#41706 Pre-pontine Baclofen Catheter Placement: A Technical Note and Case Illustration

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Intrathecal baclofen (ITB) is commonly used for medically refractory spasticity and dystonia. There are times when intraventricular baclofen (IVB) is used as a last resort for patients who cannot tolerate or cannot receive intrathecal baclofen through a traditional route. IVB has been described with recommended placement in the third ventricle. It’s been suggested that IVB may have a lower revision rate than ITB. We propose a technical variation and case illustration of a pre-pontine catheter placement through an endoscopic third ventriculostomy.

Our patient is 21 year old male presented with cerebral palsy, medically refractory spasticity, and severe autonomic storming. He underwent initial procedure with placement of intrathecal catheter into the pre-pontine cistern with good results for a short period of time, however experienced migration and on revision a ventricular catheter was placed.

This technique could provide an alternative and superior therapeutic option to traditional catheter placement for intraventricular baclofen. Theoretical benefits include increased baclofen distribution and concentration along the cortical surface and decreased risk of catheter migration.
Introduction

Intraventricular baclofen (IVB) is an alternative therapy to intrathecal baclofen (ITB) therapy for intractable dystonia or spasticity [1-3]. This is especially beneficial for patients with frequent ITB pump revisions from catheter, pump and wound complications and anatomical anomalies which make ITB therapy not feasible [4-5].

IVB catheters are placed in the 3rd ventricle. By surpassing the foramen of Monroe, the baclofen solution flows more freely through the cerebral aqueduct into the 4th ventricle and out into the intrathecal space to bathe the cerebral hemispheres, which is thought to be the region of efficacy for treating dystonia [6]. However, the success rate of this procedure is variable in patients. Therefore, there is a need of an alternative therapy for those with refractory dystonia and autonomic storming after IVB treatment.

We present a patient with medically refractory cerebral palsy with severe autonomic dysfunction syndrome (“autonomic storm”) who underwent multiple revision of spinal ITB and IVB pumps who was failing treatment of pre-pontine baclofen therapy. Patient presented with increased autonomic storming and dystonia likely from baclofen pump catheter migration into 3rd ventricle observed on CT scan.

In this report, to prevent future migration of the catheter, we replaced the pump catheter with a ventricular shunt catheter to deliver the baclofen.
Methods

• An endoscopic 3rd ventriculostomy was performed using a ventricular shunt catheter and endoscope. With video guidance, the entry into pre-pontine space was visualized and endoscope was pulled out while leaving the shunt catheter in the pre-pontine space.

• The shunt catheter was anastomosed with baclofen pump catheter using a metal straight connector. Suture was then tied to secure the catheters to the straight connector.
• A right angle connector was then used to secure the catheter tubing in place.

• To verify the patency of the shunt tubing, fluid was withdrawn from the baclofen pump using a syringe to observe CSF fluid.
Results

- Post-operative CT-scan showed the shunt located in the pre-pontine cistern. Patient’s muscle tone and autonomic storming improved during the post-operative hospital course. One-month following operation, patient continued to do better with minimal autonomic storming.

- However, after 2 months, the patient had increased autonomic storming and spasticity, so the system was revised.

- Revision showed the shunt catheter was loosened from the metal straight connector and a pocket of CSF fluid was leaking.

- Shunt catheter was reconnected and sealed with two 2-0 silk ties. Confirmation of patency was done by drawing CSF fluid from the baclofen pump
• There is a need for a more robust technique to deliver baclofen into the intrathecal space in patients who fail to improve from intraventricular baclofen (IVB) therapy for treatment of medically refractory spasticity and autonomic storming.

• Placing the catheter into the pre-pontine space should theoretically be better for treating dystonia and autonomic storming, since it provides a closer delivery of baclofen to the cerebral hemispheres.

• Shunt catheter insertion into the pre-pontine space may provide a more robust system than baclofen pump catheter with reduced migration. However, as was observed in our patient, anastomoses with the baclofen pump catheter can loosen and cause fluid leak.
Pre-pontine baclofen delivery via shunt catheter provides an alternative therapy for medically refractory dystonia and autonomic storming.

Using a shunt catheter to deliver baclofen into the pre-pontine space as opposed to baclofen pump catheter may reduce migration of the catheter from the pre-pontine space into the 3rd ventricle. Thus, it is expected to reduce catheter placement revision frequency.

Anastomoses of the shunt catheter to the baclofen pump catheter should be sealed tightly to prevent disconnection and baclofen leak.
References


