Postoperative Rehabilitation after Selective Dorsal Rhizotomy (SDR)

Patricia Ryan
MA, OTR/L, BCP
Disclosure

• I have no actual or potential conflict of interest in relation to this program/presentation.
Post SDR Day 0-1

- Bed rest: Patient should lie flat and maintain neutral alignment of their torso and hips. Use rolls to maintain alignment if indicated
- Pain relievers: to manage pain control
- Respiratory care prn
Post SDR Day 2 thru discharge

Initiate OT & PT services:

- Patient & family education begins
- Reassess tone, ROM, strength & functional mobility
- Initiate log rolling in bed, assess sitting balance, assess standing balance and transfer OOB to chair will be implemented
- Ambulation may be initiated pending findings
Post SDR Day 2 thru discharge

Sensory Management: possible changes in sensation (resolves approx. 1 wk. post-op)

• If hypersensitive to touch or c/o tingling, itching, or strange sensations: tactile input to the foot should be firm and try keeping shoes/socks on
Reduction in upper-extremity tone after lumbar selective dorsal rhizotomy in children with spastic cerebral palsy.


• Author information

• Abstract

• OBJECT:
Randomized clinical trials have established that lumbar selective dorsal rhizotomy (SDR) reduces lower-extremity tone and improves functional outcome in children with spastic cerebral palsy. Significant data exist to support a secondary effect on upper-extremity function in patients with upper-extremity spasticity. The effects of SDR on upper-extremity tone, however, are not well characterized. In this report, the authors sought to assess changes in upper-extremity tone in individual muscle groups after SDR and tried to determine if these changes could be predicted preoperatively.

• METHODS:
The authors retrospectively reviewed 42 children who underwent SDR at Columbia University Medical Center/Morgan Stanley Children’s Hospital of NewYork-Presbyterian between 2005 and 2011. Twenty-five had upper-extremity spasticity. All underwent pre- and postoperative examination for measuring tone (Modified Ashworth Scale) and assessing functional outcome. Follow-up examinations with therapists were performed at least once at a minimum of 2 months postoperatively (mean 15 months).

• RESULTS:
In the upper extremities, 23 (92%) of 25 patients had improvements of at least 1 Ashworth point in 2 or more independent motor groups on the Modified Ashworth Scale, and 12 (71%) of 17 families surveyed reported increases in motor control or spontaneous movement. The mean Modified Ashworth Scale scores for all upper-extremity muscle groups demonstrated an improvement from 1.34 to 1.22 (p < 0.001). Patients with a mean preoperative upper-extremity tone of 1.25-1.75 were most likely to benefit from reduction in tone (p = 0.0019). Proximal and pronator muscle groups were most likely to demonstrate reduced tone.

• CONCLUSIONS:
In addition to improvements in lower-extremity tone and function, SDR has demonstrable effects on upper extremities. Greater than 90% of our patients with elevated upper-extremity tone demonstrated reduction in tone in at least 2 muscle groups postoperatively. Patients with a mean Modified Ashworth Scale upper-extremity score of 1.25-1.75 may encounter the greatest reduction in upper-extremity tone.
Post Surgical Precautions

- No passive rotation, lateral flexion or forward flexion of the trunk
- Avoid lumbar hyperextension
- No vigorous hamstring stretching secondary to back pain/discomfort
- Allow movement within the child’s pain tolerance
Goals of Treatment
During first 1-3 weeks

Strengthening:

• Trunk and proximal LE muscle groups particularly hip extensors and hip abductors
• Quads, hamstrings, ankle plantar flexors and dorsiflexors
• Proximal UE muscle groups that are used for weight bearing with an assistive device
Goals of Treatment
During first 1-3 weeks

Functional Mobility:
• Optimize quality of movement, promoting isolated movements rather than utilizing old compensatory movement patterns
• Small graded weight shifts should be promoted for all mobility activities: including rolling, UE weight bearing, quadruped with creeping, knee walking and walking
Goals of Treatment
During first 1-3 weeks

Positioning and Mobility:
• Sitting with proper alignment should be promoted at all times
• Ambulation with assistive devices can be used
• Activities through quadruped, tall-kneel, half kneel & eventually standing can be utilized
• Overall goal is to maintain a high level of quality movement & motor control
Goals of Treatment
During first 1-3 weeks

Equipment Considerations:
• Reassess patient’s seating system: make sure it provides adequate trunk support while body strengthening occurs
• Reassess LE orthotics: may need to modify or provide new ones
• Assess the need for assistive walking devices: may provide one as needed
Goals of Treatment
For up to one year post operatively

- PROM may begin 2 weeks after surgery
- More aggressive trunk strengthening can be started including abdominal oblique muscles
- Continue LE and UE strengthening
- Promote functional activities such as swimming, dancing, horseback riding and gymnastics
Goals of Treatment
For up to one year post operatively

- Continue to assess seating and positioning
- Continue to assess orthotic needs
- Continue to assess ambulation with or without an assistive device
Rehabilitation Guidelines Post SDR

• First month therapy is recommended 5x per week in an inpatient rehab, home or school based therapy setting (likely a combination)
• Intensive therapy may continue 3-5x per week for an additional 6 months
• After 6 months post SDR, therapy is recommended 3x per week
Thank You