PATIENT INSTRUCTIONS:

Spinal Cord Stimulator Placement

Surgical Technique

Spinal cord stimulators can be placed anywhere in the spine, depending on the location of your pain, but the most common sites are either in the neck (cervical) or mid-back (thoracic). A small window of bone (laminotomy) is drilled over the area using minimally invasive techniques to allow the insertion of the electrodes into the epidural space. Sometimes more bone must be removed (laminectomy) to allow safe and accurate placement of the electrodes. This is a decision that is usually made during surgery. The goal of surgery is to place the electrodes over the spinal cord in a location that allows them to be programmed to cover the areas of your body that are in pain. Usually, it can be performed on an outpatient basis without the need for an overnight stay in a hospital.

If you have not had a trial stimulator placed before:

If you have not yet been trialed (like many of our patients), we will perform the trial and will place the electrodes based upon your responses to stimulation during surgery (we will wake you up for this part of the surgery). The electrodes will then be connected to temporary wires that are brought through the skin and connected to an external pulse generator. During the trial, the electrodes will be programmed to help cover your areas of pain and, if this is successful, we will offer placement of a permanent pulse generator usually within the next several days following the first surgery. This will allow the entire system to be buried safely under the skin so that there are no longer any external wires. The location of the permanent pulse generator (similar to a pacemaker) will be at a site determined by you and your surgeon.

If you have had a successful spinal cord stimulator trial:

If you have had a successful trial stimulator placed, the surgeon will be guided by the x-rays that were taken during the trial. These x-rays will guide us as we place the electrodes. We will then connect the electrodes to a pulse generator (similar to a pacemaker), and this will be placed in a small pocket under your skin at a site determined by you and your surgeon.

Please visit www.bch.org/bnsa for more information.

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Before Surgery

- Seven days prior to surgery, please do not take any anti-inflammatory NSAID medications (Celebrex, Ibuprofen, Aleve, Naprosyn, Advil, Aspirin, etc.) as this could increase your risk of bleeding during surgery.
- If you are taking any blood-thinning medications (Plavix, Coumadin, etc.), please talk to the prescribing doctor about when you can safely stop that medication before surgery to reduce your risk of bleeding. Usually, these medications are stopped anywhere from 3 - 7 days before surgery.
- Increase your strength and improve your recovery by walking at least 30 minutes a day before your procedure. Exercising before surgery will help you recover after your surgery.
- At least one week before surgery, eat healthy foods rich in carbohydrates and protein to fuel your body with the nutrients that it will need during and after surgery.
- Be aware that nicotine users have a significantly higher risk of surgical wound complications, such as healing and infection, as well as increased surgical bleeding. Nicotine disrupts many normal body functions, including nutrients and blood supplies.

Day of Surgery

- Be early or on-time to check-in on the day of surgery so that surgery is not delayed or canceled.
- Bring your hospital surgical folder and any related paperwork (consents, etc.) to surgery.
- Bring a copy of all relevant imaging studies (CT, MRI, or x-rays) to surgery, even if your surgeon has already seen them in the clinic or may have a copy. Surgery may be canceled if your surgeon cannot view your radiographic images on the day of surgery.

After Surgery

- You may experience increased pain during the first few weeks following surgery.
- You should expect increased soreness directly at the incision site, which should improve with time.
- Some patients may experience worsening leg pain. These symptoms also should gradually improve with time.
- If your pain is poorly controlled, please reach out to your surgeon to discuss.

Activity Level

- Walking is the best exercise after spine surgery because it strengthens the back and leg muscles, increases endurance, relieves stress, improves blood flow, keeps the bowels moving, and prevents fluid from building up in the lungs.
- Immediately after surgery, patients are encouraged to walk with gradually increased distances. The sooner patients can be active, the sooner he/she may be able to resume their routine.
- Do not lift more than 5 - 10 pounds for several weeks after surgery. This restriction may be increased to approximately 20 pounds after 4 - 6 weeks. Your surgical team will help guide you with your specific lifting restrictions after 6 weeks.
- Avoid prolonged upright sitting on hard surfaces or long car rides (more than 2 hours) for 2 - 4 weeks. It is recommended that patients do not sit for more than about 45 minutes without getting up and taking a 10-minute break and walking.
- You may drive as soon as it is comfortable to do so. You should not drive while under the influence of pain medications.
- Limited bending or twisting of the spine is advised. If physical therapy has been prescribed, you are not to do range of motion, flexion, extension, or lateral bending exercises until cleared by your surgeon.
- Avoid activities with a potential for falling or physical contact until cleared by your surgeon.

Bandage

- If a bandage is present, it should be changed the second day following surgery. A clean, dry gauze is recommended to be changed over the wound daily to protect the incision from clothing to prevent breakdown. The use of a bandage is usually discontinued once your incision is fully healed. This may be different according to your surgeon.
- Depending on your surgeon's preference, you will have either Steri-Strips, a liquid skin adhesive (Dermabond), or external sutures over your incision.
- Steri-Strips should be left intact until returning to the clinic for your postoperative follow-up visit 2 - 3 weeks following surgery.
- Liquid skin adhesive (Dermabond) should be left in place and will eventually fall off naturally over the next 1 - 2 weeks.
- Do not use topical ointments on your incision unless approved or directed to do so explicitly by your surgeon.
- Sometimes, external sutures are placed and need to be removed 2 - 3 weeks after surgery.

External Wires

- For those who have external wires, keep the area where the wires come through the skin clean and dry. We recommend prepping this site twice daily with a little chlorhexidine soap, which can be obtained from almost any drugstore. Keep this site dry and do not allow water from a shower to contact this area. Absolutely no soaking in a bathtub while there are external wires coming through the skin. This site almost always has drainage of blood-tinged fluid that will SOAK the dressing each day. Please change this dressing twice a day. This is the body's normal response to the wires and is to be expected and is not a cause for concern.

Bathing

- We recommend waiting to shower until the third day after surgery.
- Try to limit showers to no more than 5 - 7 minutes.
- Do not scrub the incision directly. Instead, let the clean water run over the incision and then pat the incision dry.
- Do not soak in a bathtub, hot tub, or pool until you are cleared to do so by your surgeon (at least 2 weeks) and never if there are still wires coming through the skin.

Diet

- Narcotic pain medications can be very constipating. Be proactive with stool softeners and laxatives.
- A high fiber diet is recommended.
- Avoid straining on the toilet. Keep stools soft with a high fiber diet and/or use of prune juice, Metamucil, Fiber One cereal, etc.
- Drink plenty of fluids, including Gatorade, or any kind of juice to stay adequately hydrated, prevent blood clots, and other problems.

Pain Medications

- NSAID medications (Ibuprofen, Naprosyn, etc.) or Cox-2 inhibitors (Celebrex, etc.) are encouraged after this procedure as they will provide the best anti-inflammatory and pain relief in most cases.
- Tylenol can be taken as needed.
- Stronger pain medications will be prescribed if Tylenol is inadequate. Avoid letting the pain get out of control before taking medication, or it will be less effective.
- Muscle relaxants are sometimes prescribed in combination with pain medications. Take as directed by your provider.
- BNA providers will NOT refill pain medications after hours: 5 pm on weekdays or anytime on the weekend.
- It is crucial to anticipate the need for medication refills so that they can be refilled with an adequate notification, which may take anywhere from 24 - 48 hours.

Follow-up

- Call Boulder Neurosurgical and Spine Associates (303-938-5700) to schedule your routine post-surgical visit for 7 - 14 days after surgery (if it is not already scheduled).
- Additional follow-ups will be scheduled as needed. The duration of total follow-up with your surgeon depends on the type of surgery being performed.
- **Please call your surgeon's office immediately with any problems or go to the emergency room if you notice:**
  - Drainage and increased pain at the incision site
  - Fever greater than 101.4° F
  - Swelling and/or tenderness in your legs
  - New pain and/or weakness in the arms or legs
  - Problem with controlling your bladder and bowels

Other FAQs

How long will I be in the hospital? You will likely go home the day of or the day following surgery. We have found that patients generally prefer the comforts and support that home offers. The sooner you go home, the lower your risk of complications such as hospital-acquired wound infections, blood clots, and urinary tract infections.

How much time off from work? The amount of time needed for recovery prior to returning to work varies depending on the surgery, your job, and you as an individual. Typically, 2 - 3 weeks for jobs that are at a desk or sedentary is sufficient, but patients should ask their surgeon for an individual recommendation. The return to physically demanding jobs will be at the discretion of your surgeon.

When can I resume driving? Driving is acceptable, depending on the use of pain medication. We strongly advise against driving while taking narcotic pain medications following the surgery

What about pain and other medications? We will prescribe pain medications and other peri-operative medications on the day of surgery or prior to your discharge from the facility or hospital. For those patients working with a pain management physician many times, that physician will want to manage the peri-operative pain, and we encourage you to discuss the procedure with them.

Will I need Physical Therapy? We usually recommend physical therapy and will refer you to a therapist at your first postoperative visit. Limited bending or twisting of the spine is advised. Refrain from high impact activities such as running, horseback riding, or any radical side-to-side motions. A good rule is 'If it hurts, don't do it.'

What kind of follow up is required? Patients return to our office for routine follow up appointments at intervals that are determined on a case-by-case basis. We typically see patients back in the office within a couple of weeks following surgery and then increase this to several months, followed by an annual exam. Your individual needs will be determined by your surgeon at each follow-up visit.

Do I need antibiotic prophylaxis for dental procedures? We recommend avoiding routine dental procedures for 3 months following surgeries in which hardware is placed. This includes any dental work. You should brush your teeth as you normally do. If you must have a dental procedure within 3 months, then it would be advisable to use antibiotic prophylaxis. We generally do not make recommendations about the choice of antibiotic when using it for prophylaxis, and we usually defer this to your primary care physician or your dentist. After 3 months, prophylactic antibiotics are not recommended except for specific individuals with extenuating circumstances, such as patients who are at risk for infective endocarditis.