



选择性背神经根切断术

为了舒适与护理

选择性背神经根切断术是一种下脊髓部位的手术，目的是降低腿部的痉挛或肌肉的高度紧张。切断某些引起肌肉高度紧张的异常神经纤维。手术的目的是松弛肌肉，从而提高您的孩子的舒适以及您提供护理的能力。

痉挛是什么？

痉挛是肌肉紧张度增加，可描述为僵直或肌肉拉紧。痉挛的原因为脑部和肌肉之间命令肌肉放松的信息中断。痉挛可能由脑部或脊髓的疾病或损伤所导致。

我怎么知道选择性背部神经根切断术适合我的孩子？

经过肌肉紧张度外科诊所（STM）的仔细筛查后，由医生、外科医生及康复治疗师组成的团队将确定该手术是否适合您的孩子。我们将与您及您孩子的社区治疗师合作，来确定治疗目标，并在术前创建一项护理计划。您的孩子的评估将包括西雅图儿童医院的一位物理治疗师（PT）及一位职业治疗师（OT）进行的肌肉测试。

术前将做什么？

您的孩子在术前将有一系列门诊预约。这些预约的目的是搜集详细的病史，包括近期疾病及过去术中麻醉的经历。这些预约将安排在您的孩子手术前 30 天内，一般会在同一天完成：

麻醉前手术服务（PASS）门诊

一位执业护士（NP）将与您及您的孩子见面，以确保您的孩子的健康程度足以接受术中麻醉。他们将确保您的孩子没有任何可能延迟手术的健康问题。

神经外科门诊

一位执业护士（NP）将与您及您的孩子见面，以搜集您孩子的病史信息。他们还将完成体格检查评估。

放射技术

神经外科医生将需要对您的孩子进行额外的 X 光或 MRI 扫描，以在术中使用。如果您的孩子不能保持静卧，则需要先在 MRI 检查前进行麻醉。在安排这些预约前，我们将与您就此进行讨论。为了做好准备，您可以观看苏醒状态下进行 MRI 检查的视频 (www.youtube.com/watch?v=ozrg1J5evJ0)，或麻醉状态下进行 MRI 检查的视频 (www.youtube.com/watch?v=q6S978T_olo)。

治疗

在为您的孩子安排 SDR 之前，将由一位物理治疗师和职业治疗师查看您的孩子，进行手术评估。如有必要，治疗师可在术前多次查看您的孩

子，以获得其肌肉和运动的特定测量信息。治疗师还将录制您的孩子进行各种活动的视频，如坐到轮椅上或从轮椅上起身。

预约时需要携带什么？

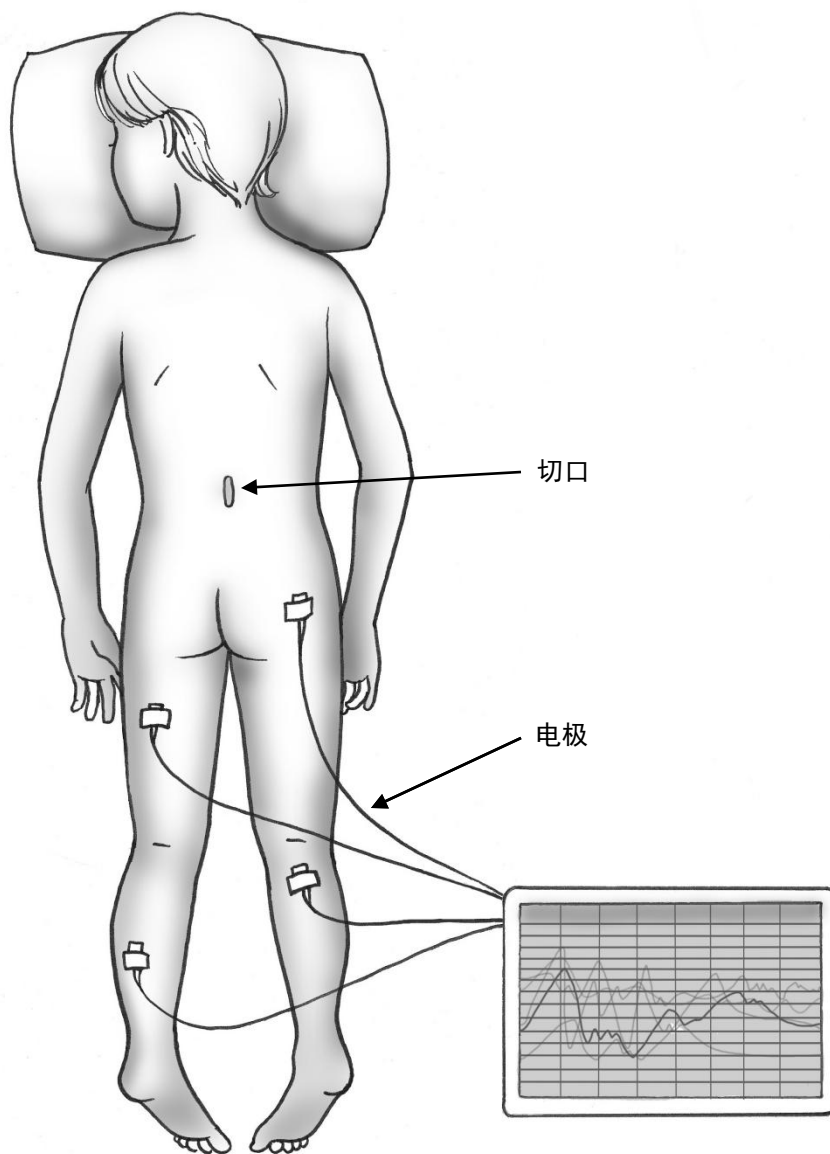
将您的孩子正在使用的以下所有物品携带至预约门诊：

- 轮椅
- 足部或腿部支具或夹板
- 在您离开医院后照护您孩子的物理治疗师的姓名和电话号码

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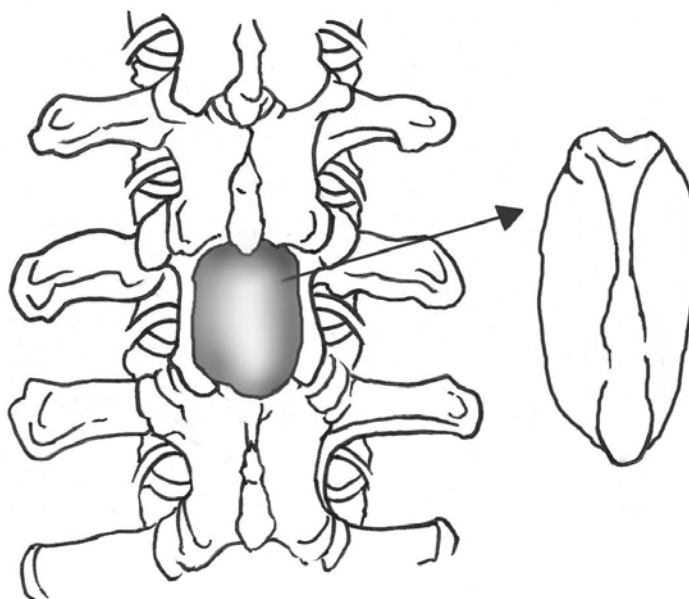
术中将会发生什么？

您的孩子在术中将进入睡眠（全身麻醉）状态。孩子入睡后，我们会将小电极置于孩子的腿上，以捕获肌肉如何应答称为“神经刺激”的信息。该信息将以波形显示在计算机显示器上，医疗团队将使用这些信息决定需要切除的神经。一旦放置电极，神经外科医生将在下腰中部切一个小切口（约1英寸长）。



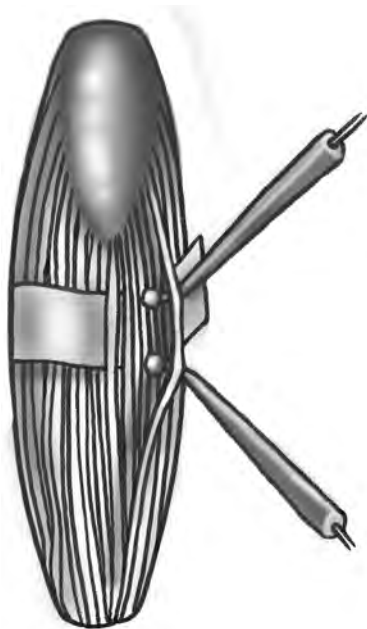
孩子的下腰切口以及连接至计算机显示器的电极。

通过这个切口，在脊柱上开一个小窗（椎板切除术），以暴露神经纤维（背根）。



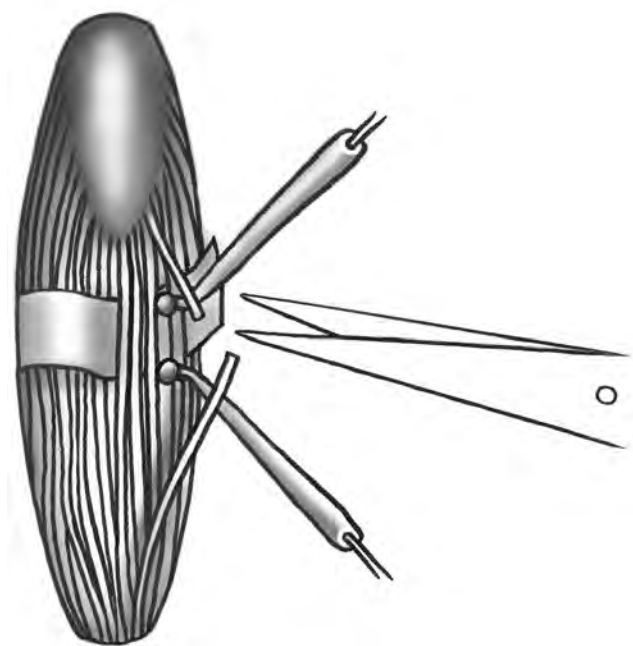
脊柱上的小窗（椎板切除术）

采用电刺激测试每根神经，以发现异常应答的神经（选择性）。



测试神经纤维

然后手术切断异常神经纤维（脊神经根切断术）。



异常神经纤维切断

每个孩子要切除的神经及切除的数量各不相同。这种治疗可以长期改善肌肉紧张度，因为神经将不会长回来连在一起。

术后应该有何预期？

疼痛和舒适

您的孩子术后可能感觉到一些背部疼痛和不适。还会有一些腿痉挛，预期会在接下来几天内消失。神经外科和疼痛团队将会每天帮助管理您的孩子的不适。

活动

术后头 3 天，您的孩子必须卧床。您的孩子可以仰卧、侧卧或俯卧。这些位置允许背部切口愈合，并将腿痉挛降到最低。通常在医院住院五天就足以确保疼痛受到良好管理，并且正在安全康复中。

孩子在医院时需要什么？

您的孩子需要携带以下东西：

- 设备：轮椅和支具
- 衣物：带有弹性腰带的裤子和短裤、内裤、袜子、拖鞋及 T 恤衫（我们提供睡衣裤，并有洗衣机供您使用）
- 个人物品：眼镜、助听器、梳子（我们提供牙刷和牙膏）

- 舒适物品：喜欢的毯子、填充动物玩具、书籍、游戏、照片
- 其他任何孩子现在使用的器材

如果您在术前计划对您的孩子的座位系统或矫形器进行改装，请告诉 SDR 团队。因为您的孩子的需要在术后可能改变，因此也许有必要延迟这种服务。

我如何为我的孩子做准备？

寻找关于为您的孩子做准备的信息及资源，请访问

www.seattlechildrens.org/patients-families/surgery/preparing-your-child/。

此外，我们的儿童生活专家可与您及您的孩子合作以缓解紧张情绪，表达担忧及恐惧，并对住院经历感到更有把握。更多信息访问

www.seattlechildrens.org/clinics-programs/child-life/。

如果您想约见一位儿童生活专家或与其通电话，请询问 SDR 团队。

我的孩子是否需要停止口服巴氯芬或其他药物？

您的康复医生将在术前会与您交流关于您的孩子的用药计划及 SDR 术前术后需要改变之处。

我的其他孩子怎么办？

在门诊预约期间

门诊儿童游戏室是在患者及看护人就诊时，兄弟姐妹可以玩耍的地方。游戏室欢迎 3-11 岁受过如厕训练的儿童，先到先参加，最长可以待 2 小时。有成人陪伴时，欢迎患者和幼儿进入游戏室。

术后

我们的住院游戏室是一个充满欢乐、安全、支持性游戏及社交互动的地方。儿童喜好活动及玩耍，以及不同种类的书籍、玩具和手工艺品。在成人家属陪伴下，欢迎患者及其兄弟姐妹进入游戏室。受过训练的志愿者可以辅助游戏室或患者病房的活动。

门诊和住院

Mountain Play 公园是一处供所有患者、家属及来访者活动的外部游戏区。玩耍不受工作人员监督。关于这些服务的更多信息，请访问

www.seattlechildrens.org/visitors/campus/recreation/。

寄宿和交通怎么样？

欢迎家属和成人医疗护理提供者在室内与孩子在一起。年龄低于 18 岁兄弟姐妹和访客不允许在医院过夜。如果其他家庭成员需要在附近居住，我们的客服部可以帮您寻找住处。您可以通过 206-987-9330 或 866-987-9330 联系客服部。我们还有淋浴间可供使用。

关于这些服务的更多信息，请访问 www.seattlechildrens.org/visitor/。

了解进一步详情

- 肌肉紧张度管理项目经理
206-987-5917 或
tone@seattlechildrens.org
- 神经外科预约
206-987-2544 ,
选项 2
- 康复内科预约
206-987-2114 ,
选项 2
- 询问您的孩子的健康医疗提供者
- www.seattlechildrens.org/SDR

免费口译服务

- 请在医院中向您的孩子的护士询问。
- 在医院外，请拨打免费家庭口译专线电话 1-866-583-1527。告诉口译员您需要通话的人的姓名或分机号码。

我能携带食物吗？

您可以从家中携带食物。如果您的孩子有任何特殊的食物需求，请告知 SDR 团队医院在准备餐饮时应该注意哪些事项。

在病区的日间室中还有可以储存易腐食物的家用冰箱，以及病区所有儿童的家属共用的炉台和烤箱。非易腐食物可以放在您的孩子的病房内。

在我们返回家中时，我们应该期待什么？

返校

从医院回家后（出院），您的孩子可以在轮椅坐一个上学日后即可返回学校。他们返回学校后即可开始基于学校的治疗。学校治疗的活动没有限制。

社区治疗

如果您的孩子接受社区治疗，他们可以在返家一周内开始。没有活动的限制。根据您的孩子的目标，您可能需要练习转移、定位及/或站立的活动。

医疗随访

您的孩子术后将在神经外科、康复科及物理/职业治疗科就诊，以检查进展状况，以及提出任何建议。我们在西雅图儿童医院的调度程序员将会给您打电话，进行以下预约：

术后	2 到 3 周	3 个月	6 个月	1 年
神经外科	X	X		
OT/PT			X	X
康复	X	X	X	X

西雅图儿童医院向聋人、听力障碍者或不会讲英语的患者、家庭成员和法律代表提供免费口译服务。西雅图儿童医院将应请求用其他格式提供本信息。请打电话给家庭资源中心，电话号码 206-987-2201。

本手册已经由西雅图儿童医院的工作人员审阅。但是，您的孩子的需求具有独特性。在您根据本信息采取行动或依赖本信息之前，请向您的孩子的健康护理服务提供者洽询。

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2015 年 10 月

PE1562SC



Selective Dorsal Rhizotomy

for Comfort and Care

Selective dorsal rhizotomy is a surgical procedure done on the lower spinal cord to reduce spasticity or high muscle tone in the legs. Certain abnormal nerve fibers that cause high muscle tone are cut. The goal of surgery is to relax the muscles, therefore improving your child's comfort and your ability to care for them.

What is spasticity?

Spasticity is an increase in muscle tone that can be described as stiff or tight muscles. Spasticity is caused by a disruption in the messages between the brain and the muscles that tell the muscles to relax. Spasticity can be a result of illness or injury to the brain or spinal cord.

How do I know if selective dorsal rhizotomy is right for my child?

After careful screening in the Surgical Tone Management (STM) Clinic, our team of doctors, surgeons, and rehabilitation therapists will determine if this procedure is appropriate for your child. We will partner with you and your child's community therapist to identify goals and create a care plan before surgery. Your child's evaluation will include muscle testing by a physical therapist (PT) and an occupational therapist (OT) at Seattle Children's.

What happens before surgery?

Your child will have a series of clinic appointments before surgery. The purpose of these appointments is to gather a detailed medical history, including recent illnesses and past experience with anesthesia during surgery. These appointments are scheduled within 30 days of your child's surgery, usually all on the same day:

Pre-Anesthesia Surgical Services (PASS) Clinic

A nurse practitioner (NP) will meet with you and your child to make sure your child is healthy enough to receive anesthesia during surgery. They will make sure your child does not have any health problems that could delay their procedure.

Neurosurgery Clinic

A nurse practitioner (NP) will meet with you and your child to collect information about your child's medical history. They will also complete a physical assessment.

Radiology

The neurosurgeon may need additional X-rays or MRI scans of your child to use during surgery. Your child may need anesthesia before an MRI if they are not able to lie still. We will talk with you about this before scheduling these appointments. To prepare, you can watch the videos *Getting an MRI While Awake* (www.youtube.com/watch?v=ozrg1J5evJ0) or *Getting an MRI with Anesthesia* (www.youtube.com/watch?v=q6S978T_olo).

Therapy

By the time your child is scheduled for an SDR, they will have already been seen by a physical and occupational therapist for the surgical evaluation. It may be necessary for the therapists to see your child one more time before surgery to gather specific measurements of their muscles and movement. The therapists may also videotape various activities like transferring to and from a wheelchair.

What do I bring to appointments?

Bring all of the items below that your child is currently using to their appointments:

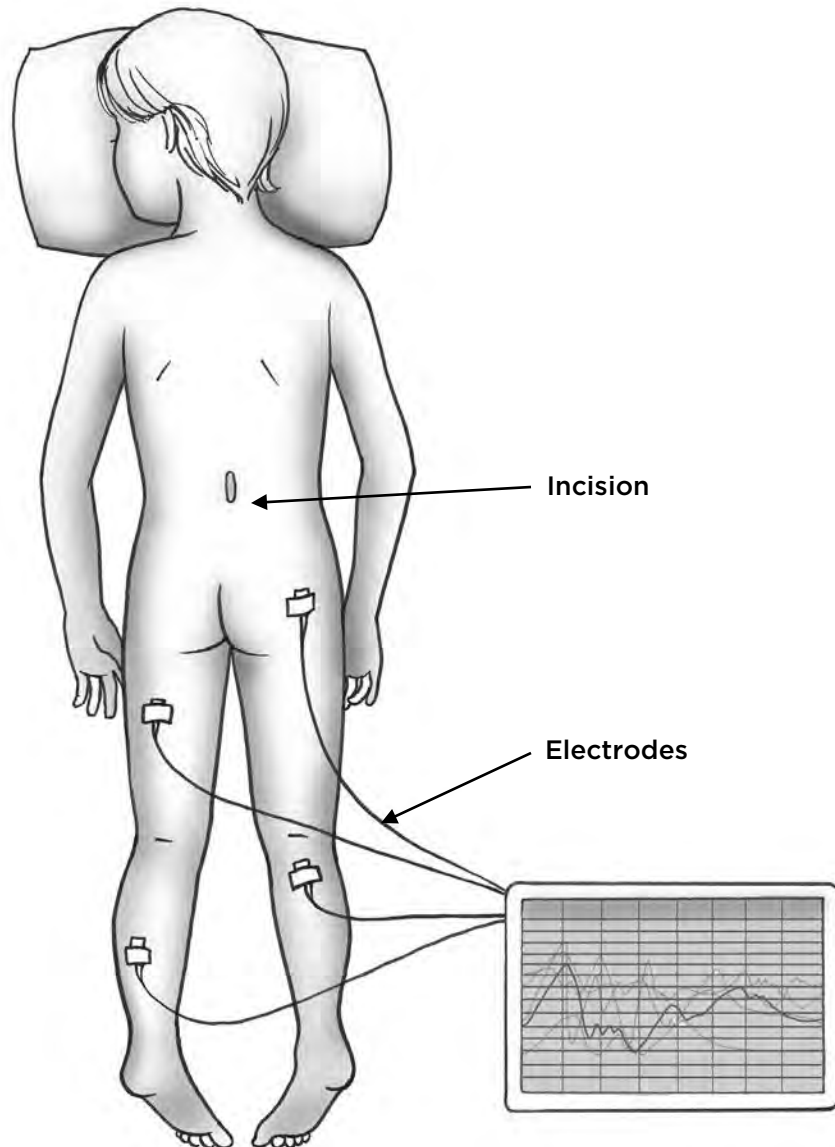
- Wheelchair
- Braces or splints for the foot or leg

Name and phone number of the physical therapists who will be working with your child after you leave the hospital

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What happens during surgery?

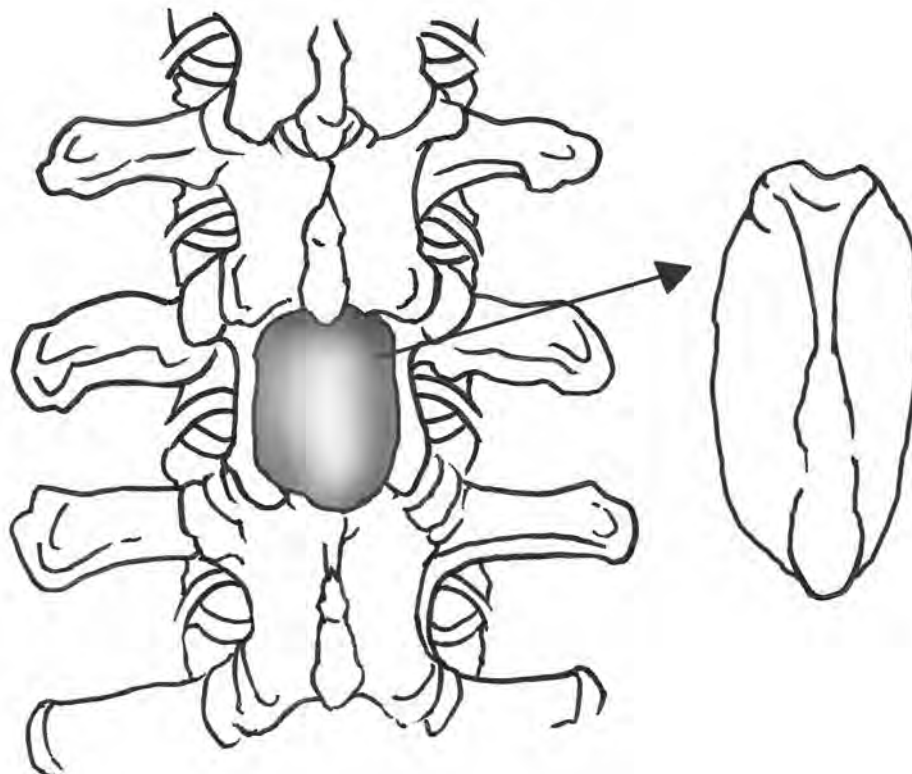
Your child will be asleep (general anesthesia) during the surgery. After your child is asleep, small electrodes are placed on the legs to capture information on how the muscles respond to testing called “neurostimulation” during the surgery. This information appears on a computer screen as wave forms that the team will use to decide which nerves to cut. Once the electrodes have been placed the neurosurgeon will make a small incision in the middle of the low back (about 1 inch long).



Child with a lower back incision and electrodes that are connected to a computer screen.

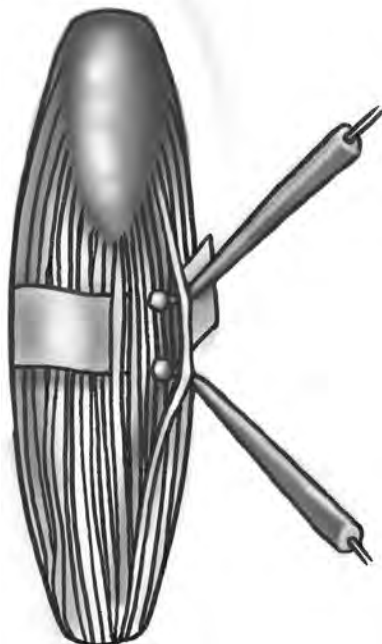
Selective Dorsal Rhizotomy

Through this incision, a small window (laminectomy) is made in the spine to expose the nerve fibers (dorsal roots).



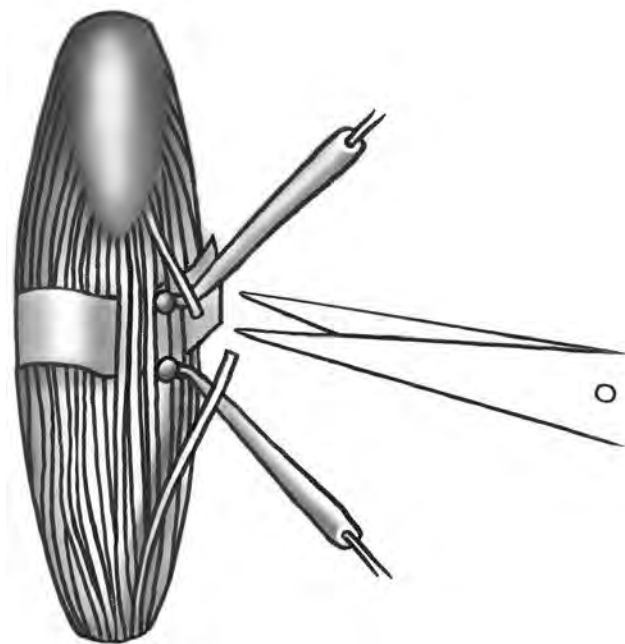
Small window in the spine (laminectomy)

Each nerve fiber is tested with electrical stimulation to find out which nerves respond abnormally (selective).



Testing nerve fibers

The abnormal nerve fibers are then surgically cut (rhizotomy).



Abnormal nerve fiber cut

Which nerves and how many are cut will vary from child to child. This provides a long-term improvement in muscle tone because the nerves do not grow back together.

What should I expect after surgery?

Pain and Comfort

After surgery your child may feel some pain and discomfort in their back. They may also have some leg spasms which are expected to go away over the next few days. The Neurosurgery and Pain teams will help manage your child's discomfort each day.

Activity

For the first 3 days, your child will have to stay in bed. Your child can lie flat on their back, on their side or stomach. These positions will allow the incision on their back to heal and minimize leg spasms. A 5-day hospital stay is usually long enough to make sure their pain is well managed and they are safely recovering.

What will my child need at the hospital?

Your child will need to bring the following items:

- Equipment: wheelchair and braces
- Clothing: pants and shorts with elastic waistbands, underwear, socks, slippers and T-shirts (we provide pajamas and have laundry machines available for you to use)

- Personal items: eyeglasses, hearing aids, comb/brush (we provide toothbrush and toothpaste)
- Comfort items: favorite blanket, stuffed animal, books, games, photos
- Any other equipment they currently use

Tell the SDR team if you have plans for your child to have their seating system or orthotics refitted prior to surgery. It may be necessary to postpone this service as your child's needs may change after surgery.

How do I prepare my child?

For information and resources about preparing your child, visit www.seattlechildrens.org/patients-families/surgery/preparing-your-child/.

In addition, our Child Life specialists can work with you and your child to help relieve tension, express concerns and fears, and feel more in control about their hospital experience. Visit www.seattlechildrens.org/clinics-programs/child-life/ to learn more.

If you would like to meet with a Child Life specialist or speak to them over the phone, please ask someone on the SDR team.

Will my child need to stop taking oral baclofen or other medicines?

Your Rehab doctor will talk to you before surgery about your child's medication plan and any changes that may need to be made before and after SDR surgery.

What do I do with my other children?

During clinic appointments

The clinic sibling playroom is a place where brothers and sisters can play while patients and caregivers go to a clinic appointment. The Sibling Playroom welcomes children ages 3 to 11 years old who are toilet-trained, on a first-come, first-served basis. They may stay for up to 2 hours. Patients and younger children are welcome in the Sibling Playroom when an adult is with them.

After surgery

Our inpatient playroom is a place for fun, safe, supportive play and social interaction. Children enjoy activities and entertainment, as well as a wide variety of books, toys and crafts. Patients and their brothers and sisters, accompanied by an adult family member, are welcome in the playroom. Trained volunteers are available to help with activities in the playroom or in patient rooms.

Clinic and inpatient

The Mountain Play Park is an outside play area for all patients, families and visitors. Play is not supervised by staff. For more information about these services, visit www.seattlechildrens.org/visitors/campus/recreation/.

To Learn More

- Tone Management Program Manager
206-987-5917
tone@seattlechildrens.org
- Neurosurgery Scheduling
206-987-2544 , option 2
- Rehabilitation Medicine Scheduling
206-987-2114, option 2
- Ask your child’s healthcare provider
- www.seattlechildrens.org /SDR

Free Interpreter Services

- In the hospital, ask your child’s nurse.
- From outside the hospital, call the toll-free Family Interpreting Line 1-866-583-1527. Tell the interpreter the name or extension you need.

What about lodging and transportation?

Parents and adult caregivers are welcome to stay in the room with your child during the night. Siblings and guests under 18 years of age are not permitted to stay overnight at the hospital. If other family members need to stay close by, our Guest Services can help you find housing. You can contact Guest Services at 206-987-9330 or 866-987-9330. We also have shower facilities available.

For more information about services, visit www.seattlechildrens.org/visitors/.

Can I bring food?

You are welcome to bring food from home. Please let the SDR team know if your child has any special food needs that the hospital should be aware of when preparing their meals. There is also a family refrigerator located in day room on the unit to store perishable food items as well as a stove and oven that is accessible to all families with children on the unit. Non-perishable food items can be kept in your child’s room.

What should we expect when we return home?

Return to School

After going home (discharge) from the hospital your child can return to school as soon as they are able to tolerate sitting in their wheelchair for the length of a school day. They can begin school-based therapy as soon as they return to school. There are no restrictions in activity in school therapy.

Community therapy

If your child is receiving community therapy, they can start within 1 week after they return home. There are no restrictions in activity. Depending on your child’s goals you may need to work on activities such as transfers, positioning, and and/or standing.

Medical follow-up

Your child will be seen by Neurosurgery, Rehabilitation Medicine and Physical/Occupational Therapy after surgery to check your child’s progress and make any recommendations. Our schedulers at Seattle Children’s will call you to make the following appointments:

After surgery	2 to 3 weeks	3 months	6 months	1 year
Neurosurgery	X	X		
OT/PT			X	X
Rehabilitation	X	X	X	X

Seattle Children’s offers interpreter services for Deaf, hard of hearing or non-English speaking patients, family members and legal representatives free of charge. Seattle Children’s will make this information available in alternate formats upon request. Call the Family Resource Center at 206-987-2201.

This handout has been reviewed by clinical staff at Seattle Children’s. However, your child’s needs are unique. Before you act or rely upon this information, please talk with your child’s healthcare provider.

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