SELECTIVE DORSAL RHIZOTOMY (SDR)

What is SDR?

Selective dorsal rhizotomy (SDR) is an operation used to improve spasticity (muscle stiffness) in cerebral palsy.

The Selective Dorsal Rhizotomy service at The Portland Hospital is the only fully private service of its kind in Europe. Led by Mr Kristian Aquilina, Paediatric Neurosurgeon at Great Ormond Hospital for Children and The Portland Hospital in London the specialist multidisciplinary team also consists of a consultant paediatrician specialising in neurodisability, a neurophysiologist, specialist physiotherapists and a paediatric orthopaedic surgeon.

This procedure is offered to children with cerebral palsy and spastic diplegia to improve their ability to walk more normally.

Who is suitable for SDR?

Spastic diplegia is a condition that affects around 25% of children born with cerebral palsy. Children with this condition find it very difficult to walk due to a constant stiffness (spasticity) in both lower limbs. SDR may be suitable for: Children aged between 4 and 12 with a diagnosis of spastic diplegia;

- Children whose MRI scans show no significant injury to areas of the brain involved in posture or coordination;
- Children with adequate muscle strength, as assessed by a detailed physiotherapy evaluation;

What assessment/screening is required to decide if SDR is suitable?

Appropriate selection for SDR is key to its success and at The Portland Hospital we carry out a comprehensive assessment to ensure that this procedure is right for your child. We will ask you to fill in a screening referral form including details of your child’s age, type of cerebral palsy, and other information which will help the team to assess your child’s suitability. Our skilled multidisciplinary team includes a paediatric neurosurgeon, a consultant paediatrician specialising in neurodisability and a number of physiotherapists specialised in children’s movement disorders. The team also includes a neurophysiologist and a paediatric orthopaedic surgeon.

If you wish to make an appointment to discuss SDR for your child, we would like to see some of your child’s medical records, including a recent physiotherapy report, an MRI scan of the brain and a recent hip x-ray, ideally before your appointment. We will then carry out a full assessment and will have the
opportunity to discuss whether SDR is the best treatment option at the time, and also what the expected risks and benefits of the procedure are likely to be. The child’s post-operative rehabilitation needs are also discussed.

Are there any alternatives to SDR?

SDR is a permanent procedure and cannot be reversed. The management of spasticity in cerebral palsy is complex and therefore if it is felt that your child is not suitable for SDR other options will be considered. These may include botulinum toxin injections in conjunction with physiotherapy, baclofen pump insertion or orthopaedic surgery.

What happens if my child is considered a good candidate for SDR?

If the decision to proceed with SDR is taken we will work with you to plan a date for your child’s surgery. This date will be tailored to your family’s needs to ensure that treatment is offered at a time to suit you.

A few weeks before the operation you will need to come in for a full assessment of your child’s functioning including GMFM-66, video of walking, muscle strength and range of movement measurements. You will come in the day before the operation and you will have an opportunity to become fully acquainted with the hospital and team.

What happens in the SDR operation?

Selective Dorsal Rhizotomy (SDR) is a surgical procedure that involves dividing some of the nerves that contribute to the spasticity in the lower limbs. The procedure is performed under general anaesthesia and takes around four hours. The technique used involves a single-level spinal opening and is the same as that developed in St Louis in the USA. The nerve roots to the legs are identified as they enter the lower end of the spinal cord. The roots are systematically tested using intraoperative neurophysiology. Those nerve roots that contribute most to the spasticity are divided. The objective of the procedure is to divide 60 to 70% of the sensory nerve roots. The procedure is performed under an operating microscope. At the end of the procedure, the membrane covering the spinal cord is closed again; the skin is closed with absorbable sutures.

Are there any risks associated with SDR?

Complications after SDR are very rare but you need to be aware of them. Complications can include infection, leak of cerebrospinal fluid from the wound, development of a fluid collection below the skin, severe leg weakness and incontinence. As all the nerve roots are carefully checked by stimulating them during the operation and monitoring their response, severe weakness and incontinence are very rare complications. In addition, there are risks associated with general anaesthesia but these, as well as the risk of long-term spinal deformity, are very rare.

What are the post-operative and follow up procedures- both acute and ongoing?

Physiotherapy will be an integral part of the build-up to surgery and particularly after the surgery in order to derive the maximal benefit from the procedure. Following the procedure your child will stay in hospital for 6 days and an intensive inpatient physiotherapy programme is commenced. This will involve strengthening muscles of the trunk and legs and increasing range of movement. After discharge we ask you to stay locally for two weeks so that your child can continue their physiotherapy programme for 14 days on an outpatient basis. At The Portland Hospital we will work with your community team to
develop a pre-surgery strengthening programme and to ensure that post-surgical rehabilitation is supported. If needed we are able to provide this in house on an inpatient and outpatient basis. Follow-up physiotherapy is essential and should be provided at least three times a week in the first 6 months post-operatively. We will plan to remain in touch with you after the surgery and we will organise to re-assess your child at least at 3, 6 and 12 months. We would like to follow our patients through beyond this, in order to continue to monitor progress and to provide advice and support as appropriate.

What can be expected post-SDR?

SDR is not a cure for cerebral palsy but can reduce spasticity immediately. The full benefit of the procedure can take up to 2 years to become apparent. SDR can unmask weakness and the physiotherapy programme is therefore essential. By its nature SDR is irreversible; however SDR has been shown to have long term benefits including a reduction in spasticity and improved movement, gait and independence. This ultimately leads to an improved quality of life for both the child and their family. One study has shown that the benefits obtained one year after SDR were maintained twenty years after surgery.

Why choose The Portland Hospital’s Selective Dorsal Rhizotomy Programme?

The Selective Dorsal Rhizotomy service at The Portland Hospital is the only fully private service of its kind in Europe. The multidisciplinary team aim to provide timely and personal support to the child with spasticity and cerebral palsy, whether it involves selective dorsal rhizotomy or any other treatment for spasticity. Their ultimate objective is to ensure the child reaches his or her maximal potential.

The SDR service at the Portland Hospital is fully compliant with the NICE guidelines on the management of spasticity in children with cerebral palsy, published in July 2012. Further information on these guidelines may be found at: [http://www.nice.org.uk/guidance/cg145/chapter/guidance](http://www.nice.org.uk/guidance/cg145/chapter/guidance)

The SDR team is led by:

- Mr Kristian Aquilina - Consultant Paediatric Neurosurgeon
- Dr Sunil Pullerperuma – Consultant Paediatric Neurologist
- Margaret Mayston – Clinical Specialist Paediatric Physiotherapist
- Michelle Mooney – Clinical Specialist Paediatric Physiotherapist

We also have a number of Orthopaedic Surgeons who are available to support the clinic and provide surgical opinion as needed.

Where can I stay if I do not live locally?

More detailed information on local hotels can be found here. We also work with Graham Properties, a local serviced apartment provider who have over 100 apartments in close proximity to The Portland Hospital. Their apartments vary in price from £650 a week to £1,200 a week and can be booked directly on 020 7637 4782 or steve@grahamproperties.co.uk. Please quote The Portland Hospital if booking.

Booking SDR at The Portland Hospital

Should you wish your child to be considered for SDR at The Portland Hospital and for details of prices please contact SDRportland@hcahealthcare.co.uk or call our dedicated team on 020 7390 6553. If you wish to discuss your child’s suitability with a member of the team before arranging an appointment please call the same number.