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Craniotomy and Brain Tumor Resection Infopack

A craniotomy and resection of brain tumour

A craniotomy is a procedure where the neurosurgeon makes an incision in the scalp (skin) before removing a small piece of the skull (bone) to expose the brain. This removal of your bone is referred to as a bone flap.

Sometimes it is unsafe to take out the entire tumour (known as complete resection), for example, the tumour might have invaded vital structures. When the tumour is partially removed, this is referred to as a partial resection or debulking procedure.

During resective surgery, the neurosurgeon performs a craniotomy and then removes as much tumour as possible before replacing the skull (bone flap) and closing the wound.

The aims of this procedure are:

- To find out what kind of cells are causing the tumour. This is called a histopathological diagnosis.
- To remove as much of the tumour as possible.

Taking out as much tumour as a possible may have the following benefits:

- Better survival outlook
- Fewer symptoms

It means other treatments may be more effective or safer for example radiotherapy, causes swelling (oedema). By creating space in the brain, the risk of severe complications is reduced.

Alternative procedures that are available

There are generally three treatment options for brain tumours:

- Brain tumour biopsy. During this procedure a very small amount of the tumour is removed and sent for analysis. Once a diagnosis is known, further treatment options can be discussed. This is a safer, less intrusive procedure but the benefits may not be as good.
- Craniotomy and resection with/without intra-operative chemotherapy. For some types of tumour it is possible to use chemotherapy that is placed directly into the tumour cavity at the end of the procedure. This carries a higher risk and is not always possible but there is evidence that it can increase survival.
- You may decide not to have surgery at all. This may also prevent you from having other types of treatment such as radiotherapy or chemotherapy as these depend upon having a tissue diagnosis, i.e. histopathological diagnosis. The full implications of deciding not to have surgery will be discussed with you.

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Before your procedure

All my patients will be seen in the consultation rooms prior to planning any tumour surgery. This will be an opportunity to ask and have many questions answered. I will ask about your past medical history and any procedures you may have had previously. A clinical examination will be performed, and if necessary CT, MRI and other scans will be requested. I may also request that you have blood tests taken at the laboratory. Please come to this meeting with any medication and scans / xrays that you have had taken in the past. Please ensure that you stop any anticoagulant or aspirin containing medication. If you are concerned feel free to contact me. I will discuss the type of anesthesia that we plan for the surgery at the consultation.

On the day of surgery or the day before

You will be admitted to the surgical ward 2. Please do not eat or drink from midnight of the day of the operation.

The anesthetist will meet you the morning of your operation (or the day before). At this meeting please feel free to ask any questions that you may have about the anesthesia, surgery or hospital care.

The porter staff will wheel you through to the operating theatre reception area, from there you will be transferred through to the operating theatre. In the theatre you will meet the anesthetist and surgeon once again, and the anesthetic will commence.

For most operations, you do need to have the hair around the site of the operation removed. We will use an electric hair clipper with a single-use disposable head, on the day of the surgery. Please do not shave the hair yourself or use a razor to remove hair, as this can increase the risk of infection.

The procedure

A small window in the skull will be removed to expose the brain. This part of the operation is called a craniotomy. I will then attempt remove as much of the tumour as possible. Sometimes it is not possible to completely remove a tumour. To increase the extent of tumour removal, I use an operating microscope and to plan the most effective route, I will often make use of neuronavigation.

If the tumour is in a vital structure in your brain, then removing all of it may cause severe disability or even death. Sometimes it is possible to tell you before the operation whether its possible to remove the entire tumour. Sometimes we don't know until they are doing the operation itself.

After the tumour is resected the bone window is closed and the skin closed with stitches or clips (staples) and covered with a dressing. The time this takes depends upon the complexity of the procedure but you will be away from the ward for several hours.

After the procedure

Once your surgery is completed you will usually be transferred to the recovery ward where you will be looked after by specially trained nurses, under the direction of your anaesthetist. The nurses will monitor you closely until the effects of any general anaesthetic have adequately worn off and you are conscious.

They will monitor your heart rate, blood pressure and oxygen levels too. You may be given oxygen via a facemask, fluids via your drip and appropriate pain relief until you are comfortable enough to return to the ICU.

Eating and drinking. You may eat and drink as soon as you feel able. It is recommended you start with clear fluids and move to light food after a few hours.

Getting about after the procedure

After this procedure you are able to get up as soon as you feel well enough. This is within a few hours of returning to the general surgical ward. I prefer if a nurse or physiotherapist assists you before you attempt to get up on your own. This helps improve your recovery and reduces the risk of certain complications.

Your wound will feel strange for a few weeks but pain is not usually a problem. The scar and skin may look bruised and swollen. The scar will fade to a thin pale line in three to six months. Any shaved hair will normally re-grow.

Leaving hospital

Most people who have had this type of procedure will be able to leave hospital after five days. Any surgical clips (not self-dissolving) are removed seven to ten days after surgery. Skin staples will normally be removed by your GP, and the wound inspected at the time.

It is likely that you will be prescribed steroids (beta/dexamethasone). It is usual to increase the dose of these around the time of surgery and then reduce them again gradually over a few days following surgery. Sometimes it will be stopped altogether. You will receive a detailed plan of when and how many tablets to take after discharge. Please do not alter the dose or stop taking them altogether without speaking to your surgical team first

Resuming normal activities and returning to work

You may return to light work and exercise as soon as you feel able to do so.

How rapidly you are able to return to work will depend upon the physical skills, fatigability and demands of the job.

Special measures after the procedure

It is advised to avoid flying for approximately six weeks. Avoid contact sports such as boxing or rugby for at least six months.

Wound Care / Hair Washing

It is recommended you gently wash your hair after 2 days from your operation. Self-dissolving sutures need to get wet before they will begin to dissolve. It is recommended you use a gentle shampoo for this and that you pat the wound dry. Avoid hair dyes and perms for 3 months as this will irritate the scar.

Results

A sample of the tumour will have been sent for analysis. The test results usually take about one week. These results will be explained and I will discuss any further treatment that is recommended.

Significant, unavoidable or frequently occurring risks of this procedure

There are risks of surgery in general and risks associated specifically with the craniotomy. The risks of surgery in general include problems with the wound (for example infection), problems with breathing (such as a chest infection) and blood clots for example in the legs (also known as deep venous thrombosis or DVT) or less frequently the lungs (also known as pulmonary embolism).

Some of the possible problems related to the craniotomy are listed below.

These are general figures, I will discuss with you risks pertaining to your specific case.

- Infection in the brain: approximately 1-5 in 100 people
- Leakage of brain fluid (CSF): approximately 1-5 in 100 people
- Bleeding (haemorrhage) into the brain: four in 100 people
- Superficial wound infection: 2 in 100 people
- Permanent 'neurological deficit' such as speech, visual, arm or leg weakness if the tumour is away from a critical area of the brain: 3 in 100 people
- Permanent 'neurological deficit' such as speech, visual, arm or leg weakness if the tumour is in or close to a critical area of the brain: 10 in 100 people
- Death: 1 in 100 people

If you do wake up with a new neurological deficit then remember that most patients with a new neurological deficit following this procedure will improve over a few days and weeks. Some will resolve completely.

Anaesthesia

Anaesthesia means 'loss of sensation'. There are three types of anaesthesia: general, regional and local. The type of anaesthesia chosen by your anaesthetist depends on the nature of your surgery as well as your health and fitness. Sometimes different types of anaesthesia are used together.

Before your operation you will meet your anaesthetist who will discuss with you the most appropriate type of anaesthetic for your operation, and pain relief after your surgery.

He will need to know about:

- your general health, including previous and current health problems

- whether you or anyone in your family has had problems with anaesthetics
- any medicines or drugs you use
- whether you smoke
- whether you have had any abnormal reactions to any drugs or have any other allergies
- your teeth, whether you wear dentures, or have caps or crowns.

Your anaesthetist may need to listen to your heart and lungs, ask you to open your mouth and move your neck and will review your test results.

General anaesthesia

During general anaesthesia you are put into a state of unconsciousness and you will be unaware of anything during the time of your operation. Your anaesthetist achieves this by giving you a combination of drugs.

While you are unconscious and unaware your anaesthetist remains with you at all times. He monitors your condition and administers the right amount of anaesthetic drugs to maintain you at the correct level of unconsciousness for the period of the surgery.

Your anaesthetist will be monitoring such factors as heart rate, blood pressure, heart rhythm, body temperature and breathing. He or she will also constantly watch your need for fluid or blood replacement.

What will I feel like afterwards?

How you will feel will depend on the type of anaesthetic and operation you have had, how much pain relieving medicine you need and your general health.

Most people will feel fine after their operation. Some people may feel dizzy, sick or have general aches and pains. Others may experience some blurred vision, drowsiness, a sore throat, headache or breathing difficulties.

What are the risks of anaesthesia?

Serious problems are uncommon, however risks cannot be removed completely. The risk to you as an individual will depend on whether you have any other illness, personal factors (such as smoking or being overweight) or surgery which is complicated, long or performed in an emergency.

Very common (1 in 10 people) and common side effects (1 in 100 people)

- Feeling sick and vomiting after surgery
- Sore throat
- Dizziness, blurred vision
- Headache
- Bladder problems
- Damage to lips or tongue (usually minor)
- Itching
- Aches, pains and backache
- Pain during injection of drugs
- Bruising and soreness
- Confusion or memory loss

Uncommon side effects and complications (1 in 1000 people)

- Chest infection
- Muscle pains
- Slow breathing (depressed respiration)
- Damage to teeth
- An existing medical condition getting worse
- Awareness (becoming conscious during your operation)

Rare (1 in 10,000 people) and very rare (1 in 100,000 people) complications

- Damage to the eyes
- Heart attack or stroke
- Serious allergy to drugs
- Nerve damage
- Death
- Equipment failure
- Deaths caused by anaesthesia are very rare.