

Service: **Neurosurgery**

Meningioma

Management and types of treatment



Meningioma

This booklet aims to explain the diagnosis and treatment pathways for meningioma. A meningioma doesn't always require immediate treatment. A meningioma that causes no significant signs and symptoms may be monitored over time. However some meningioma tumours can grow and start to affect the brain. At your hospital appointment you will be able to discuss the management of your tumour and it will be explained which treatment options are suitable for your condition.

Signs and symptoms

Typically symptoms begin gradually and may be very subtle at first. Depending on where in the brain the tumour is situated these may include:

- Changes in vision, such as seeing double or blurriness
- Headaches that worsen with time
- Hearing loss
- Memory loss
- Loss of smell
- Seizures
- Weakness in your arms or legs

Causes

It isn't clear what causes a meningioma. It is known that something alters some cells in your meninges which are the membranes that form a protective barrier around your brain and spinal cord. This makes them multiply out of control leading to a meningioma tumour. What is still being researched is if these occur because of the genes you inherit, things you're exposed to in your environment, hormones or a combination of these factors.

Risk factors for a meningioma include:

Radiation treatment. Radiation therapy that involves radiation to the head may increase the risk of a meningioma.

Female hormones. Meningiomas are more common in women, leading doctors to believe that female hormones may play a role.

An inherited nervous system disorder. The rare disorder neurofibromatosis type 2 increases the risk of meningioma and other brain tumours.

Tests and scans

Computerised Tomography (CT) scans take X-rays that create cross-sectional images (like slices) of your brain and head. These images are combined together by a computer to create a full picture of your brain. Sometimes you will be given a contrast iodine-based dye into your vein.

Magnetic Resonance Imaging (MRI) with this imaging study, a magnetic field and radio waves are used to create cross-sectional images of the structures within your brain. MRI scans provide a more detailed picture of the brain and your tumour. These scans do not involve radiation.

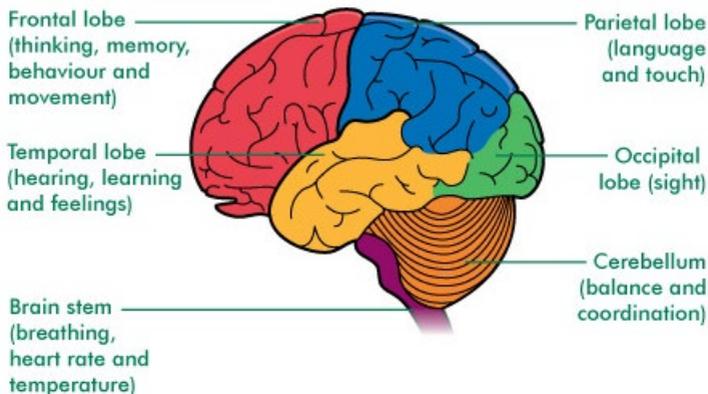


Diagram of the brain (www.Macmillan.org)

Treatment options

The best treatment for a meningioma depends on a number of factors, including:

1. Location – if the tumour is easily accessible then it is often best for it to be removed if it is causing symptoms.
2. Size – if the tumour is less than 3cm in diameter it may alternatively be possible to treat it with stereotactic (targeted) radiosurgery.
3. Symptoms – if your tumour is not causing any symptoms and is small, you may not require any treatment at all.
4. Your general health - for example there may be risks with a general anaesthetic in patients with other significant medical conditions such as heart disease.
5. Grade of tumour – how quickly it is growing, whether it is invading other structures in the brain this will influence ongoing care required such as radiotherapy. Chemotherapy is rarely used.

The treatment you receive for a meningioma depends on many factors as described above. The potential benefits of treatment (ie, reducing symptoms and preventing further tumour growth) need to be considered in addition to the potential side effects and risks of treatment.

The optimal treatment for each patient is now determined by a panel of specialists within the Neurosurgical unit. The majority of meningiomas are treated with microsurgical excision. The multi-disciplinary team (MDT) will consist of:

- Neurosurgeon responsible for your care
- Ear Nose Throat (ENT) surgeons (with specific expertise in brain or skull based tumours)
- Neuro-Oncologists (specialists in radiotherapy and chemotherapy for brain tumours)

- Neuro- Radiologists (specialist in interpreting brain scans)
- Neuro- Pathologists (make the diagnosis by examining the biopsies under the microscope)
- Neuro-Ophthalmology Consultant
- Advanced Nurse Practitioner

The MDT's consensus decision will be discussed with you at your outpatient consultation with Neurosurgical Consultant who will take into consideration all of these factors and your overall health to discuss treatment options that are suitable for you.

Surveillance imaging

A wait and see approach can be used when immediate treatment isn't necessary. A small, slow-growing meningioma that isn't causing signs or symptoms may not require treatment. If the plan is not to undergo treatment for your meningioma, you will likely have brain scans periodically to evaluate your meningioma and look for signs that it remains stable and isn't growing. If there is concern then your treatment plan will be re-evaluated with you at further outpatient appointment.

Stereotactic Radiosurgery (SRS)

Gamma Knife Radiosurgery is a day case radiotherapy (x-ray) treatment that uses tiny beams of radiotherapy. These beams all focus on the tumour or lesion in the brain that needs treating and give a very high dose of radiotherapy in that spot, whilst giving a very low dose of radiotherapy to the surrounding brain. This means that the tumour/lesion has the highest chance of being controlled whilst the side effects are minimized compared to other types of radiotherapy. Although it is called radiosurgery, this is not surgery. Instead

the invisible radiotherapy beams pass through the brain to the tumour/lesion completely painlessly- they are not felt in any way by the patient. The whole treatment occurs on one day and almost all patients can go home within one hour of completing the treatment.

SRS is carried out at Bristol Gamma Knife Centre situated at the University Hospitals Bristol. You will receive an appointment to see specialist Consultant Oncologist Dr Alison Cameron for a consultation in the first instance where you will be given further information.

Surgery

Neurosurgeons work to remove the meningioma completely. But because a meningioma may occur near many delicate structures in the brain or spinal cord, it isn't always possible to remove the entire tumour. The aim of surgery is to remove sufficient tumour in order to relieve pressure or distortion of the normal brain tissue. In complex cases surgeons remove as much of the meningioma as possible with the aim of preserving neurological function. The surgery is done via a craniotomy, this means making a window in the bone in the skull to access the tumour.

The type of treatment, if any, you need after surgery depends on several factors.

- If no visible tumor remains, then no further treatment may be necessary. However, you will have periodic follow-up scans.
- If the tumor is benign and only a small piece remains, then your doctor may recommend periodic follow-up scans only. In some cases, small leftover tumours may be treated with a form of radiation treatment.
- If the tumor is atypical then radiation treatment may be scheduled to occur following your recovery from surgery.

Surgery may pose risks including infection and bleeding. The specific risks of your surgery will depend on where your meningioma is located. For instance, surgery to remove a meningioma that occurs around the optic nerve can lead to impact on your vision. Ask your Neurosurgical Consultant about the specific risks of your surgery. This will be discussed with you again when you go through the consent process for surgery and you will be able to ask any questions you have.

Meningioma tumours are classified by pathologists into three types:

- **Grade 1 - Benign:** These very slow-growing tumours account for 75 percent of all meningioma.
- **Grade 2 - Atypical:** Usually slow-growing but can recur locally in the brain.
- **Grade 3 - Anaplastic:** More malignant, faster-growing these are very rare.

Surgical pathway

What preparation do I have to do?

You will be required to attend pre-operative assessment clinic in advance of your surgical date so we can carry out the necessary physical examination and tests required before general anaesthesia. You will have some blood tests and electrocardiogram (ECG) and it is important we establish your medical history and medications you are taking, so bring this information with you when you attend your appointment. Most GP surgeries will offer a printed summary of your history and medications if you make arrangements with them. Occasionally you may be referred for further diagnostic tests or reviewed by a member of the Anaesthetic team.

Will I need to start any new medications prior to surgery?

Some patients are prescribed a course of steroids to help to reduce swelling around the tumour, you will be advised if this is the case. It is important you take the medication correctly, observe for any side effects which will be explained to you and following the regime to complete the course of tablets. Please do not stop taking this medication abruptly, you will be advised to reduce these in a staged way.

What are the side effects of steroid medications?

The most common side effect is stomach irritation it may be suggested you take a medication alongside to help with this. Much less common but a serious side effect when taking steroid medication is that it can affect your mental health symptoms include:

- Feeling depressed
- Mood swings (feeling high known as mania)
- Feeling anxious, unable to sleep, difficulty with concentration and memory or confusion
- Feeling or visualising things that don't exist "hallucinations"

The above symptoms would require you to be reviewed by your doctor straight away and review of your medication.

Do I need to shave my head in preparation for surgery?

No, when you have been anaesthetised a small amount of hair is shaved from your scalp. This usually grows back fairly quickly, you may find this area a little sensitive or you may notice that you have reduced sensation in this area. Once your surgical site is dry and healed then you can wash your hair normally. When using hair dye following surgery it is best to carry out a test area as the skin can be a little sensitive.

What is a craniotomy and what happens during the operation?

Surgery to remove meningioma can take a number of hours depending on the location and size of the tumour. An incision is made into the scalp, a skin flap is peeled back, burr holes are drilled into the skull and then a piece of bone (“bone flap”) is cut out like a trapdoor to reveal the brain underneath.

During the operation

To carry out the procedure safely your head may be fixed in a head clamp to keep your head very steady during the surgery. You may notice three puncture marks where the clamp was fixed to the skull, including one to two on the forehead.

In most cases the bone flap is fixed back in place at the end of the operation with either very small titanium plates and screws or small titanium clamps. These titanium bone flap fixation devices stay permanently even when the skull bone has fully healed. Some patients find they can feel them through their scalp.

You will have a bandage on your head following surgery and this will be removed once it is established there are no concerns with the operative site.

Where will I be cared for following surgery?

A number of patients will be cared for in the immediate post-operative phase in the Intensive care (ITU) or High Dependency Unit (HDU). You will require additional monitoring in this acute stage and will be moved to a neurosurgery ward as you recover.

Who will be involved with my care in hospital?

Neurosurgical Consultant and Surgical Registrar team

Your surgical team will review you each day to monitor your progress and identify any medical review required. They work together with the other members of the multi- professional team to assess the rehabilitation requirement and establish referral to local hospital or discharge home.

Advanced Neurosurgical Nurse Practitioner (ANNP)

You will meet the ANNP during your pre-operative assessment stage and we also have Nurse Practitioners on our Neurosurgical wards who help to coordinate ongoing care and discharge arrangements. We will offer you support for you recovery and we encourage you to contact us via the Nurse Practitioner telephone 0117 414 7534 if you have any queries before or following discharge from hospital.

Occupational Therapist

OT will review your functioning post operatively and assess any difficulties you may have with carrying out your normal activities in relation to physical or cognitive function such as memory.

Physiotherapist

The physio team will look at your mobility, coordination and balance to assess if you require any support and ongoing therapy.

Speech Therapist

Speech therapist will review your care with the following aspects if required:

- Difficulty with swallowing they can provide patients with a management plan to aid adequate nutrition, hydration and medication management in the acute setting.
- Acquired difficulties with language for example difficulties finding words or understanding information. These may be caused by a location of the tumour or post-surgical problem
- Acquired difficulties with producing clear speech.
- Supporting those who require support to communicate their needs with a tracheostomy tube.

There can be some temporary or longer term side effects following treatment for Meningioma these include:

- Fatigue
- Difficulty concentrating
- Memory loss
- Personality changes
- Difficulty with speech and language
- Visual disturbance
- Seizures
- Weakness in your limbs

Rehabilitation and ongoing support

Everyone recovers from treatment at different rates and this is why you will receive advice following your assessments which may be more challenging for you. Some patients require a period of further in-patient hospital rehabilitation.

This may be suggested at your local hospital or it may be that you are referred for specialist neuro-rehabilitation.

You may be referred to receive specialist ongoing support or therapy in the community such as:

- Occupational Therapy
- Physiotherapy
- Neuropsychology
- Speech Therapy
- Counselling
- Hearing therapy
- Social services

How long will it take me to recover from surgery?

This is a difficult question to answer as everyone is very different some people take a number of months to see improvement in their condition where as others can recover more quickly. You may notice that they are easily fatigued and there can be fluctuations in how you are feeling.

What follow up appointments will I require?

You will have a surgical review with your Consultant team at Southmead hospital around 3 months and a further scan. Further follow up and scans will be decided according to your recovery and ongoing care requirements.

Can I drive following surgery?

Being able to return to driving depends on your recovery and the grading of your tumour therefore you will need to seek advice regarding this from your doctor. Some patients are able to drive on clinical recovery where as some require up to a year off driving. Other factors such as visual disturbance, cognitive impairment and seizures need to be reviewed before you would be medically fit to drive. You must inform the DVLA you have had meningioma surgery. Further information can be found at: www.gov.uk/driving-medical-conditions(accessed 14.12.2014).

Coping and support

There are a number of charities that can support you and your family with understanding and coping with your treatment they have supporting information you can access via telephone or website. A number of charities run support groups, you may wish to check out if there is a group in your local area.

Brain tumour support

www.braintumoursupport.co.uk

General enquiries

01454 414 355

Support Services line (local rate call)

0845 450 1039

info@braintumoursupport.co.uk

The Brain Tumour Charity

Support & Info Line

0808 800 0004

support@thebraintumourcharity.org

Brain and Spine Foundation

Tel: 020 7793 5900

info@brainandspine.org.uk

Macmillan Cancer Support

www.macmillan.org.uk

0808 808 0000

Meningioma UK

www.meningiomauk.org

Telephone: 01787 374084

enquiries@meningiomauk.org

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Advanced Neurosurgical Nurse Practitioners

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**PATIENT
APPROVED** 

How to contact us:



Skull Base Nurse Practitioner service
0117 4147534



North Bristol NHS Pharmacy
0117 4142284



If you have any problems contacting any of these persons please phone the ward and leave a message for the duty registrar.



www.nbt.nhs.uk

If you or the individual you are caring for need support reading this leaflet please ask a member of staff for advice.

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