

Introduction:

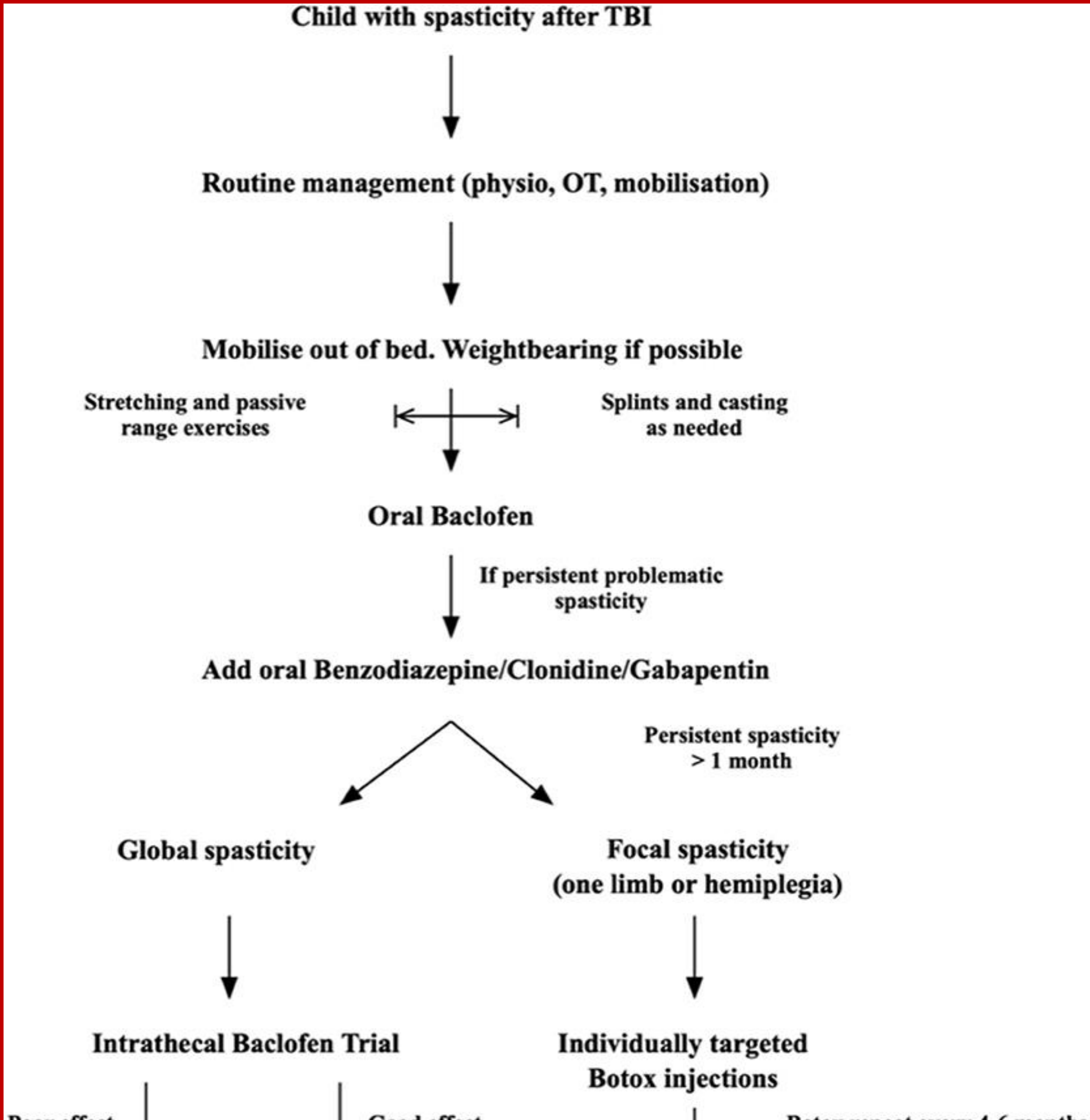
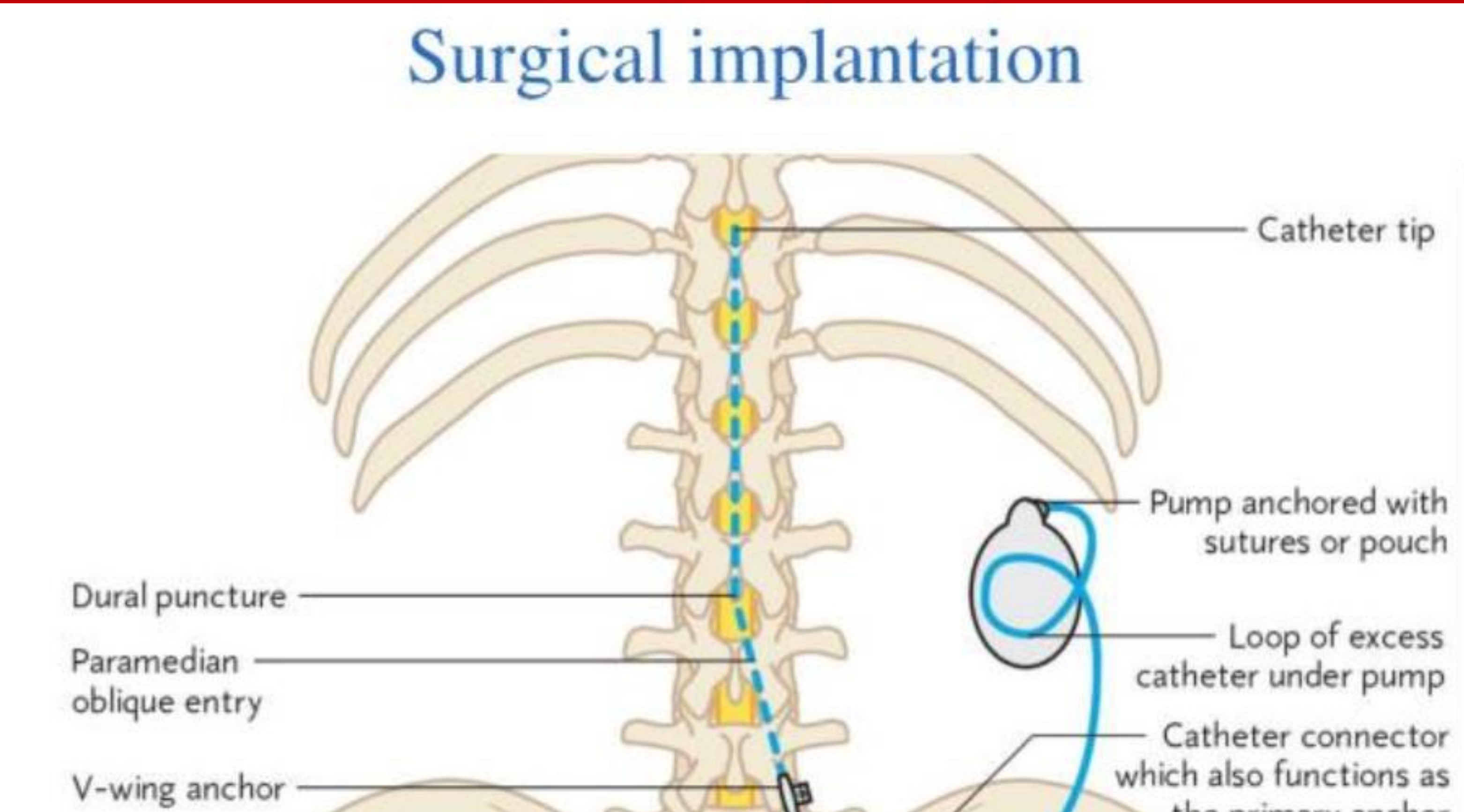
Traumatic brain injury (TBI) is the leading cause of death and disability in children¹. The Support Program for Assembly of a Database for Spasticity Management (SPASM) defines spasticity as a disorder of “sensory-motor control” that is caused by disruption to the upper motor neuron system². Spasticity is a complication in approximately 38% of children who experience a TBI³. Spasticity post TBI can be attributed to injury of various parts of the brain including the motor cortex, prefrontal cortex, or anterior funiculus of the spinal cord³. Determining which patients will develop post-TBI spasticity can be challenging. Patients with a high Modified Ashworth Score early in their clinical course are more at risk of developing spasticity³. Not all spasticity requires treatment; when spasticity impairs function and/or contributes to further medical complications, treatment is warranted.

Case Summary:

This is a case study on a 9-year-old girl who sustained a TBI in 2020 due to an unhelmeted motorcycle accident. Permission was obtained from the patient’s primary caretaker. The patient presented to the emergency room with a glasgow coma score of 3T. She was found to have multifocal intraparenchymal hemorrhages in the bilateral cerebral hemispheres and demonstrated signs of quadriplegia. Approximately 14 days into her clinical course, she began to develop spasticity of the upper extremities. Phenol and botox injections were performed to the upper extremities approximately 2 weeks after presentation of spasticity. Unfortunately, several weeks after the pt was noted to have worsening spasticity with ongoing upper extremity pain and oral Baclofen was initiated. Oral Baclofen provided some improvement but ultimately a

**MULTIMODAL APPROACH TO MANAGING
HYPERTONIA AND SPASTICITY IN A PEDIATRIC
PATIENT WITH SEVERE TRAUMATIC BRAIN INJURY:
A CASE REPORT**

University of Wisconsin Hospitals & Clinics
Christina Henderson, D.O.



Discussion:

Baclofen’s GABA activity allows it to act via an inhibitory mechanism in the central nervous system to limit spasticity symptoms. Approximately 25-30% of spinal cord injury patients fail to respond to oral baclofen, therefore direct administration to the site of action can improve symptoms⁴. Given that intrathecal baclofen reduces spasticity in 92% of patients, it was an appropriate choice for this patient⁵. The patient was initiated at a low dose of daily baclofen intrathecally which has since been increased to over 9x her initial dosing. Additionally, the patient requires oral baclofen for day-to-day functioning. While botox and phenol injections were appropriate treatments initially, they provided minimal improvement with spasticity. Since implantation of her baclofen pump in 2020, the patient’s mother reports significant improvement in her functioning. She continues to require physical therapy and wheelchair assistance but reports improvement in contractures. More research is needed in this field to determine other modalities to treat TBI related spasticity as well as chronic pain related to contractures.