SELECTIVE DORSAL RHIZOTOMY

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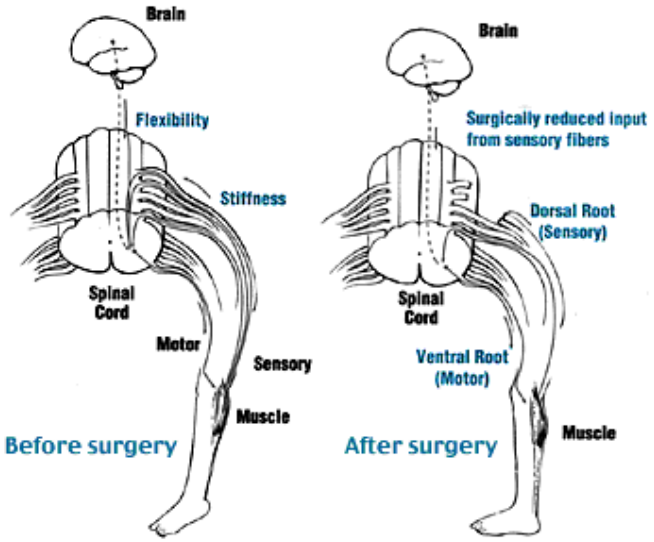

What is an SDR?

- It's a complex permanent procedure which involves cutting nerve rootlets in the spinal canal that are sending abnormal signals to the muscles.
- This reduces spasticity in the lower limbs to improve quality of life and mobility
- It's often used when less invasive treatments such as braces, and oral medications aren't effective

Surgery procedure

The surgeon would remove one layer of bone on the posterior side of the lower spine* and proceed to test and cut nerve rootlets in the lower spinal canal that are sending abnormal signals to the muscles causing the spasticity.

After surgery the patient would need to lie flat for 3 days to protect the spine – the expected hospital stay would be 4-5 days.

* Removing only one layer reduces the post operative pain and increases recovery time opposed to removing multiple layers of bone. Patients can restart physiotherapy sooner to maintain muscle mass and length and functional ability

Who is eligible

- Children aged 3-9 would benefit most from SDR
- The child must be able to take at least a few steps on their own
- They must have good trunk strength or support in their core and lower back muscles
- The child needs to be able to co-operate in physiotherapy for weeks after the surgery
- Absence of chronic conditions which may contraindicate anaesthesia
- Good family and social support
- GMFCS II to III

Who is NOT eligible

- hip dislocation
- fixed muscle tendon contractures
- mixed type CP with dystonia, athetosis or ataxia
- scoliosis (curvature of spine)
- acquired brain or spinal injury, such as meningitis, congenital brain infection, head trauma or hydrocephalus
- genetic or progressive neuro-degenerative conditions

Benefits

The Procedure is irreversible so it's very important that the benefits outweigh the risks and patients only undergo the procedure if suitable.

The benefits of the procedure are as follows:

- Reduces spasticity
- Improves function and Mobility
- Increases independence
- Increases range of motion
- Improves positioning
- Reduction in the number of painful spasms
- Improves ease of care
- Improves sleep pattern
- Improves energy levels and physical endurance

Post-Surgery Risks

Complications are rare but can include

- Temporary altered sensation
- Permanent numbness
- Constipation
- Urinary retention
- Back pain
- Leg weakness

SDR can highlight weaknesses elsewhere, such as compensation from nonspastic muscles

Post-Surgery Input

- Post-surgery management requires a large multidisciplinary team
- Medical management is used to improve function by managing spasticity but also treats multiple co-morbidities such as visual and hearing impairment, constipation, epilepsy, gastro-oesophageal reflux and learning and behavioural difficulties
- Physiotherapists, Occupational Therapists and Orthotists assess a patient for AFO's to help them improve motor control
- Physiotherapy management is extremely important after surgery. During the first 6 weeks the therapist should continue to assess risk and advise on mobility aids and equipment. Between 3-6 months following surgery the physio will provide progressive rehabilitation including muscle control, graded resistance training, fitness and endurance.

Preoperative Physiotherapy Management

- Used to prepare the child and family for what will be expected after surgery
- Help to develop a relationship with the therapist
- Strengthening leg and trunk muscles
- Focusing on the antigravity muscles that may be weaker post op.

Post-operative Physiotherapy Management

- Early mobilisation to maintain and improve the range of motion while ensuring the lower limbs are positioned correctly
- Facilitation of normal movement including gait training
- Postural control
- Balance and functional activities
- To develop alignment and control of the pelvis, trunk and head
- Increase range of movement in the lower limbs
- Strengthen the trunk, hips, knees and feet
- Improving balance and co-ordination
- Developing new functional skills

Resources

- https://www.hopkinsmedicine.org/health/conditions-and-diseases/cerebral-palsy/selective-dorsal-rhizotomy-for-cerebral-palsy-what-you-need-to-know
- https://alderhey.nhs.uk/services/selective-dorsal-rhizotomy
- https://www.physiopedia.com/Selective_Dorsal_Rhizotomy_in_Cerebral_Palsy-_Selection_and_Physiotherapeutic_Management
- https://www.msn-neuro.com/services/selective-dorsal-rhizotomy/docs/Selective-Dorsal-Rhizotomy-info-for-physiotherapists-170905.pdf
- https://www.stlouischildrens.org/conditions-treatments/center-for-cerebral-palsy-spasticity/about-selective-dorsal-rhizotomy
- https://www.scope.org.uk/advice-and-support/selective-dorsal-rhizotomy/n
- https://www.manchesterneurophysio.co.uk/paediatrics/conditions-we-treat/selective-dorsal-rhizotomy/post-op-sdr-surgery-physiotherapy-treatment.php