

### References and sources of further information:

There are NICE (National Institute for Health and Care Excellence) guidelines available for spasticity in children and young people

National Institute for Health and Clinical Excellence. Selective dorsal rhizotomy for spasticity in cerebral palsy. Interventional procedure guidance 373, December 2010

[www.scope.org.uk](http://www.scope.org.uk)

### Hospitals offering SDR :

Many children still travel to the USA for this surgery but more hospitals are now offering SDR surgery in the UK:

- Frenchay Hospital, Bristol
- Robert Jones and Agnes Hunt Hospital, Oswestry
- Leeds General Infirmary
- Great Ormond Street Hospital, London
- Alder Hey Hospital, Liverpool
- Nottingham University Hospital

If you are considering SDR, please look at the relevant hospital website.



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Association of Paediatric Chartered Physiotherapists

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# Selective Dorsal Rhizotomy

A guide for parents



## **Cerebral Palsy and Spasticity**

Cerebral palsy occurs when a child sustains a brain injury very early on in life. Although the brain injury is not progressive, its effects change continuously in the growing child. The brain injury causes damage to some of the bundles of nerve fibres in the brain, particularly the motor nerves that control leg movement. These nerve fibres run down from the brain to the spinal cord and control contraction of the limb muscles. If these fibres are damaged, the limb muscles contract too much and become stiff. This stiffness, or spasticity, interferes with children's ability to move and learn to walk. Spasticity also causes pain, and over time, shortening of muscles and tendons, causing deformities. This is why permanently cutting some of these fibres reduces stiffness and spasticity. This is the basis of selective dorsal rhizotomy (SDR).

## **What is Selective Dorsal Rhizotomy?**

Although this operation has been performed since the early 1900's, the current technique was introduced in 1978. The procedure is performed under general anaesthesia and takes around 4-5 hours. This involves surgery in the lower back and between 50% and 75% of the nerve fibres are cut during the operation. The aim of surgery is to alleviate the symptoms but **will not cure cerebral palsy**.

## **Is my child suitable for SDR?**

Most commonly children between four and eleven years of age, with a diagnosis of bilateral lower limb involvement (spastic diplegia) can be considered for SDR. Children suitable for SDR need to demonstrate adequate muscle strength in the legs and trunk. Their ability to support their full weight on their feet, to hold their posture against gravity and to make appropriate movements to crawl or walk is evaluated.

Some causes of cerebral palsy are not suitable for SDR. Children who have a history of meningitis, congenital infection, hydrocephalus or head trauma do not do well with SDR. Similarly, children with severe muscle rigidity, low muscle tone or dystonia or severe cerebral palsy involving the whole body may not be suitable. In children with severe scoliosis, SDR is not generally recommended as it may cause the existing spinal curvature to deteriorate.

## **How will I find out whether SDR is the best option for my child?**

Most children are referred by a Paediatrician, Orthopaedic Surgeon or a Neurologist in consultation with the child's physiotherapist. Depending on the outcome of these discussions your child may then be referred to a specialist SDR clinic, but there are other medical or surgical options that may be explored first. Any possible side effects will also be discussed at this stage.

## **Funding**

Generally this surgery is not routinely offered on the NHS, private funding is normally explored. If your child has the operation, inpatient physiotherapy may continue for several weeks dependent on your child's needs and your local protocols. After discharge the aim of the physiotherapy programme is: to continue to develop strength in the lower limbs, trunk and pelvis; increase range of movement in the legs; and to develop and improve walking.

The ongoing local physiotherapy needs to be discussed and agreed pre-operatively. It should be noted that rehabilitation after surgery is over and above what can usually be funded by the NHS and the cost of private rehabilitation should be included in the planning stage. Regular post-operative physiotherapy is essential to obtain the best results after SDR and suitable children and families need to be motivated and show that they are able to cooperate with therapy in an intensive way for at least two years.

## **What can I expect SDR to achieve?**

SDR unmasks the leg weakness found in cerebral palsy. Although reduction in spasticity is immediate after the procedure, it takes time for the strength in the legs to return. Some children who had previously been walking may not be able to walk initially after the operation. Through the physiotherapy programme, the child will learn to use his or her body in a new way. Strength and ability will gradually improve although it may take up to two years for the full benefit of the procedure to become apparent.

There is now enough evidence to demonstrate that SDR can be associated with long term benefits. These are not only related to reduction in spasticity, but also related to improved movement and gait and improved quality of life for both children and their families.