WHAT IS A CRANIOTOMY?

This is when a piece of bone has been removed from the skull to gain access to the brain. There are many of different types of procedures that can be performed inside the head through a CRANIOTOMY. Despite their differences, they all have similar types of recovery. From the outside, all you will usually see is a suture line with either staples or a nylon suture that was used to close the opening.

AT NO TIME SHOULD ANY BLOOD THINING MEDICATIONS BESIDES ASPIRIN BE TAKEN IF A CRANIOTOMY IS TO OCCUR WITHIN A WEEK. SUCH MEDICATIONS INCLUDE THE FOLLOWING generic (brand) names:

warfarin (Coumadin/Jantoven), Argatroban, bivalrudin (Angiomax), Heparin, dabigatran (Pradaxa), apixaban (Elliquis), clopidogrel (Plavix), ticagrelor (Brilinta), prasurgrel (Effient), dipyridamole (Aggrenox), cilostazol (Pletal)

It is okay to take aspirin for any brain surgery that Dr. Welch will perform.

HOW LONG WILL IT TAKE TO GET OVER A CRANIOTOMY?

This depends on:

1. How sick you were before your surgery.
2. If you had any neurological problems either before or after the operation.
3. Any complications from either the pre-existing disease or the surgery.
4. Your age.
5. The affects of any postoperative treatments such as radiation on recovery.
6. Other medical conditions.

There are many different things that effect recovery so it is hard to make an absolute statment. It is important to remember that your tolerance for pain and medications will have some effect. Different people recover at different rates.

Allowing that your surgical procedure is successful, there is a path that you will follow. It can be divided up into the first two weeks which will take you to your first follow up appointment, the following month and then to the point of three months following your surgery.

THE FIRST TWO WEEKS

This is the time that you will make the fastest recovery. When you leave hospital you may feel as though you will not be able to do quite a lot. While you have been in hospital, you have been resting and most things are taken care of for you. When you go home, you will have more to do and may find that you are very tired. This is normal and it is common to need a rest in the middle of the day. This tiredness gradually improves over time. At your first follow-up visit, you will likely still be tiring easily and using the pain medications prescribed to you. Depending on the wound, sutures or staples are generally removed within the first 7-14 days after surgery.

It is common to find that your memory is not at its best and that you do not seem to be able to concentrate on any one thing for a long period. If you were someone who reads a lot, you may find this difficult. This will gradually improve and affects different people in different ways. This inability to concentrate on things can affect your confidence; remember that it does get better!

It is important to have someone to rely on to help in the early recovery period. We generally recommend this up to the first clinic visit or about two weeks.

When possible, we recommend that some sort of walking exercise be performed at least 30 minutes a day once you return home. Recumbent bikes are the best but a supervised stationary bike or just walking in the neighborhood is also okay. Treadmill should be no more than 3 miles/hour and you should ***always wear the safety stop.*** Benefits of postoperative exercise include reduced pain, improved breathing, lower risk for leg clots.

THE NEXT MONTH

This is the time that you have turned the corner and are looking to return to work and other pursuits. Routine walking and other types of supervised exercise will help your reach this point. When you return for your next post-operative visit, all of these things will be discussed with you. You will be assessed at this visit and a plan will be put in place as to the next steps of recovery. You may have required some rehabilitation and if so, your neurosurgeon should have a report of your progress. Some people are able to get back to doing things quicker than others and this will need to be assessed. Your stamina will be a lot better at this stage. It will continue to improve even more from this point on. ***Remember to walk (see above).***

It is important to remember that a return to work is frequently a decision between the physician and the patient. As your physician does not know your work requirements, it is expected that the patient makes an honest assessment of his or her abilities and reports them to the physician. Family members are also very helpful here. A similar interaction will occur with respect to driving. Generally speaking, the continuous use of narcotic (pain) medication (Norco, Fioricet, hydrocodone, etc) should not occur if the patient is expected to drive.

THE NEXT THREE MONTHS

Most people have returned to work by this period. Your return to work should be gradual as your stamina is still going to be improving. Remember how much you want to go to work after a long vacation … now add surgery. You will need to ease back in to your work routines.

We generally, recommend a few of weeks of part-time or light-duty prior to returning to full responsibilities. It is important to try and increase your exercise and other tasks in a stepwise fashion rather than trying too much to soon as this may result in a loss of confidence and prolong recovery. It can all seem too hard if you try to tackle too much early on.

FOLLOW UP APPOINTMENTS?

On discharge from hospital, you should have follow up appointments with your:

NEUROSURGEON	At 10-14 days
LOCAL DOCTOR	Within the month
ONCOLOGIST	If required
RADIATION ONCOLOGIST	If required
REHABILITATION	If required

DRUGS?

You will be on certain drugs on discharge. Some you will need to stay on and others you will be reducing or stopping. It is important to udnerstand which drugs you will need to continue on and what the doses are. **Your neurosurgeon will be responsible for refilling only the drugs that were prescribed as a part of your neurosurgical treatment.** Just because your drugs run out does not mean you should stop these; call the office if there are questions that have not been answered in your clinic visits.

COMMON DRUG TYPES

The descriptions are not meant to replace any literature given to you by your pharmacy regarding side effects and drug interactions. Follow your prescriptions as written.

Steroid Medication (e.g. Dexamethasone or Decadron)
This is to reduce any swelling in the brain related to surgery. If the operation is for tumors and you are having radiation therapy it is reduced slowly to a small dose which continues through the treatment and stops after radiation. In most other craniotomies, it is progressively reduced to nothing over a few weeks. Many patients who have a craniotomy do not require dexamethasone at the time of discharge. Other than tumors and large aneurysms that were treated by endovascular means, it is uncommon to

leave the hospital taking this type of medication. When you do leave taking steroids, you should take a medication for stomach discomfort (common side effect). We usually prescribe Pepcid or Zantac.

Anticonvulsant Therapy (Seizure medications)
These are to stop you from having seizures. Your Neurosurgeon or Neurologist decides the need for this. If you have not had any seizures, then they may not be required. All patients who have seizures are usually on an Anticonvulsant. It is important to know the side effects of your drugs and if any blood levels need to be monitored (common medications include Keppra, Dilantin, Tegretol, Trileptal).

Muscle Relaxants (Robaxin, Flexeril)
These are generally very useful in relieving pain related to incisions on the side of the head that include one of the jaw muscles (temporalis). Many patients find that this is the last medication to discontinue and will use it. Always remember to stretch your jaw by yawning or chewing after surgery. It may hurt early but will prevent cramping later.

CARE OF THE WOUND

Different surgeons manage this in different ways. After discharge from hospital, we like the wound to be kept clean. You may shower after 48 hours and pat the wound dry afterward. You will not, generally leave the hospital with a dressing. Increasing redness, tenderness, drainage or fever > 101.5 F are signs of infection. You should contact your neurosurgeon immediately if you notice any of this.

REMOVAL OF STITCHES?

Some patients have nylon stitches and others have metal staples. Your surgeon decides when they should be removed and this is normally at about day 7-10 post operatively if you have not had a re-operation and at about day 10 – 14 if you have had a re-operation or previous radiation treatment. The surgeon, the ward or your local doctor or nurse may remove these.

WHAT IS NORMAL TO EXPECT?

OVERALL
All patients are tired when they get home and need a rest in the middle of the day. It is common to have some headaches and an ache around the wound. The general tiredness can lead you to be a little short tempered and this is nothing to worry about and does improve.

If you have had a big operation, just having a shower can be enough to make you tired. It is all right to have more than one rest during the day but it is important to be doing some light exercise. Many patients are more sensitive to heat after surgery. Limit exposure to heat for long periods (outside or even long hot showers/baths).

THE WOUND

This is sore for the first 2 weeks or so. Because there are some nerves cut at the time of the incision, there are usually patches of numbness adjacent to the wound (usually behind) that will take months to improve. Do not be surprised if the wound becomes more numb the first couple of weeks after surgery. This is a normal response. As the nerves grow back there is an occasional shooting pain, tingling, and some even describe the sensation of a dripping feeling around the wound. It will start to itch when it is healing.

There may be some fluid under the scalp that moves around, this is usually more full in the morning and reduces as the day goes on. As the days go by, this will normally reduce as the scalp heals.
Pockets of fluid at the lower part of the wound are the last to resolve. The movement of fluid may result in some "popping" sounds. This is also normal.

Fluid should not leak from the wound. If it does, please call the clinic.

THE HEAD

As the swelling in the scalp subsides, there may be a noticeable depression where the surgery was. The thing most obvious can be some small holes (called Burrholes) where we gained access to lift the bone of the skull. In our practice, bone cement is used to fill in these areas for a better cosmetic result. This may produce areas of hardness but less of an indentation.

Over a very long period of time (many years), the bone flap that was opened may shrink substantially. If the cut was in the region in front of the ear and above the jaw, there can be some problems in opening the mouth the normal distance. This occurs because the muscle to the jaw (temporalis) muscle has been cut. This can be remedied by slowly stretching your mouth open and closed for a period of 5 minutes at least three times a day. It is fine to begin these exercises 48 hours after your surgery.

Some people are able to feel the fluid around the brain move in the first few weeks. This is just the brain readjusting to its normal position; it settles fairly quickly and is nothing to worry about.
There can be swelling/puffiness/bruising around the eyes. This settles.

HEADACHES

These are variable. Some people have very little while they trouble others.
As a general rule, they are not troublesome and should respond to the discharge medications.
Headaches can be worse towards the end of the day and they may be linked to increasing tiredness, noise or stressful situations.

It is important to keep your fluids up in warm weather as dehydration may make the headache worse.

By 2 weeks post operatively, the headaches will have begun to subside depending on the reason for the craniotomy. In some conditions, they may last for a few months. Posture can have some effect. If you bring your head up from lying down very quickly then you may get not only a headache but also some dizziness. Placing your head between your knees will increase the pressure in the head and cause increased pain. This may also increase any fluid beneath the scalp.

NEUROLOGICAL DEFICIT

This is any problem that you have such as weakness, clumsiness, problems with speech etc.
The ability for this to get better depends partly on the surgery that you have had. It is important to discuss this with your neurosurgeon prior to discharge.
As a general rule, all deficits will improve to some extent. It depends on whether the underlying brain has been damaged by the disease or pushed out of the way. In patients with significant problems preoperatively, it may take longer to recover. The extent of recovery can be unpredictable.
Any recovery can be quick initially then progressively slows, it may continue at a very slow rate for years.

If any new symptoms of weakness, clumsiness or numbness begin after you are discharge from the hospital, it is important to notify your surgical team.

SEIZURES

These can occur to any one who has had a craniotomy. The risk of having a seizure depends partly on the reason for the procedure and also the type of operation that you have had. Some patients are on anti-convulsant medication prior to the surgery. We may start you on medication during the operation. The minimum time for anticonvulsants is between 3 and 12 months. If we believe the risk of seizures is very low we will discuss this with you preoperatively and may not use an anti-convulsant drug because these can have very severe side effects. Also once starting medication, it can be hard to get you off them. Once you have a seizure, you will require medication. The greatest risk of seizure is early after the operation. This is the time that you are at greatest risk of injury.

If you do have a seizure, it is important for anyone with you to move anything out of the way that you may bump into and to call an ambulance. Patients and their relatives, who know what a typical seizure pattern for them, will not always call the ambulance.
If you are very concerned about the risk of seizure you can be discharged with some valium suppositories that can be given to help stop the seizure while waiting for the ambulance.
If you are taking medicine for seizures, you must not stop it abruptly.

There are different types of seizures.
The most common to affect patients post-craniotomy is the type where you become unconscious and convulse. These usually stop after a few minutes. We suggest you call the ambulance initially just in case the seizure is prolonged.

The next most common is the type where one of your limbs twitches or jerks but you do not lose consciousness. This may progress to the above type, if it does, it is usually fairly quickly. This is a type of seizure that you will require treatment for.

ALCOHOL?

It is best to avoid this in the early postoperative period but half a glass of wine or a light beer per day is unlikely to cause any problems.
Alcohol can affect the metabolism of some of your medications and make them less effective.

Check that it will not interfere with any other medications that you taking.

If you have any doubts, discuss with your Neurosurgeon or local doctor.

SPORT/EXERCISE

All exercise in the postoperative period should be supervised.

We encourage a walking routine as you recover. Walking ONLY on a treadmill with an increase in the incline is a good way to raise your heart rate and assist in a more rapid recovery. ***Always wear the autostop belt when using a treadmill.***

We suggest the avoidance of all contact sports for at least 12 months after surgery to avoid blows to the head.

After 3 months, you can start to play non-competitive, non-contact sports starting slowly. Depending on your recovery, golf and bowling may be played at 6 weeks. Do not play golf alone in this period.

You must consider the risk of seizure and so we advise you not to place yourself in risky situations for the first three months and this means you must not climb onto a chair or ladder. Swimming poses a similar risk, avoid the beach and if in a pool, it should be water shallow enough that someone who is with you can support your head above water if you should have a seizure. Do not swim alone.

HAIR MANAGEMENT

You can wash your hair 2 days after removal of sutures.
It may be colored or processd in other ways 4 weeks after surgery.

DRIVING

You should not drive until told that you can do so by your Neurosurgeon. This is usually after 2-4 weeks months.
The reasons for this are that you have reduced concentration and you may have neurological deficit and are at the risk of an epileptic seizure.
Added to this, it is against the law in most states to drive while taking pain medications or muscle relaxants.
In most cases, if you are driving without permission or against advice and you do have an accident, your insurer will not cover you.

When you do return to driving, we initially suggest:
Do not drive at night.
Short trips.
Have someone with you.
Stay out of peak hours.
Stick to familiar routes.

AIR TRAVEL

Check with your neurosurgeon.
In most cases, this is all right unless you have raised intracranial pressure.
Some airlines may require a letter from your doctor.
If you have titanium plates in your head, they do not trigger the metal detector.
In the early stages, we would recommend against overseas trips.

REHABILITATION

You may need physical rehabilitation for any neurological deficit. This may mean inpatient admission to a rehabilitation center. Once you are at the point where you can manage at home, you will be discharged. You will have some exercises to do and may need outpatient physiotherapy.
The main exercise we recommend is walking. This should start slowly with a distance that you are comfortable with and then increased in small increments. *Avoid any lifting that is more than a gallon of milk (~ 10 lbs) until your first follow-up visit.* Do not be concerned if the first walk ties you out.

RETURN TO WORK

Discuss this with your Neurosurgeon

You will normally need at least 6 weeks completely off work. After this, you may be able to go back on reduced hours doing the equivalent of light duties. The return to work will depend on your recovery and is usually discussed at your first post op visit.
When you do go back to work, you cannot operate machinery until, at least, 3 months post surgery.
If you have a neurological deficit this will not stop you returning to work but you may need retraining.
Remember that even if you can return part time after 6 weeks you will not be able to drive until 3 months.

WHAT IS IMPORTANT TO NOTIFY MY DOCTORS ABOUT?

WOUND
- Increased Redness
- Discharge
- Increased fluid/below/swelling
- Fluid Leakage

Headaches
- Increasing Severity

Increased
- Drowsiness
- Weakness
- Confusion
- Speech difficulty
- Falls
- Visual Disturbance

Seizures
Nausea/Vomiting
Rash
Pain or swelling in leg/calf
Fever > 101.5/sweats/neck stiffness/light intolerance
Chest pain or shortness of breath

IF I HAVE A PROBLEM WHOM SHOULD I CALL?

Some problems are urgent and require immediate treatment that will mean presenting to the nearest emergency department.
Your Neurosurgeon or a member of his team is always available and can be contacted by any emergency department or your local doctor. We can be contacted through the main office at 214-645-2300. This number will be transferred, after hours, to a pager for emergencies. If you see your local doctor, we would appreciate being informed of any concerns.
For general questions, our practice nurses are able to help in most cases. If they are unsure, they will contact your neurosurgeon.