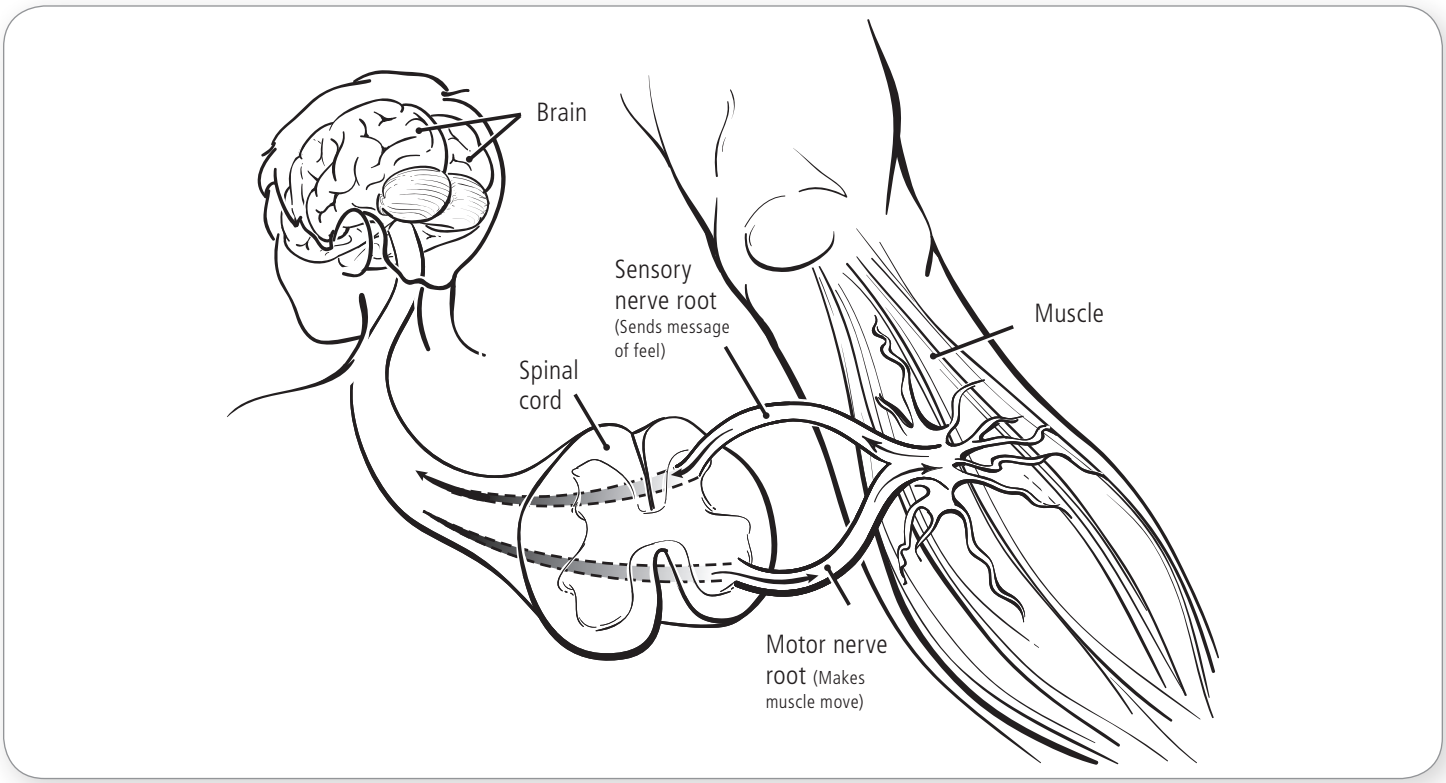
Let's Talk About...

Selective Dorsal Rhizotomy (SDR)



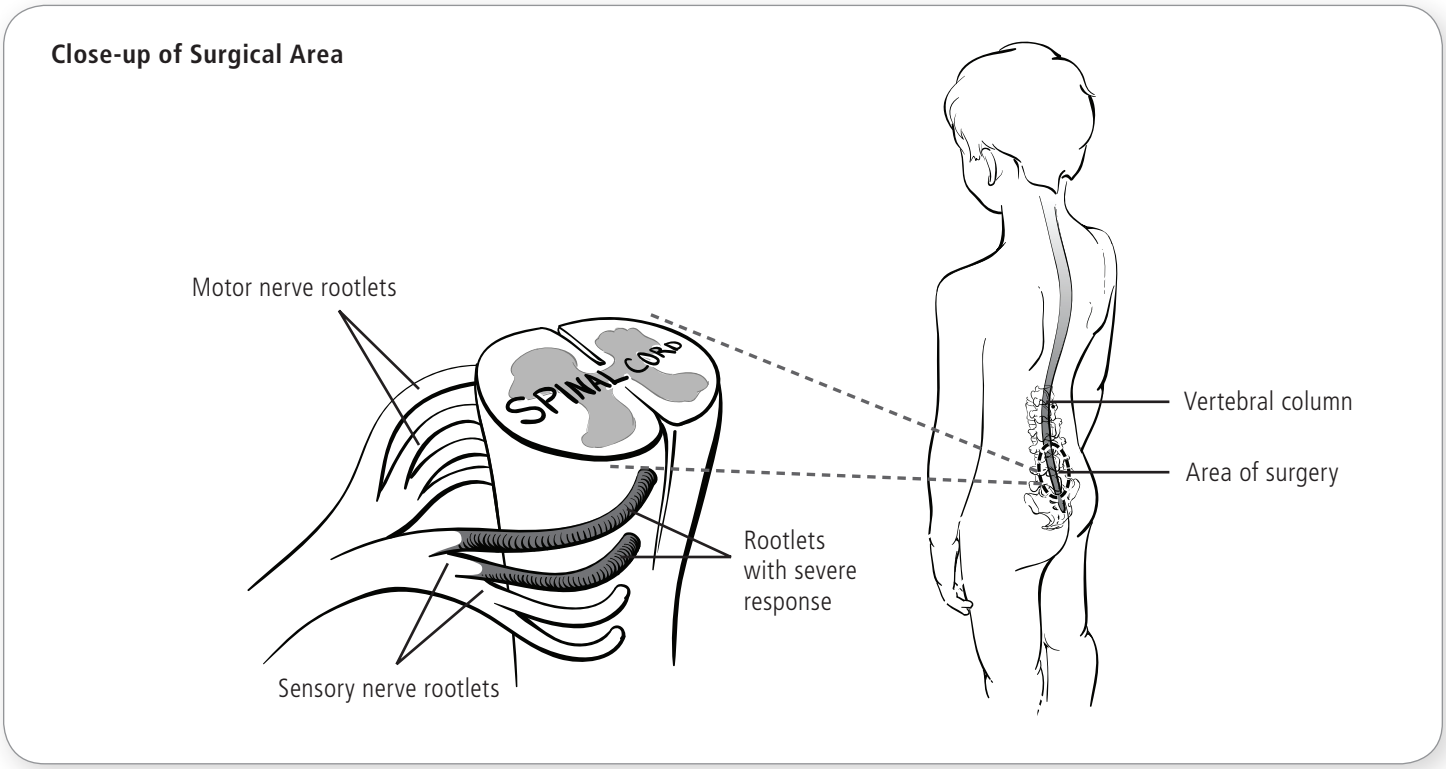
Selective dorsal rhizotomy (SDR) is a surgery of the nerves in the spinal cord. The surgeon snips tiny parts of nerves that are sending sensory signal to the brain. This surgery is done to reduce tone or spasticity.

Our brain communicates with the body through our nerves. The bottom of the brain is connected to the spinal cord. Nerves branch out from the spinal cord and go to every part of the body. There are two kinds of nerves that connect to our muscles. Sensory (SEN-sor-ee) nerves send messages to the brain about what we can sense. Motor nerves control our muscles.

When you touch something hot, sensory nerves tell your brain that your finger feels heat. The brain tells the muscles to pull the finger away from the heat through the motor nerves. The muscles pull tight (contract) until your finger is away from the heat. Sensory nerves then tell the brain that the finger doesn't feel heat anymore. The brain, through the motor nerves, tells the muscles to relax.

What is spasticity?

When a child has spasticity input from the sensory nerves is too high, the brain does not get the message to tell the muscle to relax. As a result, the child has spasticity (spaz-TISS-it-ee). Spasticity is usually increased muscle tone, or stiff muscles. It is caused by an injury to the brain or spinal cord, by a stroke, or by cerebral palsy. Spasticity can cause awkward movements, exaggerated reflexes, and discomfort.



Can my child benefit from SDR?

SDR is not effective for everyone with abnormal muscle tone. The doctors and therapists will carefully examine your child. They will meet as a team to decide if SDR will help.

Therapy is essential to the success of SDR. Because of this, doctors and therapists will only recommend a child who is highly motivated during physical therapy.

When the muscles relax after SDR, muscle weakness may be revealed. It is very important that a child have relatively strong leg muscles to begin with. Children with spastic diplegic cerebral palsy usually benefit the most from this procedure. In spastic diplegic cerebral palsy, there is greater stiffness in the legs than in the arms. This procedure will also help children who do not have many fixed contractures. Fixed contractures are muscles that are permanently shortened and prevent movement.

Children from the ages of four through seven most often have SDR, but many older children and adults have been helped by the procedure. Children with other forms of abnormal muscle tone, such as dystonia (dis-TONE-ee-ah) or athetosis (ath-eh-TOE-sis) are not usually helped by this procedure.

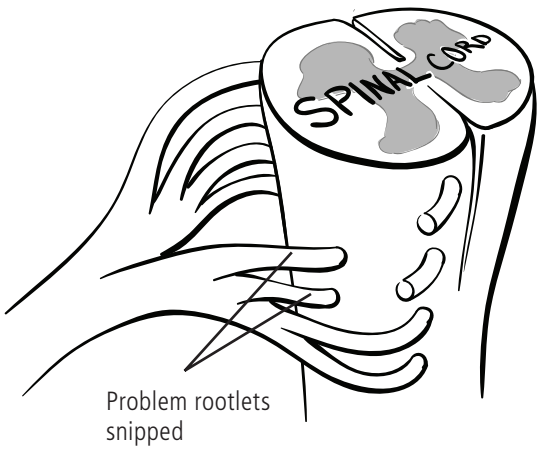
What happens during surgery?

An IV, a tiny tube, will be placed in a vein. Your child will be given medicine through the IV to help her sleep. Sensors, used during the procedure to measure muscle response, will be attached to the muscles in her legs. The surgeon will make a small opening in the lower part of your child's back to see the nerve roots in the spinal column. He will divide the nerves into their smaller rootlets. Motor nerve rootlets are separated from sensory nerve rootlets. Each sensory nerve rootlet is stimulated with a tiny electrical current. The doctors watch to see how the muscles respond. They rank the responses of the muscles from mild to severe. If the response is severe, they may choose to snip that sensory nerve rootlet.

What are the risks?

As with any surgery, there is a small chance of bleeding or infection. There can also be risks involved with anesthesia. Your child may have some numb areas in her legs. This usually goes away, but small areas of numbness may last. Some changes in bladder control may occur at first, but usually go away within a few days. Talk to your doctor if you have any concerns.

Results of Surgery



What happens after surgery?

Your child will have to stay flat on her back for the first two or three days to allow the surgery site to heal. She will rest and be given pain medicine. She may need to have her ankles in a cast for a few weeks. This will help lessen the shortening and hardening of muscles (contractures.)

The physical therapist may start exercising your child's legs as early as the first day after surgery. By the third day, the head of her bed may be raised slightly.

On the fourth day, your child will start physical and occupational therapy. Her therapy will focus on stretching and strengthening her legs. Goals will be set for your child to reach.

Sometimes, a child's feet are sensitive after surgery. The therapist will help your child get used to the feeling of touch in her feet. Sometimes a therapist may play with shaving cream on your child's feet, or introduce other sensations during therapy. Therapy treatment will continue for a about a week, up to a few weeks, until your child is strong enough to go home.

What is the long-term outlook?

Studies have shown that the spasticity a child had before surgery does not return in later years. Reducing spasticity may reveal some motor weakness, but SDR does not cause the weakness. Physical therapy after surgery usually improves your child's muscle strength. Children often return to walking within a few weeks of therapy, and the quality of their walking usually improves. Some children even have improved upper body function, thinking skills, and speech as overall spasticity decreases.

What if I have questions?

If you have questions after your child's SDR, ask your doctor or nurses during your hospital stay. Call the numbers on your child's discharge papers if you have questions when you return home.

SDR is not the only option to help treat spasticity. Treatment is tailored to each child. There are many things your doctors and specialists can try. Be sure to discuss all of your options with your child's care team.