Guillain-Barre Syndrome is a postinfectious polyneuropathy involving motor, sensory, and autonomic nerves. Most patients have a demyelinating neuropathy, but primarily axonal degeneration is documented in some cases.\(^{10}\) Ascending paralysis is the most typical symptom with weakness beginning in the feet and hands and migrating towards the trunk. Reports of regional anesthesia in Guillain-Barre patients are few. Anecdotal evidence suggests that epidural anesthesia may activate the onset or recrudescence of Guillain-Barre Syndrome.\(^{10}\) In some instances, new neurologic deficits may persist weeks after the performance of neuraxial anesthetic. However, there are also case reports that have described successful use of epidural anesthesia, even spinal anesthesia, in parturients with GBS without worsening of pre-existing deficits.\(^{10}\)

To date there are no studies to determine the risk for the development of neuropathy in neurologically compromised patients who receive a regional anesthetic. However, if one extrapolates from a non-impaired population, it may be likely there is a minimal likelihood of development of a post-regional block neuropathy.\(^{10}\)

There continue to be questions regarding the mechanism of progressive deficits after regional anesthesia in patients with pre-existing deficits. It has been proposed that local anesthetics may be neurotoxic to some degree and the toxicity may be proportional to the duration of the nerve exposure. Regional anesthesia is a safe and effective way to provide perioperative pain relief.\(^{10}\) Extrapolating from very limited clinical and limited experimental evidence, pre-existing neuropathy does not represent an absolute contraindication for regional anesthesia, but should trigger a thorough risk benefit analysis. In some patients adaptation of the regional anesthetic technique (e.g., reduction of local anesthetic dose) may be prudent. A ten year old boy who developed Guillain Barré Syndrome at age six presented for bilateral Achilles tendon lengthening, peroneus brevis lengthening, and calcaneal osteotomy, for the treatment of bilateral equino-plantar-valgus foot deformities. The orthopedic surgeon requested placement of epidural catheter for postoperative analgesia as severe postoperative pain was anticipated.

The concern of performing a neuraxial technique for postoperative analgesia arose among the anesthesia team since there had been previous reports of worsening of neurologic status after epidural use in patients with Guillain-Barre. Neuromuscular control of the lower extremities never recovered after initial presentation except for minimal function of the proximal lower extremities, which was critical for his mobility currently when using a walker. We deemed use of local anesthetic for a neuraxial block to be of too high risk because of the theoretical risk of permanently worsening his neurologic status. With the patient’s input along with parents and surgeon, we sought to determine viable options to control postoperative pain from this extensive procedure. We agreed that in the context of even very small chance for neurotoxicity, we would prefer to minimize further progression of weakness of the proximal lower extremities muscles, the function of which were critical for his maintenance of mobility at the time. Therefore, we planned placement of bilateral popliteal nerve catheters with a low concentration of local anesthetic infusion preparatory to facilitate pain management in the postoperative period. After general endotracheal anesthesia was induced, the popliteal fossa were prepped and draped bilaterally and, under ultrasound guidance, bilateral popliteal nerve catheters were placed. Into each catheter, ten ml of 0.125\% bupivacaine were injected prior to surgical incision followed by a continuous infusion of 0.1\% bupivacaine at 3 ml/hr. Additional analgesia was supplemented with patient controlled analgesia using hydromorphone as well as gabapentin and acetaminophen. For two days the local anesthetic infusion continued and the catheters removed on postoperative day three. During the time of the he rated his pain scores on a 0–10 numeric rating score between 0 through 5, which was acceptable to him and allowed him to participate in physical therapy. He was discharged on day postoperative day five. At three months follow up visit, his foot position was greatly improved and he had maintained baseline neuro muscular function.

Regional techniques in pediatric surgical patients with a history of Guillain-Barre syndrome and residual weakness present a dilemma. To circumvent these concerns we present the analgesic technique provided by peripheral nerve catheters as a viable alternative to neuraxial anesthesia in this unique situation. By administration of local anesthetic along a peripheral nerve we are avoiding any potential deleterious effects that these drugs might have in the neuraxis. In the presented case, this approach provided successful postoperative analgesia which allowed the patient to engage in physical therapy with improved mechanics seen at six month followup and no progression of his Guillain-Barre.