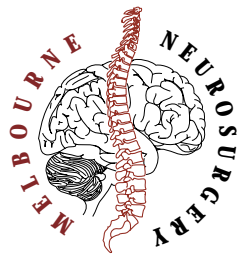
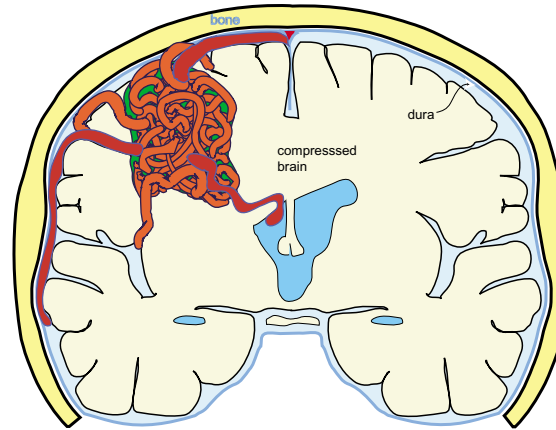
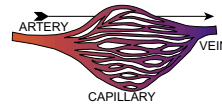


ARTERIO - VENOUS MALFORMATION



WHAT IS AN ARTERIOVENOUS MALFORMATION (A.V.M.)?

This is an abnormality of the blood vessels of the brain. The blood to the brain is supplied by strong walled vessels called arteries. After these divide into smaller and smaller vessels they run into very low pressure capillaries which is where the brain takes out all the nutrients. The capillaries all join up and eventually form veins that are thin walled low pressure vessels that take the blood back to the heart. The A.V.M. is a short circuit between the arteries and veins in the brain.



WHAT PROBLEMS CAN THEY CAUSE ?

They may bleed into/or around the brain because the high pressure blood gets into the thin low pressure veins. If this is a large bleed then it may cause death and if it is a small bleed it will produce a stroke.

They may cause fitting (seizure) because the area of the brain around the AVM may be scarred. This will be treated with anti-convulsants.

They may cause a progressive stroke because the AVM may steal the blood from the normal brain.

They can produce headaches

Visual disturbance

You may feel a buzzing in your head.

WHERE DO THEY COME FROM ?

They occur because when the vessels grow into the brain as it is being formed something happens to the normal process. As you get older they can grow. They have a tendency to bleed while you are young. As you get older they have usually been found and treated.

HOW ARE THEY DISCOVERED ?

The commonest ways are if you have a fit or a bleed from the A.V.M. If you have been developing some weakness slowly it may also be discovered. Sometimes it is found when a CAT scan is done for another reason.

HOW IS THIS DIAGNOSED ?

You usually have no idea that it is present until one of the symptoms appears and this will result in a CAT scan being performed. This does not always give the definite answer and other better tests will need to be done. The first is usually an M.R.I. scan with a special M.R.A. being done at the same time. This may be followed by a cerebral angiogram

M.R.I. (Magnetic Resonance Imaging)

This produces pictures like the CAT scan but they are generated using a magnetic field and not using radiation. This test shows the vessels and the underlying brain much better than the CAT scan. It is used in conjunction with the M.R.A. or Angiogram to show the structure and location of the AVM.

M.R.A. (Magnetic Resonance Angiogram)

This is performed in the same way and at the same time as the M.R.I. It isolates the vessels and gives a good 3D picture of them. It may not show a small AVM, or small associated aneurysm.

CEREBRAL ANGIOGRAM

This is the gold standard test and involves the injection of contrast into the arteries of the brain. The contrast is followed through all the vessels and this will show even the smallest A.V.M. or associated Aneurysm.

WHAT HAPPENS NOW ?

This depends on many factors that are usually indicators of the risks of bleeding or things indicating a more difficult operation/treatment.

Size
Internal characteristics of the lesion
Associated Aneurysm
Location
If it has bled
Your age
What you want to do

SIZE

The bigger the AVM the harder it is to remove and the more likely it is to cause symptoms.

INTERNAL CHARACTERISTICS

If the AVM has large vessels feeding it close to the base of the brain it is probably more likely to bleed.

ASSOCIATED ANEURYSM

If there is an aneurysm in the AVM or on one of the vessels leading to the AVM this has a higher risk of bleeding than the AVM itself and this aneurysm should be treated.

LOCATION

If the AVM is in an important part of the brain the risks of surgery are greater. If it is in the area at the bottom of the brain(brainstem) where everything is concentrated, the chance of a bleed doing damage is high but the chance of damage in trying to treat the AVM is also high.

IF IT HAS BLED

This means that it may bleed again. Sometimes the bleed actually helps make it easier to remove the AVM because it cuts one side away from the brain.

YOUR AGE

If it bleeds when you are young it should be treated to prevent rebleeding. If it first presents in your 60's and not with a bleed then it may be appropriate to observe it.

WHAT YOU WANT

Some people choose not to have anything done despite the risk of no intervention leaving a high risk of complications from a bleed. This is your choice and must be respected. At all times it is important to weigh up the risks of treatment against doing nothing and sometimes there is not much in it.

HOW IS THIS TREATED ?

THE OPTIONS

NOTHING

If we feel the risk is too high in treatment or the chance of the AVM causing problems is small then we will observe the AVM.

TREAT ANY SYMPTOMS

If you have seizures then we will treat these with anti-convulsants

EMBOISATION

This involves the blockage of the feeding vessels with glue or titanium coils via an angiographic approach. It can only be done if the lesion is accessible to an angiogram catheter. The AVM needs to be completely obliterated to get a cure from this alone. Usually this is done prior to surgery to make the surgery easier. The problem with embolisation is the risk of blocking a vessel that normally supplies the brain.

SURGICAL REMOVAL

This depends if the AVM is accessible and if it is not in a very important part of the brain. Once the size of the AVM gets over 3cm the risks increase substantially. This may be done as a 2 stage procedure. (see Leaflet CRANIOTOMY FOR AVM).

STEREOTACTIC RADIOSURGERY/RADIOTHERAPY

This is where a frame is fitted to your head and high dose X-ray therapy is used to treat the lesion. If the AVM is over 3 cm in size the chance of complete obliteration is less. Radiosurgery is where it is done as a single dose and this is suitable for small lesions. Radiotherapy is when the dose is spread over a few treatments.

IF IT IS NOT OR CAN NOT BE TREATED WHAT MAY HAPPEN ?

NOTHING

PROGRESSION IN ANY SYMPTOMS

If you have had weakness or clumsiness:- if the AVM starts to expand it steals blood from the surrounding brain and this is starved of nutrients and can slowly die or stop working. When the brain is starved for oxygen it is more likely to fit.

IT MAY BLEED

This is a risk in any AVM. If it bleeds it may just produce a headache. If the bleed is large this may produce a stroke or even death. Generally if it does bleed and the AVM can be treated safely then this is recommended. The risks of treatment can be higher than the risk of rebleeding for some AVM's

FOR ABOVE PROCEDURES SEE THE RELEVANT PROCEDURE LEAFLET

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