Lumbar Plexus Catheter Placement: A Novel Approach for Managing a 20 year-old patient With Aicardi-Goutieres Syndrome Undergoing Femoral Neck Resection

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Diagnostic Criteria:
- Early-onset encephalopathy with psychomotor delay
- Spastic quadriplegia
- Microcephaly
- Calcifications from the basal ganglia extending into periventricular white matter

Presentation
- 20 year old male with a history of Aicardi Goutieres Syndrome presenting for left femoral neck resection.
- 8 previous hip surgeries, all under General Anesthesia

Past Medical History
- Chronic pain, severe obstructive sleep apnea, asthma
- Multiple hip surgeries, Nissen fundoplication, baclofen pump placement

Previous Anesthetic History
- No intraoperative complications, however postoperative course complicated by intractable pain after 3 of his hip surgeries

Social History
- Fulltime care provided at home; severe developmental delay

Medications
- Albuterol, baclofen, buprofen, loratadine, medical marijuana, morphine, hydromorphone, lanoprazole, budenoside, lidocaine patch, and travoprost

Anesthetic Considerations
- Risk of postoperative pulmonary complications, given chronic encephalopathy, spastic quadriplegia, seizures, and OSA
- Baclofen pump precluded neuraxial technique
- Coordination with Acute Pain Service Team to place a lumbar plexus catheter the day before the surgery to minimize opioid requirements intraoperatively and postoperatively

Operative Day 1:
- Lumbar plexus catheter placed using anatomical landmarks and stimulation of quadriceps femoris muscle
- Patient tolerated procedure well, and 0.2% Ropivacaine was infused overnight at 5cc/hour

Operative Day 2:
- Anesthesia induced using 100mg Propofol, 75mcg Fentanyl, and 40mg Rocuronium
- Dexamethasone infusion was maintained during the surgery
- 0.2% Ropivacaine solution was continued at 7cc/hour
- No additional opioids were required
- Patient emerged from general anesthesia without any complications and was extubated in the OR

Postoperative Course
- FLACC scores were recorded by nurses and remained 1-2 throughout postoperative period
- Mom reported significantly improved pain control in comparison to previous surgeries
- Patient was discharged on postoperative Day 2

Discussion
- The balance between adequate analgesia and minimizing depth of anesthesia and respiratory depression is key
- Spastic quadriplegia is associated with recurrent orthopedic procedures and chronic pain
- Chronic encephalopathy with brainstem involvement routinely leads to severe obstructive sleep apnea
- Autonomic hyperreflexia further highlights the importance of adequate analgesia
- For patients with severe developmental delay and chronic pain that require lower extremity orthopedic procedures, placement of a lumbar plexus catheter for perioperative analgesia is a viable option

References