the brain that is critical for something then your symptoms may be made worse. Sometimes this will be permanent and other times they will get better over time. If a vessel needs to be taken at the time of surgery it may have no affect at all but could also produce a stroke from which you may not recover. Retraction of the brain may stop it working or produce a stroke. The specific risks depend on the location of the tumour and what it may be stuck to. If it is adherent to the nerve to the face there is a risk of facial palsy, if it is adherent to the nerve to the eye there is a risk of loss of vision in one eye or even blindness. Patients can die or not wake up from this type of surgery.

WHAT IS THE RISK OF A BLOOD CLOT POST-OPERATIVELY?

We stop all the bleeding at the time of the surgery but it can restart. If this is going to happen it will happen in the first 6-12 hours post-operatively and we do special observations to keep watch for this. If this happens then we may need to take you back to theatre to remove the clot. Any worsening of your symptoms usually will improve but they may not. Some patient can die from a sudden hemorrhage into the brain.

IS THERE A CHANCE THE LESION MAY COME BACK?

Yes. At the end of the surgery we will tell you how it went and how much could be removed. If some is left behind the lesion will probably recur but we will give you either brain radiation or stereotactic radiosurgery to try and prevent this. Even if we feel that it has been completely removed there is still a small chance it may recur. Further surgery is required in some patients if we cannot remove it all at the initial operation or if it grows back over time. If the tumour invades the lining of the base of the brain it has a greater chance of recurrence. We divide the tumours on the basis of the type of resection we can do.

1. Removal of all tumour and all attachments. Very little chance of regrowth
2. Removal of all tumour and diathermy (burn) attachments. Increased chance of regrowth
3. Residual tumour left behind Significant chance of regrowth

There are different types of meningioma based on what they look like under the microscope. Some can behave in a malignant way.

CAN I DEVELOP EPILEPSY?

You may already have had a seizure that led us to find the lesion in the first place. If not there is a risk of developing seizures after the surgery. We will not routinely place you on medication unless you are in the high risk group. If you do have a seizure after the surgery someone should call an ambulance and get them to take you to hospital. After that we will either re-adjust your medication or start you on the appropriate drugs. The seizures can nearly always be controlled with medication.

WILL MY SYMPTOMS GET BETTER?

This will depend on what is causing the effect of the lesion. If the symptoms are because the brain is damaged by the lesion then improvement is unlikely. If the symptoms are from pressure then they should get better.

WHAT BENEFITS CAN I EXPECT FROM THE SURGERY?

The aims of the surgery are to:

Cure of your lesion if possible

Remove as much of the lesion as possible (hopefully all)

To make the lesion small enough for radiosurgery if we are not able to completely remove it.

Remove any compression of the brain

Improve any symptoms that you may have (headache, weakness, speech problems, walking difficulty etc)

Get a diagnosis if we do not know what the lesion is.

WILL THE SURGERY ALWAYS BE AS DESCRIBED?

No. At the time of the surgery if we encounter problems or if the surgery is felt to be too dangerous we may either change the procedure or abandon it. The most likely event would be that we only did a local biopsy and subtotal removal rather than tried to remove the whole lesion.

COULD THE LESION SPREAD IF WE OPERATE ON IT?

This is very unusual. Certain types of lesions are more likely to do this. Meningioma would only do this very very rarely.

WHAT YOU NEED TO TELL THE DOCTOR BEFORE SURGERY?

If you have clotting problems

Any recent new Health problems or heart disease

If you are taking blood thinning agents

e.g. Warfarin / aspirin/anti- inflammatory

If you have improved from the time you decided to have surgery.

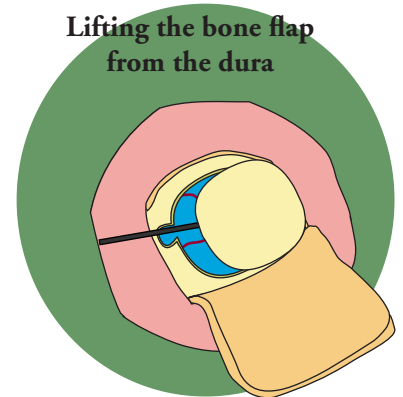
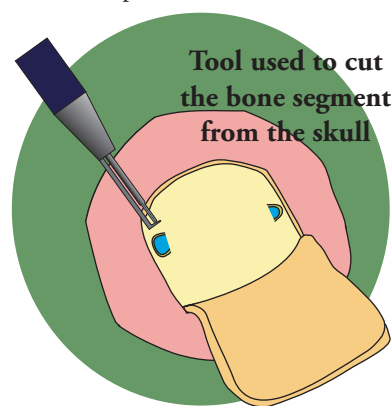
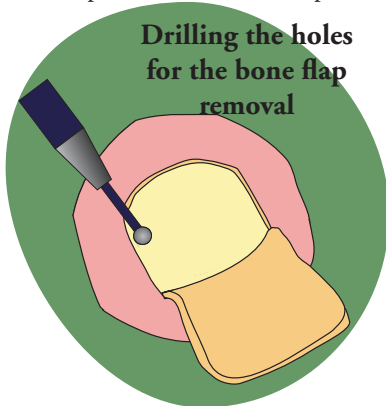
Drug allergy

Anything that you think is important for the doctor to know in making his decision to offer you surgery.

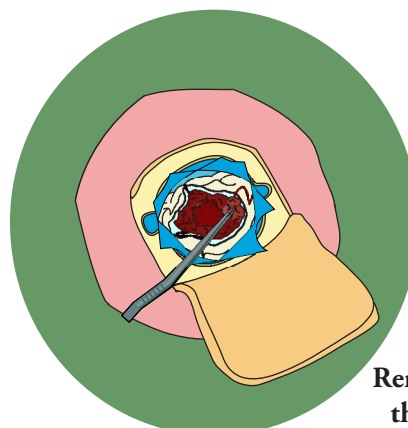
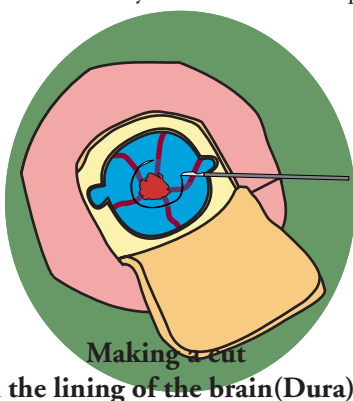
HOW IS THE OPERATION PERFORMED?

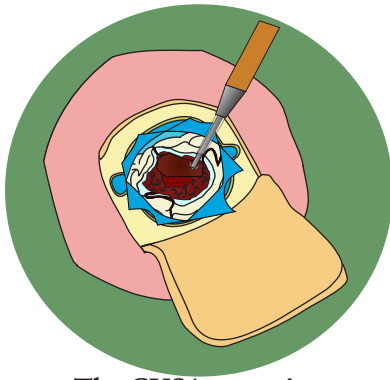
The surgery is performed in a hospital by a surgeon and he will most likely have a surgical assistant.

In the operating theatre you are given a general anaesthetic by the anaesthetist (an indwelling catheter may be needed) You are then positioned with the lesion uppermost. The head may be fixed in a special holder (this may leave 3 small pinholes in the scalp). The area of the incision is then shaved and prepared with anti-septic. You are covered in drapes so that only the incision can be seen. Local anaesthetic is injected and then the skin is cut. A hole in the bone is drilled down to the dura then a special drill cuts the disc of bone which is lifted off the dura. The dura is cut to expose the brain. A computer is often used to help locate the lesion in the brain.



The lesion has the dura cut from around the edge. we dissect around the outside to free the tumour from the brain. It is shrunk with diathermy. The reduced tumour is then removed with suction and a special device called a CUSA. The CUSA breaks up the lesion so it can be removed with suction. Once the lesion is all removed all bleeding is stopped. We may line the bed that the lesion has been removed from with a substance that encourages the blood to clot. The lining of the brain is then repaired with a fine suture. If this has been involved it may be replaced with a patch of either fascia from under your skin or a synthetic material. The bone is plated back into position. The skin is then closed either with nylon suture or with special staples..

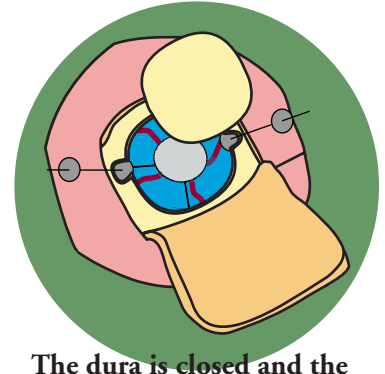




The CUSA removing some of the lesion



Closing the dura over the defect after Tumour removal



The dura is closed and the clips are being placed to hold the bone

WHAT HAPPENS NEXT?

You will wake up in recovery and after about 1 hour you will be transferred to the ward. The nursing staff will be continually checking your pulse/blood pressure/limb strengths and level of alertness looking for any changes to indicate a complication. During the first night on the ward you will be woken for these observations. You will have either intravenous/intramuscular or oral analgesia. Operations on the head do not often hurt much.

Sometimes you will have difficulty passing water and you may require a catheter (this may have been inserted for the operation).

In the next day or so the drip in your arm will be removed. Usually this is the day after surgery. The day after surgery you will be encouraged to go for a walk. Gradually over the next two days you will be able to get around as normal. When you are comfortable you will be able to go home. You may have a repeat scan of your head before going home. Commonly you will have a headache for a while after the operation. The sutures are usually removed about 5 - 10 days after the surgery depending on if you have had previous radiotherapy in which case they can be left in for 14 days.

HOW LONG WILL YOU BE IN HOSPITAL?

Unless you have been admitted as an emergency you may be admitted on the day of surgery or the day before. You will fast from midnight on the day of surgery.

You will be discharged about 3-5 days post-operatively.

On discharge you will be able to perform most tasks of daily living (e.g. showering/dressing/etc.) Depending on how quickly you recover from any preoperative disability you may require rehabilitation.

WHAT TO NOTIFY YOUR DOCTOR OF AFTER SURGERY

- Increasing Headache
- Fever
- Fitting
- Swelling or infection in the wound
- Fluid leaking from the wound
- Weakness or numbness
- Drowsiness
- Leg pain or swelling
- Difficulty breathing or chest pain

WHAT HAPPENS WHEN YOU GO HOME?

- You will be tired
- It is common to require a rest in the afternoon
- You may have intermittent headaches.
- These will all improve with time.

If you are taking steroids it will be reducing slowly

You may have appointments for some tests.

You will not be able to drive for 3 months.

Your post operatively will depend on what we find and if you need to have further tests or treatment. Most will be seen within 2 weeks.

WHEN WILL THE ANSWER BE KNOWN?

It may be known at the time of the surgery if we have sent a frozen section to the pathologist and he is sure of the answer. If he is not sure we will wait until the special stains are done and this will usually take a few days.

WHAT ARE SOME OF THE RISKS?
Discuss these and others with your surgeon

Some of the possible complications are:

Inability to proceed with the surgery from anaesthetic or other complication

Partial or incomplete removal of the lesion

Infection: Meningitis (treated with antibiotics)
 Brain abscess (may need further surgery)
 Bone flap infection (may need removal)
 Wound infection (treated with antibiotics)

Post operative blood clot requiring drainage.

CSF (fluid from around the brain) leak from the wound

Brain Swelling and worsening of symptoms or death

Stroke (weakness/numbness/paralysis/death)

Seizure

Death (rare)

Positioning injuries (pressure on a nerve or other body part)

Wound breakdown

Possible damage to fine nerves to things like swallowing or the eyes or face if they are involved in the tumour

Surgery on the wrong side or inability to find the lesion in the brain

Biopsy may be inaccurate or show normal tissue

Blindness

If you have a fluid collection in the brain you may require a shunt

There may be partial thinning of the bone under the flap

There may be thinning of the muscle under the incision

The holes used to gain access may get bigger

Numbness of the scalp may remain

Symptoms may be made worse

Further surgery may be required

Blood transfusion

Medical complications not related directly to the surgery

e.g. Clot in the legs (can travel to the lungs [uncommon])
 Pneumonia
 Heart attack
 Urine infection
 Kidney failure
 Stroke
 Drip or catheter infection

WHAT ARE THE COSTS OF THE SURGERY?

Discuss this with your surgeon

There are generally no out of pocket costs for the surgery above the amount you will get back from your health fund unless this needs to be done as an emergency. It is important to discuss this with your doctor and to contact your fund to understand not only the cost of the surgeon but also the costs of the hospital admission and other people involved. The assistant will send an account for 20% of the value of the surgeons' fee. If you have no health insurance and wish to have the surgery privately then you should discuss with the office staff to organize an estimate.

YOU WILL BE ASKED TO SIGN A CONSENT FORM TO SAY THAT YOU UNDERSTAND ANY RISKS.

IF YOU ARE NOT SURE ASK BEFORE YOU SIGN.

If you feel that you need a second opinion we recommend that you ask your local doctor to arrange an independent opinion for you.

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