

Thalamotomy and Pallidotomy

This information leaflet contains information about Thalamotomy and Pallidotomy and should answer some of your questions. If you have any further questions, please speak to a member of the Movement Disorder Team.

What is Thalamotomy?

Tremor can be a symptom of a number of different disorders, some of which are hereditary (passes from parents to children). Sometimes tremor can occur as a result of a head injury or stroke but sometimes the cause is not known. Tremor may also be one of the symptoms of Parkinson's Disease.

Thalamotomy is a surgical procedure used to treat tremor. It involves deliberately damaging, in a controlled way, a tiny area in a part of the brain called the thalamus. Where the tissue is damaged is called a lesion.

This procedure is performed on one side of the brain and therefore benefits tremor mainly on one side. The procedure would be carried out on the side of the brain to treat the most tremulous side of the body.

What is Pallidotomy?

Pallidotomy is a surgical procedure which involves deliberately damaging, in a controlled way, a tiny area in a part of the brain called the Globus Pallidus interna (Gpi or pallidum).

Some people with Parkinson's Disease (PD) are offered a pallidotomy to help improve some of their symptoms. Pallidotomy can help particularly with rigidity (stiffness) and dyskinesias (involuntary movements) caused by some PD medications. It may also help to improve tremor and the severity of your 'off state' (when your medication has worn off), but this doesn't happen with all people. This procedure is usually only performed on one side of the brain to improve symptoms on the opposite side of the body, but, despite this, it can sometimes help both sides of your body.

Why should I have this operation?

Benefits of thalamotomy

Surgery on the thalamus can significantly improve the quality of life for people with tremor. The aim of a thalamotomy is to help reduce the severity of your tremor. It will not provide a cure for the underlying cause. How much improvement people get is different from one person to another. The procedures will not improve any ataxia (uncoordinated movements) you have in addition to the tremor. We may be able to improve your tremor so that the violence of the movement doesn't interfere with activities, but your control of fine movement may not improve.

On average people achieve around an 80-90% improvement in their tremor, although some people will experience less than this. It is never possible to be absolutely certain before the operation of the amount of tremor reduction that will be achieved.

Benefits of pallidotomy

Surgery on the pallidum can significantly improve the quality of life for people with Parkinson's Disease by reducing stiffness and dyskinesia as well as sometimes improving the severity of tremor and the off medication state. If you would like to speak to someone who has had either of these treatments, please let us know. We will be happy to put you in contact.

If you have any questions that you would like to ask, please do not hesitate to contact the Movement Disorder Team.

Please see the end of the booklet for the contact numbers.

Assessment

You will be seen first for assessment by the Movement Disorder Nurse. After this your case will be discussed within the team and then you will be invited to meet the broader team, including a consultant neurologist or neurosurgeon. They will discuss your symptoms with you, the outcome of the assessments and any options to take your care forward.

If the team recommends surgery then they will talk to you about what the surgery involves. They will give you the opportunity to ask further questions about the surgery and your care afterwards.

You will be asked whether you wish to go ahead with the surgical treatment, but you can choose to go away and think about whether you feel it would be right for you. You will not be put under pressure to make a decision on the day of your appointment.

The assessment process

Assessing your tremor or PD symptoms includes making video recordings whilst you are doing various activities. This helps us to see your symptoms in different situations. If you have tremor that is not due to PD, we will measure your tremor using a special recording device on your wrist (like a wrist-watch).

You will also need to have a Magnetic Resonance Imaging (MRI) brain scan. This scan helps the surgeon to see the area that will be targeted during the operation. To get the best picture on this scan we may need to sedate you to make you relaxed and help control the tremor. We will discuss this with you as to whether you feel you would be able to keep completely still for the scan without sedation.

This MRI may be carried out during your main assessment or it may require a separate appointment. Some people need a general anaesthetic for the scan (an anaesthetic to make you sleep). If you need this we will arrange a separate date for you to be admitted to hospital for your MRI scan to be done as a day case procedure. This means that you would need to be in the hospital early in the morning but you would be able to go home later on the same day. You will be told the approximate time of the scan and when you would need to stop eating and drinking beforehand in preparation.

A neuropsychological assessment is also part of the assessments to be carried out before surgery. This looks at memory, mood and the way you think.

The assessment is an opportunity for the team to have a look at the symptoms to see whether a thalamotomy or pallidotomy would help you. If, after the assessment, we feel that surgery would not be appropriate, you will have an opportunity to discuss this decision with the team if you would like to do so.

We may be able to give you the results of the assessments and the decision as to whether or not surgery is appropriate for you before you go home. If not, we will contact you when you are back at home. You will be able to discuss the results with one of the consultants if you wish. This may need to be at another clinic appointment.

Are there any alternatives?

We have opened discussion regarding surgery as it has been identified that medication changes have not helped with your symptoms so far. If you feel surgery is not an option for you, then your Neurologist and Specialist Nurse if you have one can continue to look at these options with you. If you do not have the surgery then your Neurologist will continue to monitor your condition. Given the nature of your condition the underlying condition will continue to progress.

[Include any evidence-based alternatives, such as surgery, drug therapy, lifestyle changes. If there are no alternatives, say so. Include what could happen if the patient doesn't have the procedure]

How can I prepare for Thalamotomy or Pallidotomy

Prior to being admitted for surgery you will be invited to a pre operative assessment for routine blood tests and assessments. At this time you will be advised regarding the admission procedure and any changes to medication required before your admission. You will be provided with written information to help you prepare for the admission- Your hospital stay, Our inpatient services

Asking for your consent

It is important that you feel involved in decisions about your care and our aim is to make sure that you have enough information to help you make an informed decision about whether to go ahead with surgery or not.

You will have many opportunities to talk with different members of the Movement Disorder Team about any concerns or queries that you may have. If you decide to go ahead with surgery, having been told that you are suitable for a thalamotomy or pallidotomy, a surgeon who understands all the possible risks and benefits will explain the operation to you. If you are happy with the explanation you will be asked to sign a consent form to say that you agree to have the treatment and understand what it involves. You can withdraw your consent at any time, even if you have said 'yes' previously. If you would like more details about our consent process, please ask for a copy of our policy.

The main risks and benefits are described later in this information leaflet.

What happens during admission for surgery?

Whilst we make every effort to ensure your admission can go ahead as planned, St George's Hospital is a regional centre for Neurosurgery and therefore takes emergency cases. This may mean your admission is postponed.

People are normally admitted to hospital on a Monday or Tuesday and your main operation will be done on Tuesday. You will be in hospital for around four to seven days.

The day of surgery

The Nurse will tell you when to get ready for theatre. You will be asked to wear a theatre gown and special stockings to reduce the risk of blood clot (deep vein thrombosis) developing in your leg.

The anaesthetist will also see you to talk to you about the anaesthetic. Thalamotomy for tremor or pallidotomy for PD has to be done with you awake; so that we can see what effect stimulation is having on your symptoms. When it's time, the nurse will take you down to the anaesthetic room, where you will be prepared for your operation.

The operation

On the day of surgery you will first be taken to the anaesthetic room in theatres. Local anaesthetic will be injected into your scalp at four sites. These will be where pins will temporarily fix the stereotactic (head) frame to your skull. This may occasionally be done on the ward, before you are brought to theatres. People have described this as feeling like four 'bee stings' until the skin goes numb.

When your skin is numb the four pins will be inserted. They are designed to pierce the skin and screw a few millimetres into the bone. You will then have the stereotactic frame fitted to the pins.

Wearing the frame has been likened to "wear a hat several sizes too small". A mild sedative (to make you feel sleepy) can be given during this procedure to help with any discomfort.

You will then have a CT (Computerised Tomography) scan which will help us to work out where the electrodes will need to go in relation to the metal frame. The frame must stay on for the surgery. It is used to hold your head in one place during the operation and will allow the surgeon to pass the wire accurately to the correct position in your brain. It will be removed as soon as the operation is over.

The surgeon will inject some more local anaesthetic into your scalp to numb the skin further. They will then drill a small hole (about 3mm wide) into your skull, on one side of the top of your head. This will allow the surgeon to put the electrode into your brain at the calculated site.

We will then test the site to see if we can control your tremor or PD symptoms without causing you to have any side effects, such as slurred speech or pins and needles in your hand or arm. If we manage to do this successfully, the surgeon will pass a small electric current through the wire to heat it up and destroy a tiny area around it. If we are unable to control your tremor or PD symptoms without causing side effects we may have to remove the electrode and stop the operation.

After the procedure the frame is removed from your head. When the pins are unscrewed, the four holes may leak a little blood or fluid, but won't usually need stitches. The whole procedure will take approximately two hours but this does vary from patient to patient. An MRI scan will be done the next day to confirm the position of the lesion in your brain.

After the operation

After the operation you will be taken to the recovery room for a short while. There may be a drip in the back of your hand for giving drugs or fluids. You will then be taken back to the ward where we will monitor your pulse, blood pressure and wound regularly. We will offer you regular pain relief. It is important that you tell a nurse if you are feeling sick or if you have pain so we can help make you comfortable. It is also important that you change your position in bed at least once every two to three hours to avoid prolonged pressure on individual parts of your body; the nurses will help you if necessary. When your condition is stable you will be allowed to get out of bed. Be careful not to do too much. The next few days should be seen as an important part of your recovery process.

Will I feel any pain?

You may experience some discomfort after the surgery, this may be caused by the frame described previously in the section about the operation. People have described the placing of the frame as the most uncomfortable aspect of the surgery, they do not often describe much pain or discomfort afterwards.

You will be offered regular pain killers if you are uncomfortable after surgery.

Going home

You should be ready for discharge from hospital two to three days after your operation. You will be in hospital for about five to seven days in total.

We advise for you to take four to six weeks off work. You will also need to contact DVLA as it is likely that they will ask you not to drive for a period of six months after your surgery.

You will have only one or two stitches, which can be removed approximately five to seven days after the operation. We will give you a separate leaflet written by the Movement Disorder Group which contains more information about your aftercare and other advice about going home.

By the time you leave hospital we would expect you to be able to care for yourself as you did before the surgery but it may be sensible to make arrangements for help with shopping, housework, gardening and caring for small children.

Will I have a follow-up appointment?

A repeat scan will be arranged within six weeks after surgery. This allows the surgeon to review the lesion.

We will see you for a clinic appointment within three months after surgery. The arrangements for long-term follow-up with the Movement Disorder Team will be discussed at this appointment.

Risks and Complications

As with all types of surgery, thalamotomy and pallidotomy involve some degree of risk and the chance of complications.

- The most serious complication is a 0.5% (1 in 200) chance of stroke from this procedure. A stroke is a bleed into the brain. This can result in weakness down one side of the body, speech difficulties or damage to sight. How much a stroke affects a person depends on the position of the bleed and how severe it is.
- The surgery may not provide the improvement in symptoms that had been hoped for
- There is a very small risk of infection in the wounds.
- There is a small risk of the surgery causing epilepsy. This risk is less than 1%. (less than 1 in 100)
- While 99.8% of patients survive the procedure, in common with all surgery, there is a very slight risk of death as a result of the operation. This is very small, at around 0.2% (1 in 500).
- As the lesion that is made during the operation is permanent, if there are any unwanted effects such as slurred speech or pins and needles or weakness, they may also be

permanent. However, these unwanted effects often lessen over the weeks or months following the operation.

Useful sources of information

PARKINSON'S UK has an information booklet on Surgery for PD:

www.parkinsons.org.uk/content/surgery-parkinsons-booklet

Contact us

If you have any questions or concerns about surgery, please contact us (Monday to Friday, 9am to 5pm).

Consultant's secretaries:

Dr D Paviour (Neurologist): 020 8725 4627

Mr E Pereira (Neurosurgeon): 020 8725 4173

Movement Disorder Nurse: 020 8725 4677

Movement Disorder co-ordinator: 020 8725 4680

For more information leaflets on conditions, procedures, treatments and services offered at our hospitals, please visit www.stgeorges.nhs.uk

Additional services

Patient Advice and Liaison Service (PALS)

PALS can offer you on-the-spot advice and information when you have comments or concerns about our services or the care you have received. You can visit the PALS office between 9.30am and 4.30pm, Monday to Friday in the main corridor between Grosvenor and Lanesborough Wing (near the lift foyer).

Tel: 020 8725 2453 **Email:** pals@stgeorges.nhs.uk

NHS Choices

NHS Choices provides online information and guidance on all aspects of health and healthcare, to help you make decisions about your health.

Web: www.nhs.uk

NHS 111

You can call 111 when you need medical help fast but it's not a 999 emergency. NHS 111 is available 24 hours a day, 365 days a year. Calls are free from landlines and mobile phones.

Tel: 111

