PREPONTINE PLACEMENT OF AN INTRATHECAL BACLOFEN PUMP CATHETER FOR TREATMENT OF DYSTONIA

Thomas J Gianaris, Nicolas W Villelli, Albert E Lee
No disclosures
Cerebral palsy with medically refractory spasticity and dystonia is a condition that often benefits from intrathecal baclofen pump therapy to treat these symptoms.

Baclofen acts via its agonistic effect on gamma-aminobutyric acid (GABA) B receptors to reduce pain and muscle spasms.

22-year-old female with a past medical history of cerebral palsy and prior spinal fusion for scoliotic deformity with Harrington rod constructs from T1 to pelvis presented with baclofen pump failure and was unable to undergo placement of a new lumbar baclofen catheter due to an infection in her lower back precluding safe and efficacious catheter placement.

It was decided the patient would benefit from intrathecal baclofen administered into the prepontine space as a means to avoid a lumbar catheter and thus bypass this prior infection site.
Methods

- After scalp incision, a burr hole was created and a MINOP® Modular Neuroendoscopy was navigated into this burrhole through parenchyma.
- The third ventricle was entered using stealth guidance and a forceps-type instrument was used through the MINOP to create the third ventriculostomy.
- The MINOP was retracted into the lateral ventricle and then through electrocautery, a pial opening was created just anterior to the burr hole craniotomy to pass the baclofen proximal catheter.
- Slowly, with instrumentation and maneuvering of the MINOP, an endoscopic third ventriculostomy was performed and the catheter was manipulated into the 3rd third ventricle and through our ETV into the prepontine space.
- The distal catheter was then connected to a new pump placed in an abdominal subfascial pocket.
Results

- Placement in the preponine cistern was confirmed by a post-operative CT head.
- By the time the dose was increased to 200 mcg/day, the patient was extubated, as she no longer showed signs of autonomic dysfunction and the spasticity in her upper extremities was significantly reduced.
- By post-operative day 5, the patient was at a dose of 400.28 mcg/day and was discharged home with minimal upper and lower extremity spasticity (Modified Ashworth scores of 1 in uppers and 3 in lowers compared to 4 throughout preoperatively).
Prior reports have described intraventricular baclofen catheters implanted into the third ventricle instead of the lateral ventricles so that the baclofen can more directly drain to the subarachnoid space and distribute over the cerebral convexities where it produces its effects via the inhibition of the excessively stimulated premotor cortex and supplementary motor cortex. Prepontine baclofen catheter insertion may provide superior benefits to lateral and third ventricular baclofen catheter placement. There could be a lower occlusion rate due to the reduced interference of choroid plexus that may occlude the catheter.

Prepontine proximal shunt catheters have been placed previously through a similar approach and have demonstrated safety and efficacy. 

A baclofen pump catheter has successfully been placed into the prepontine space with visible clinical improvement in a patient suffering from dystonia.

Placing a baclofen catheter into the prepontine space may circumvent some of the difficulties associated with placing said catheter into the thecal sac, including occlusion and cases with heavy scarring, infection, or bony overgrowth.

Further trials are necessary to fully identify the efficacy of this technique on a larger scale and to apply it more globally.