



What is a Meningioma?

- It is a type of tumour that develops from the meninges, the membrane that surrounds the brain and spinal cord. There are three layers of meninges, called the dura mater, arachnoid and pia mater.
- Most Meningiomas (90%) are categorized as benign tumours, with the remaining 10% being atypical or malignant.
- However, "benign" can sometimes be misleading, as when benign tumours grow and constrict and affect the brain, they can cause disability and even be life threatening.
- Benign meningioma's can grow slowly. This means that depending where it is located, a meningioma may reach a relatively large size before it causes symptoms.
- However, some meningioma's grow more rapidly, or have sudden growth spurts. There is no way to predict the rate of growth for a meningioma, or to know for certain how long a specific tumour was growing before diagnosis.
- Most people diagnosed with a meningioma will only have a tumour at only one site, but it is also possible to have several tumours growing simultaneously in different parts of the brain and spinal cord.
- If multiple meningiomas occur, more than one type of treatment may have to be used.
- Meningiomas vary in their symptoms and appropriate treatment options depending on where they are located.
- Meningiomas account for about 27% of primary brain tumors, making them the most common of that type.
- Meningiomas are most common in people between the ages of 40 and 70.
- They are more common in women than in men.
- Meningiomas are very rare in children, with paediatric cases accounting for only 1.5% of the total.

Outcomes

- The age of the patient at the time the tumour is removed influences outcome. Younger patients tend to do better after surgery than older patients. However, older patients in otherwise good health should not assume that their chances of a good outcome are diminished.
- People with tumours that invade the brain tend to do more poorly than patients with tumours that do not invade.
- Similarly, people with tumours on the outer surface of the brain (convexity) tend to do better than those with

tumours that are difficult to access.

- Incomplete removal of the tumour, which is usually due to limitations caused by the location of the tumour, is associated with a higher chance of tumour recurrence.
- Residual tumour cells are a potential source of new tumour growth.
- The major clinical factor in recurrence is the extent of resection/ removal.
- Survival estimates show a marked difference when grouped by type.
- Atypical meningiomas have the highest survival rate, followed by benign and then malignant.
- Age at the time of diagnosis is also indicative of an increased chance of survival.
- The younger patients have better survival rates.
- Brain invasion indicates an increased chance of recurrence. Brain-invasive benign meningiomas act like atypical meningiomas overall.

Types of Meningiomas

Convexity Meningiomas

- grow on the surface of the brain, often toward the front.
- account for 20% of meningiomas.
- may not produce symptoms until they become large
- Symptoms of a convexity meningioma are seizures, focal neurological deficits, or headaches.

Falx and Parasagittal Meningiomas

- Parasagittal tumours lie near or close to the falx.
- Falx or parasagittal account for 25% of meningiomas
- The falx is a groove that runs between the two sides of the brain (front to back), and contains a large blood vessel (sagittal sinus).
- Because of the danger of puncturing the blood vessels, removing a tumour in the falx or parasagittal region can be difficult.
- Large parasagittal meningiomas may result in bilateral leg weakness.

Olfactory groove Meningiomas

- Olfactory groove meningiomas grow along the nerves that run between the brain and the nose.
- These nerves allow you to smell, and so often tumours growing here cause loss of smell.
- Account for 10% of meningiomas.



Brain Tumour Australia Information

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What is a Meningioma? Cont.

Olfactory groove Meningiomas cont.

- If they grow large enough, olfactory groove meningiomas can also compress the nerves to the eyes, causing visual symptoms.
- Similarly, meningiomas growing on the optic nerve can cause visual problems, including loss of patches within your field of vision, or even blindness.
- They can grow to a large size prior to being diagnosed due to changes in the sense of smell and mental status changes being difficult to detect.

Sphenoid Meningiomas

- Sphenoid meningiomas lie behind the eyes.
- Account for 20% of meningiomas
- These tumours can cause visual problems, loss of sensation in the face, or facial numbness. Tumours in this location can sometimes involve the blood sources of the brain (e.g. cavernous sinus, or carotid arteries), making them difficult or impossible to completely remove.

Posterior Fossa Meningiomas

- Posterior fossa tumours lie on the underside of the brain.
- These tumours can compress the cranial nerves causing facial symptoms or loss of hearing. Account for (petrosal) 10% of meningiomas.
- Petroclival tumours can compress the trigeminal nerve, resulting in sharp pain in the face (trigeminal neuralgia) or spasms of the facial muscles.
- Tentorial meningiomas or those near the area where your spinal cord connects to your brain (foramen magnum) can cause headaches, or other signs of brain stem compression like trouble walking.

Intraventricular meningiomas

- Intraventricular meningiomas are associated with the connected chambers of fluid that circulate throughout the central nervous system.
- Account for 2% of meningiomas.
- They can block the flow of this fluid causing pressure to build up, which can produce headaches and dizziness.

Intraorbital meningiomas

- Intraorbital meningiomas grow around the eye sockets of your skull and can cause pressure in the eyes to build up, giving a bulging appearance.
- They can also cause an increasing loss of vision.

Spinal meningiomas

- Spinal meningiomas account for less than 10% of meningiomas.
- They tend to occur in women (with a female/ male ratio of 5:1), usually between the ages of 40 and 70.
- They are intradural (within or enclosed within the dura mater), extramedullary (outside or unrelated to any medulla) tumours occurring predominantly in the thoracic spine.
- They can cause back pain, or pain in the limbs from compression of the nerves where they run into the spinal cord.