Externalization of IT Pump System During Removals to Prevent Baclofen Withdrawal

Poster#432941
Roy S Hwang MD1, Vishad Sukul MD1,2, Claire Collison MS1, Julia Prusik MPH1,2, Julie G. Pilitsis MD, PhD1, 2

1Department of Neurosurgery, Albany Medical Center, Albany NY
2Department of Neuroscience and Experimental Therapeutics, Albany Medical College, Albany NY
Disclosures

» Dr. Julie Pilitsis
   – Grant Support–Medtronic, Boston Scientific, Abbott, Jazz Pharmaceuticals, NIH
   – Consultant–Boston Scientific, Abbott, Medtronic, Jazz, Nevro
   – Medical Advisor–Centauri, Karuna

» Dr Vishad Sukul
   – Consultant-Medtronic

» Dr Roy Hwang, Claire Collison
   – None
Intrathecal (IT) Baclofen is beneficial for the treatment of spasticity from spinal cord injury and cerebral palsy. If the pump becomes infected, this necessitates removal of the system. Baclofen withdrawal is difficult to manage and life-threatening. It can readily occur after IT pump removal. There is no consistency between dosing and severity of withdrawal, and many case reports detail full baclofen withdrawal at dosages of only 260mcg/day. In patients on a stable IT baclofen dose for a prolonged period of time, we offer a technique to wean IT therapy after removal.
Methods

- We retrospectively reviewed 147 consecutive IT pump implantations for removal due to infection. In our case series, we report our preliminary outcomes from patients that underwent the procedure.

- Our technique is to remove the infected pump in a standard removal procedure. However instead of discarding the IT pump we reconnect the pump after cleaning with betadine to an intrathecal catheter. We use a new or existing lumbar drain based on extent of the infection (Figures 1-2). We then administer therapy externally during our weaning protocol of 20-50% decrease in dose per day. Until the minimal dose is achieved for the IT pump.
Results

» Over 4 years we implanted or replaced 147 consecutive baclofen pumps. Of these implants 7 patients had infections requiring removal. We utilized our technique in 5 of 7 patients. Our mean IT dose at time of explant was 400.5 +/- 285.3 mcg/day.

» We titrated the dose by 20-50% per day based on clinical response over a mean of 6.2 +/- 1.3 days. We removed the catheter at bedside once weaning was complete. No adverse events were noted, and no patients showed any signs of withdrawal. There was also minimal spasticity increases while optimizing oral treatment.
## Results

### Table 1: Population demographics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>49.8 +/- 18.1</td>
</tr>
<tr>
<td>Gender</td>
<td>Male: 4, Female: 1</td>
</tr>
<tr>
<td>Etiology of spasticity</td>
<td>Cerebral palsy: 2, Spinal cord injury: 3</td>
</tr>
<tr>
<td>Years of implantation</td>
<td>12 +/- 3.5 yrs</td>
</tr>
<tr>
<td>Mean preoperative dosage</td>
<td>400.5 +/- 285.3</td>
</tr>
</tbody>
</table>
## Results

### Table 2: Patient characteristics

<table>
<thead>
<tr>
<th>Patient</th>
<th>Age</th>
<th>Gender</th>
<th>Indications for Pump</th>
<th>Baclofen pump dosage prior to removal (mcg/d)</th>
<th>Days to Wean</th>
<th>Post-op Oral Dose</th>
<th>Culture Results</th>
<th>Adverse Effects</th>
<th>Complications</th>
<th>Est Years Implanted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient 1</td>
<td>26</td>
<td>M</td>
<td>Quadriplegic spasticity Spinal cord injury</td>
<td>550</td>
<td>5</td>
<td>10mg qid (40 mg)</td>
<td>Propionibacterium acnes</td>
<td>0</td>
<td>None</td>
<td>15</td>
</tr>
<tr>
<td>Patient 2</td>
<td>56</td>
<td>M</td>
<td>Spinal cord injury, spasticity Diplegic spasticity</td>
<td>255</td>
<td>5</td>
<td>10mg tid (30 mg)</td>
<td>Pseudomonas aeruginosa</td>
<td>0</td>
<td>None</td>
<td>7</td>
</tr>
<tr>
<td>Patient 3</td>
<td>51</td>
<td>F</td>
<td>Diplegic spasticity Spinal cord injury</td>
<td>820</td>
<td>7</td>
<td>10mg tid (30 mg)</td>
<td>Staphylococcus epidermidis</td>
<td>0</td>
<td>None</td>
<td>13</td>
</tr>
<tr>
<td>Patient 4</td>
<td>75</td>
<td>M</td>
<td>Spinal cord injury, spasticity</td>
<td>97.8</td>
<td>8</td>
<td>25mg tid (75 mg)</td>
<td>Staphylococcus aureus, MRSA</td>
<td>0</td>
<td>None</td>
<td>15</td>
</tr>
<tr>
<td>Patient 5</td>
<td>41</td>
<td>M</td>
<td>Spinal cord injury, spasticity</td>
<td>280</td>
<td>6</td>
<td>20mg qid (80 mg)</td>
<td>Pseudomonas aeruginosa</td>
<td>0</td>
<td>None</td>
<td>10</td>
</tr>
</tbody>
</table>
Results

Figure 1: Original IT catheter connected to externalized pump tubing via straight connector, and externalized IT catheter and Pump, lumbar incision visible
Results

» Figure 2. Custom abdominal binder pouch. Two abdominal binders are stapled together to create a pocket where the pump can be safely kept near the patient minimizing risk of disconnection.
Discussion

» We demonstrate our procedure for removal of an IT pump to an externalized system using the removed device.

» Here we show preliminary evidence that an externalized IT pump is an effective means of weaning IT baclofen.

» This treatment strategy warrants further investigation, but appears to be a safe and effective.