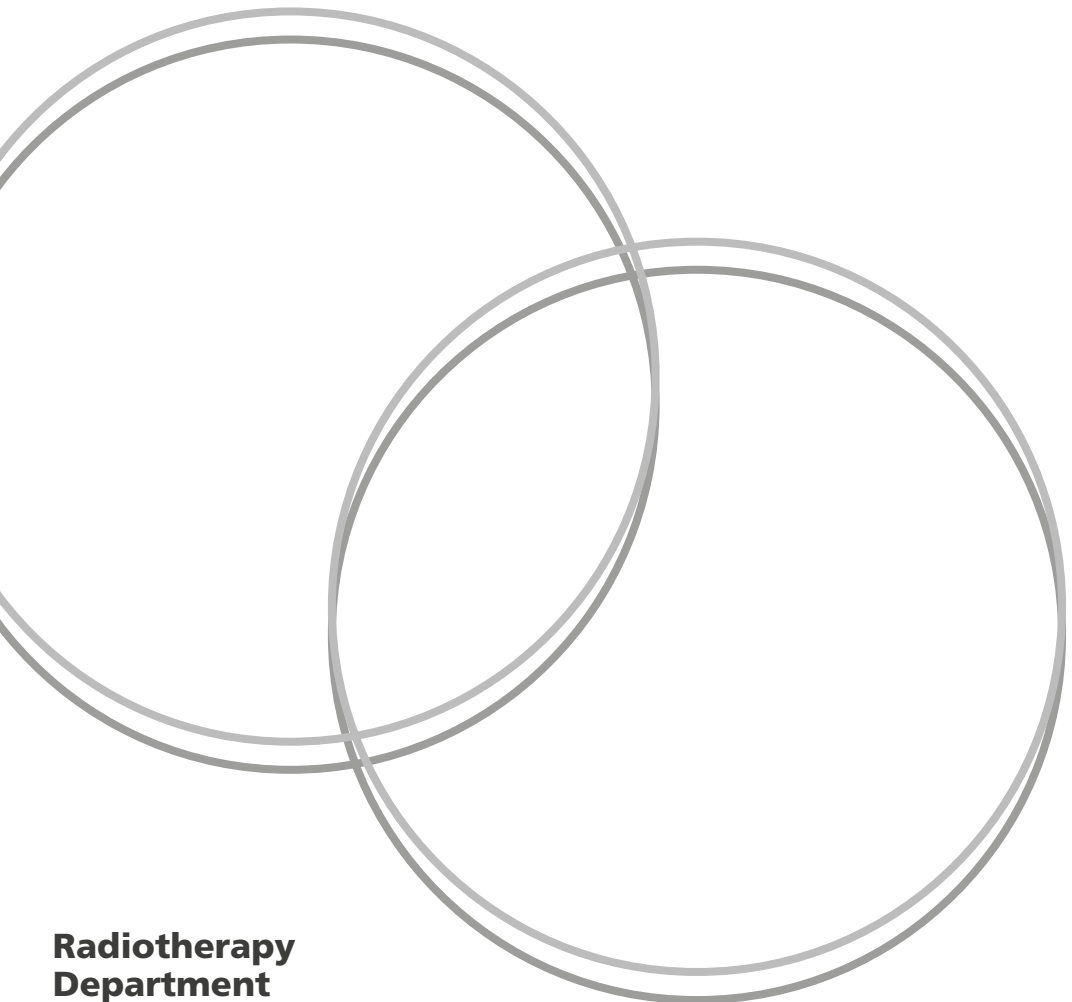




Oxford University Hospitals
NHS Foundation Trust

Stereotactic Radiosurgery for Benign Brain Tumours

Information for patients



**Radiotherapy
Department**

You have been given this leaflet as your doctor has recommended that you have stereotactic radiosurgery (also known as SRS) to your benign brain tumour. This leaflet will give you more detail about stereotactic radiosurgery, specifically about the type of treatment planned for you and how you can help yourself during and after treatment.

This leaflet has been written as a general guide, because the timing and effects of treatment may vary from one person to another. This leaflet will highlight the key points of the discussions you will have had with your doctor and treatment team. Your family members and friends may also find it helpful to read.

We will also give you our **general radiotherapy leaflet** which will explain what radiotherapy treatment involves, common side effects and some general information about the department.

What is stereotactic radiosurgery?

Radiotherapy is the use of high energy X-rays to treat tumours. It works by damaging tumour cells in a way that may stop them from growing or cause them to die.

Stereotactic radiosurgery is a very accurate way of giving radiotherapy treatment to small areas of the brain. It allows us to use small beams of high energy X-rays to treat the tumour. You will have the stereotactic radiosurgery as a single treatment. It is not traditional surgery in an operating theatre.

As we can direct the radiotherapy very accurately, this increases the chances of controlling your tumour, whilst at the same time minimising the amount of X-rays that pass through your healthy tissue. This reduces the chance of possible side effects from the treatment.

There are three different ways patients can be treated with stereotactic radiosurgery in the UK; using a radiotherapy machine called a Linear Accelerator, using a Gammaknife machine or a Cyberknife machine. Studies have shown that each method gives the same results and outcomes when treating benign brain tumours.

At Oxford University Hospitals, we use a radiotherapy machine called a Linear Accelerator with advanced technology to position you correctly for your treatment. This technology allows us to track the position of the area that we are treating to within a distance of half a millimetre.

Why do I need stereotactic radiosurgery?

Stereotactic radiosurgery is suitable for small, clearly defined tumours which may be difficult to remove surgically, or where surgery is likely to be associated with a high risk of side effects. SRS may also be used in certain circumstances if a benign tumour has started to regrow following surgery.

After discussing your case, your multidisciplinary team (including neuro-surgeons, neuro-oncologists, neuro-radiologists, therapeutic radiographers and specialist nurses) have recommended SRS as a suitable treatment option.

You can discuss with your clinical oncologist whether alternative options for treatment are available and suitable for you.

Preparing for your stereotactic radiosurgery

Before you come for your stereotactic radiosurgery, you will be asked to attend the radiotherapy department for your radiotherapy planning appointment so the team can begin to prepare your treatment.

You will need to wear a close-fitting plastic treatment mask, as shown in the photograph below. This mask is individually made to fit you and needs to be worn at each stage of your radiotherapy planning and treatment. It will keep your head still during the stereotactic radiosurgery, to make sure the treatment is delivered accurately to the area your doctor has planned to treat.



Picture of patient wearing SRS mask.

Your first appointment will be a 'planning appointment'. You will be taken to the Mould Room where we will make the plastic mask for you. The therapeutic radiographer making your mask will talk you through the process and any concerns you may have.

The mask starts off as two plastic sheets. The therapeutic radiographer making your mask will warm them one by one in a specially-designed oven until they are soft and flexible. The first sheet is moulded around the back of your head, the second and third sheet is gently moulded around your face. The plastic will be warm but this process is not uncomfortable. A small plastic rectangle will be fitted to the front of the mask for you to gently rest your teeth on (as shown in the picture above). This also helps to keep you still.

There are lots of holes in the plastic so that you can still breathe comfortably whilst the moulding is being done. The two halves of the mask are secured together at the sides with plastic clips to keep everything in place. It is then allowed to set; this takes about ten minutes. The whole mask making process will take approximately half an hour.

The process of making the mask is not painful but if you have a beard or moustache we will ask you to shave it off before you come, as the hairs can interfere with making the mask.

After the mask is made, usually on the same day, you will need to have a planning CT scan and a MRI scan of your head. You will have to wear your mask for the planning CT scan but not for the MRI scan. These scans will provide accurate information for the doctor, so that they can plan your treatment.

During these scans you may need to have an injection of contrast (a type of dye) to help show up the tumour more clearly. If you have ever had an allergic reaction to dye given during a scan before, please let the radiographer know when you come to this appointment.



Picture of planning CT scanner.

How is the treatment prepared?

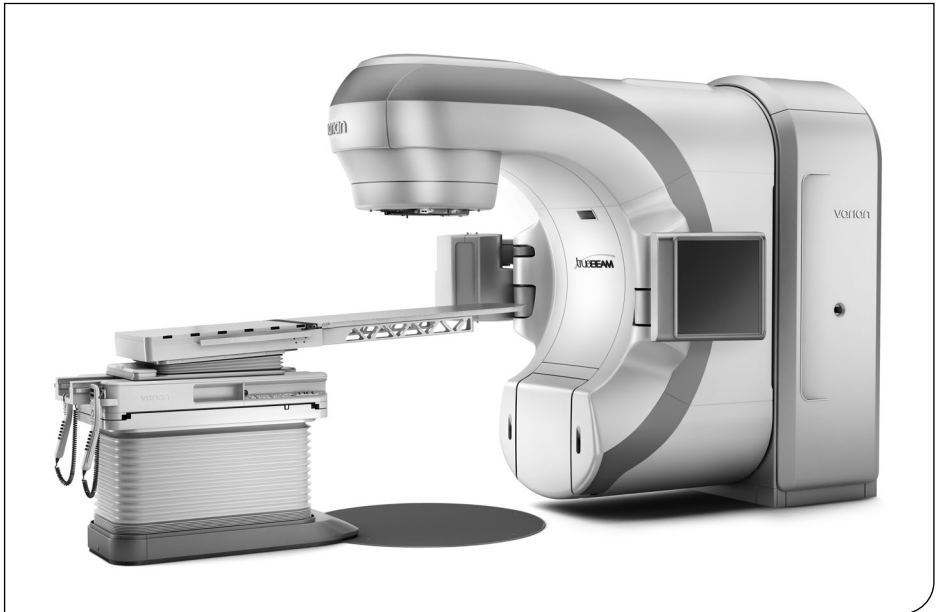
Before your stereotactic radiosurgery can begin, we need to produce an individual treatment plan for you. This makes sure that all the area needing treatment is included and that other unaffected tissues are avoided as much as possible.

The neuro-oncologists and neuro-radiologists will look at your planning CT scan and MRI scan to define the exact area to be treated and areas to be avoided. Our medical physicists will then use this information to design your individual treatment plan.

Coming for your treatment

On the day of your stereotactic radiosurgery treatment you will be collected from the waiting room by a nurse or therapeutic radiographer and taken to a clinic room. Here you will be given any medication that has been prescribed for you and there will be an opportunity for discussion before your treatment starts. We would encourage you to let us know about any particular problems or worries you are experiencing so that we can best support you.

During the treatment you will need to lie on your back on the treatment couch, wearing your mask. The therapeutic radiographers will then move the couch and the treatment machine into position. They will use a localising frame (pictured below), lights, lasers and X-ray equipment to help to position you accurately. The treatment machine may come close to you but it will not touch you.



Picture of the linear accelerator (Radiotherapy treatment machine).

When you are in the correct position, the therapeutic radiographers will leave the room to start your treatment. You will have to lie still but can breathe normally. The team will be watching you on cameras from outside the room. If you want them to come back in just raise your hand. You will not see or feel anything different during the treatment. The treatment takes approximately 30 minutes. When your treatment is finished you can go home straight away.

It is advisable to have a family member or friend to accompany you to and from your appointment, as you may feel tired after the treatment, although you shouldn't feel unwell.

Steroid medication

Stereotactic Radiosurgery can cause swelling around the area being treated which can lead to headaches and nausea. You will usually be prescribed a short course of steroid medication and anti-sickness medication to reduce these side effects. You will also be given medication to protect your stomach from irritation caused by the steroids. The nurse or therapeutic radiographer will explain how to take your medication.

Side effects of stereotactic radiosurgery

There are some side effects which are associated with radiotherapy. Stereotactic radiosurgery has fewer side effects than conventional radiotherapy, as less healthy tissue is exposed to high doses of radiation. Side effects may build up gradually for a couple of weeks after you have had your radiosurgery and can take a number of weeks to wear off.

Tiredness and fatigue

Fatigue is the most common side effect of radiosurgery and each person will be affected differently. You can help yourself by keeping well hydrated and taking frequent rest. We encourage you to maintain a healthy, balanced diet and continue with your usual activities and light exercise if you feel able. Please do tell us if you are experiencing fatigue or any other side effects. It will help us to provide you with the correct advice and support.

Skin reaction

Radiotherapy can cause the skin around the area being treated to become red, itchy and dry. Your doctor or therapeutic radiographer can advise you on where this is likely to happen as skin reaction can differ from patient to patient.

If you have had surgery to this area less than 6 months ago and your wound has not completely healed, we advise that you do not use any skincare products on this area at all.

If you have had surgery to this area more than 6 months ago and your wound is completely healed, you may wish to gently apply a moisturiser on this area to relieve the dryness or itching caused by your radiotherapy. We do not recommend you use any other skincare products on this area.

During your radiotherapy and until 3 months after your radiotherapy has finished:

Wash your hair with your normal shampoo and lukewarm water. Do not use hair dye or any styling products such as hairspray and avoid excessive heat from styling equipment such as hairdryers.

During your radiotherapy and in the future:

The skin in the area receiving radiotherapy will always be more sensitive to the sun, even many years after your treatment has finished. We recommend that you wear a hat or cover up in the sun and/or use a high factor sunscreen on the area. Do not apply sunscreen if you have had surgery in this area less than 6 months ago or if your surgical wound has not completely healed.

It is very important that if you notice any discharge, swelling or redness at the site of your surgical wound, you tell your treatment team as soon as possible.

Hair loss

Not all patients receiving stereotactic radiosurgery for benign brain tumours will lose hair as a result of the treatment. However, some patients may lose some hair close to the area that is receiving the radiotherapy treatment. This is more likely to occur if the area being treated is close to the skin surface.

Your doctor or therapeutic radiographer will explain if this is likely to happen and where to expect some hair loss. Hair loss occurs approximately 3 weeks after treatment. Any hair re-growth usually starts 4 to 5 months after you have finished treatment. It is unlikely you will have significant permanent hair loss, although hair regrowth after treatment may be patchy or a different colour or texture to the hair that was there before.

Your nurse or therapeutic radiographer can give you information on how to cope with hair loss after radiotherapy. You may wish to arrange to wear a wig and your team can help to organise this. Your team can also talk you through other options such as headscarves which you may like to consider.

Seizures

There is a slightly increased risk that you may have a seizure (also sometimes called a fit) after your treatment. However, this is usually more likely if you have had seizures in the past.

Your treatment team will discuss the likelihood of you having a seizure.

A seizure can take different forms. You might notice that one part of your body starts twitching or jerking or you may lose consciousness and start shaking.

Usually a seizure will only last a few minutes. However if:

- The seizure lasts for more than 5 minutes and shows no sign of slowing down
- The seizure is unusual in some way
- You have trouble breathing afterwards
- You have been injured or are in pain
- Recovery is different than usual

then call for emergency help – dial 999

You may wish to make family and friends aware that you may experience a seizure and let them know when they should call for emergency help.

Nausea

You may experience nausea and dizziness after your treatment. This can last for a couple of weeks. The SRS team will give you advice on how to cope with this.

Headaches

You may experience headaches after your treatment. They can occur for a number of weeks after you have finished your treatment. Your SRS team will give you advice on how to cope with them if they do occur.

Psychological wellbeing

The SRS team is here to support you with the psychological and emotional impact of your diagnosis and treatment.

A member of the team would be happy to chat to you about your emotional wellbeing at any time.

A list of resources to help support you and your family can be found at the end of this leaflet.

Possible longer term side effects

Long term side effects can occur many months or years after radiotherapy has finished. These late side effects are hard to predict and unfortunately, if they do occur, they can sometimes be permanent. We carefully plan your treatment to ensure the healthy tissue surrounding your tumour receive as little radiation as possible. This reduces the chance of these side effects developing, which are generally very rare.

Radionecrosis

The rim of normal brain surrounding the area being treated may become inflamed 6 to 18 months after SRS treatment. This may cause headaches or similar symptoms to those originally caused by the tumour. This may occur in up to 1 out of 10 patients and may require further treatment with a course of steroids or rarely surgery.

A further brain tumour

There is a rare chance of developing a second tumour in or around the brain as a result of radiotherapy treatment. This occurs in less than 1% of people treated (less than 1 in every 100) and would usually develop at least 10 to 20 years after radiotherapy treatment has been completed.

Vestibular Schwannoma treatment only

If you are having treatment for a Vestibular Schwannoma 1 in 20 (5%) people may develop some facial weakness following treatment. This usually improves, but 1 in 100 (1%) may have longer term weakness in their face which may occur some years after your SRS treatment.

If your Vestibular Schwannoma is large, there is a risk of swelling affecting the flow of fluid through your brain. 1 in 20 people (5%) may need to have a shunt inserted into their skull by a neurosurgeon to help drain away this fluid. Your doctor can explain this procedure to you.

1 in 20 people (5%) treated may find that their balance is not as good following treatment.

There is a chance that your Vestibular Schwannoma may increase in size during the first four years after treatment, before reducing in size again. We will check and monitor the size of your Vestibular Schwannoma on follow-up scans after your treatment has finished.

If your hearing has been affected by the Vestibular Schwannoma you may experience a further decline in your hearing after treatment. However, this should be slower than if we left the tumour untreated. Studies have shown that 10 years after SRS treatment, hearing is preserved in 7 out of 10 people.

Follow-up

You will have a follow up consultation with one of the SRS team by telephone or video call around 4 weeks after our treatment finishes to hear how you are feeling and answer any further questions you may have. Please get in touch before this using the phone numbers on the back of this leaflet if you have any questions or are feeling unwell following your treatment.

After this appointment, you will be referred back to the surgeon who is managing your care. We will provide them with a summary of your treatment and inform them that they will be responsible for booking regular follow up scans.

We ask that you speak with a member of the SRS tea before booking any kind of holiday or trip following your stereotactic radiosurgery treatment so that you receive the appropriate advice.

Driving

If you have a benign brain tumour(s) and you drive any type of vehicle, you must contact the DVLA and inform them of your diagnosis. Depending on the type of tumour you have you may have to stop driving for a certain length of time. The DVLA also has strict guidelines if you have suffered from seizures (fits) either before, during, or after your treatment.

Failure to comply with these regulations is illegal and potentially dangerous; your insurance will be invalid and you may be fined up to £1,000.

The DVLA can be contacted:

Website: www.gov.uk/contact-the-dvla

DVLA Driver's Medical Enquiries Helpline

Telephone: 0300 790 6806
Monday to Friday, 8am to 5:30pm
Saturday, 8am to 1pm

By post:

Driver's Medical Enquiries

DVLA
Swansea
SA99 1TU

Practical help

Access to Work government programme:
Website: www.gov.uk/access-to-work

- Disability bus pass.
- Disabled persons railcard.
- Blue parking badge.

How to contact us

If you have any queries during your radiotherapy treatment, please do not hesitate to contact us by telephone, or speak with us when you come for treatment.

Radiosurgery Specialist Radiographers

Telephone: 01865 226 419

Monday to Friday, 8:00am to 6:30pm

(answer machine available outside these hours)

Alternatively, outside of these hours, please contact:

Oxford Triage Assessment Team (24 hour helpline)

Telephone: 01865 572 192

Helpful websites

The Brain Tumour Charity

Website: www.thebraintumourcharity.org

Support and Information Helpline: 0808 8000 004

Monday to Friday, 9am to 5pm

Email: support@thebraintumourcharity.org

Maggie's Centre at the Churchill Hospital

Located opposite the main entrance to the Cancer Centre.

No appointment needed.

Website: www.maggies.org/our-centres/maggies-oxford

Telephone: 01865 751 882

Email: oxford@maggiescentres.org

Meningioma

Website: www.meningiomauk.org

Telephone: 01787 374 084

Vestibular Schwannoma

Website: www.bana-uk.com

Telephone: 01246 550 011

Pituitary Tumour

Website: www.pituitary.org.uk

Telephone: 0117 370 1320

Further information

If you would like an interpreter, please speak to the department where you are being seen.

Please also tell them if you would like this information in another format, such as:

- Easy Read
- large print
- braille
- audio
- electronic
- another language.

We have tried to make the information in this leaflet meet your needs. If it does not meet your individual needs or situation, please speak to your healthcare team. They are happy to help.

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Oxford University Hospitals NHS Foundation Trust
www.ouh.nhs.uk/information



Making a difference across our hospitals

charity@ouh.nhs.uk | 01865 743 444 | hospitalcharity.co.uk

OXFORD HOSPITALS CHARITY (REGISTERED CHARITY NUMBER 1175809)

