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Commentary: Pre- and Postoperative Gait Analysis and Video for Selective Dorsal Rhizotomy in Spastic Diplegia: 2-Dimensional Operative Video

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Although it is not a threatening condition, spasticity will disturb the quality of life for patients, especially in childhood. In this surgical video, the authors provide a systematic procedure that explains step by step selective dorsal rhizotomy (SDR) for patients with leg spasticity.[1]

Patient evaluation before surgery is described by the authors briefly, including the patient selection characteristics. The walking condition of the patient before surgery is also shown in this video with spastic gait, which can affect the gait balance of the patient.[1]

The authors use the Gross Motor Function Classification System (GMFCS) scale categorized into 5 different levels. The patient in the video walking using a hand-held mobility device explains that the patient had Level III of GMFCS scale.[1,2]

SDR was first introduced by Foerster in 1913 for children with cerebral palsy and having diplegia; the milestone began with more selective root cutting by Gros and Fasano. SDR is performed by cutting 30%-50% of dorsal roots along L1 and S1 either by monitoring the clinical response of muscle by electrical stimulation at the dorsal roots or by using electromyograph during intraoperative monitoring. This procedure has been established as an option in treating lower extremity spasticity in children with cerebral palsy, especially if other treatment options do not respond as expected.[3–5]

Recent reports on randomized-controlled studies indicate its long-term effectiveness. A less invasive technique and intraoperative neurophysiologic assessment are important in SDR to maximize clinical benefits and minimize complications.[6]

Recently, 2 methods have been developed. Based on the approach, wide laminectomy from Th12 to S1-2 (Peacock's technique) offers a good visual of the dorsal roots, optimal resection, and optimal stimulation to the dorsal roots. Easy separation of S2-3 from other dorsal roots eliminates the need of cutting them incidentally. These dorsal roots function mainly for bowel, urinary, and sexual. But, this also has some disadvantages associated with it such as postsurgery pain and risk of spinal deformity. Other method is limited laminotomy through L1 and L2 (Park's technique), which could eliminate the risk of spinal deformity, but differentiation among the dorsal roots will be more challenging. An operative microscope and intraoperative monitoring will be mandatory.[4]

The authors provide a good surgical video explaining midline dural incision, arachnoid dissection, ventral fascicle division, stimulation, identification of roots that had abnormal firing, and root cut. Authors also provide excision of the filum terminale to prevent any future tethering.[1]

Intraoperative neuromonitoring, which shows an abnormal firing pattern/most robust response, at the same level as done by the authors, can improve the success of surgery.[7]

The authors present a series of patients in their institution who show improvement in velocity and cadence after SDR, which is being followed up until 4 mo after surgery. The patients can walk better without using a hand-held mobility device and without any complication.[1]

Patient selection is very important. Evaluation should be done comprehensively by a medical team member in order to have the best outcome for management of cerebral palsy children with spasticity.[7]

Disclosure

The authors have no personal, financial, or institutional interest in any of the drugs, materials, or devices described in this article.

REFERENCES

1. Archer J, Yaacoub AP, Angulo-Parker F, et al. Pre- and postoperative gait analysis and video for selective dorsal rhizotomy in spastic diplegia: 2-dimensional operative video. *Oper Neurosurg*. published online ahead of print: December 27, 2018 (doi: 10.1093/ons/opy392).
2. Morris C, Bartlett D. Gross motor function classification system: impact and utility. *Dev Med Child Neurol*. 2004;46(1):60-65.
3. Leonard J, Graham K. Treatment of motor disorders in cerebral palsy with botulinum neurotoxin. In: Jancovic J, ed. *Botulinum Toxin: Therapeutic Clinical Practice and Science*. 1st ed. Philadelphia, PA: Saunders; 2009.
4. Rhizotomy TT. *Encyclopedia of Movement Disorders*. 1st ed. Cambridge, MA: Academic Press; 2010.
5. Sindou M, Georgoulis G. Keyhole interlaminar dorsal rhizotomy for spastic diplegia in cerebral palsy. *Acta Neurochir*. 2015;157(7):1187-1196.
6. Taira T, Hori T. Selective peripheral neurotomy and selective dorsal rhizotomy. *Brain Nerve*. 2009;60(12):1427-1436.
7. Turner RP. Neurophysiologic intraoperative monitoring during selective dorsal rhizotomy. *J Clin Neurophysiol*. 2009;26(2):82-84.

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