Introduction: The use of continuous intrathecal baclofen delivery systems is becoming popular for the management of spasticity, particularly in children. It is likely that anesthesiologists will encounter these patients with increasing frequency, often for complex surgery where post-operative pain management may be difficult. We present a case report of the successful use of an epidural catheter for post-operative analgesia in a patient with an intrathecal catheter and a subcutaneous pump to deliver baclofen.

Case report: A 42kg, 18-year-old female patient presented to our hospital for rotational osteotomy of the right femur. Her past medical history was significant for prematurity and cerebral palsy with normal cognitive function. An intrathecal catheter and subcutaneous pump to deliver baclofen had been placed two years previously to control her spasticity. The patient had a rotational osteotomy performed on the opposite extremity a few months earlier. Her postoperative course at that time was complicated by significant nausea and vomiting ascribed to the intravenous (IV) opiates used for pain management. She was concerned about the recurrence of these complications and requested alternative pain management, avoiding IV opiates if at all possible. We were faced with a patient who would benefit from a regional procedure and a dilemma concerning what the most appropriate approach would be. We considered a continuous catheter technique essential to provide for post-operative analgesia using either a neuraxial or peripheral nerve technique. Our pediatric nursing staff is only familiar with epidural catheters and so we felt that this was the most prudent technique we could offer this patient. We were concerned about performing this procedure in a patient with a preexisting intrathecal catheter, but in view of her previous history, we decided to proceed with an epidural catheter for pain management.

General examination of the patient was remarkable for severe contractures in her legs as well as significant spasticity in her upper limbs. Examination of the spine revealed a moderate degree of scoliosis without any evidence of local sepsis. A well-healed scar was present from L2-L5. Review of her spinal x-rays showed the tip of the intrathecal catheter to be positioned at the T5 level with a dural entry noted at L4. We concluded that low thoracic epidural placement was feasible and, following a full discussion regarding possible complications with the patient and her parents, agreed to attempt epidural placement. The patient understood that we would make a single attempt and that we would not persist if we encountered difficulty with either localizing the epidural space or threading the catheter.

We elected to place the epidural catheter under general anesthesia as her spasticity and contractures precluded her from tolerating the positioning required for catheter placement. General anesthesia was induced in the operating room after the placement of routine monitors. An 18G epidural catheter was placed in the midline via a 19G Tuohy needle at the T12-L1 interspace about two centimeters above the scar from her intrathecal catheter placement. Loss of resistance with saline was noted at 3cm, and 8cm of catheter was placed in the epidural space. No blood or CSF was aspirated and an epinephrine containing test dose was negative for intravascular injection or subarachnoid block.

An initial dose of 10ml of 0.25% bupivacaine with 1:200,000 epinephrine was followed by repeat doses of 5ml given every hour during the procedure. There was no hemodynamic response to surgery and her intraoperative course was uneventful. The patient was wakened at the end of the procedure and transported to the recovery room where she was noted to be pain-free. An epidural infusion of 0.05% bupivacaine with 5mcg/ml hydromorphone was commenced and continued for 24 hours. She had unremarkable postoperative course, was extremely satisfied with her postoperative analgesia and was transitioned to oral non-opioid analgesia on the 2nd postoperative day.

Discussion: Anesthesiologists at our institution have been reluctant to place epidural catheters in patients with implanted intrathecal catheters for fear of damaging the intrathecal catheter or introducing an infection. We believe that there is merit to these concerns, but if certain precautions are undertaken, the potential for problems
can be lessened. A case report exists describing successful use of epidural labor analgesia in an adult patient with an intrathecal morphine pump [1]. Another case report describes successful epidural blood patch in a 3-year old child with a CSF leak following intrathecal catheter placement [2]. The merits and considerations of epidural catheter placement in the presence of an intrathecal catheter and subcutaneous pump to deliver baclofen have not been described before.

Epidural abscess formation, while rare, would be of concern in the presence of an intrathecal catheter. The quoted incidence of epidural abscess formation following epidural catheterization is 0.6-0.77 per 1000 catheter days [3]. It is not known what the incidence might be in the presence of an intrathecal catheter. The rate of infection following intrathecal catheter placement is highest in the first two months [4], so it would be advisable to avoid epidural placement if surgery occurs within two months of intrathecal catheter placement. Furthermore, the patient should have no sign of local or systemic infection.

Clinical and technical data should suggest that the implanted pump and catheter are properly functioning at the time of consideration for an operation requiring epidural analgesia. Any concerns in this regard should trigger a neurosurgical evaluation prior to the epidural catheter placement. Standard review of the patient’s medical history, including comorbidities as well as a physical examination and laboratory review should be completed as for any patient receiving epidural analgesia. The risks and benefits of this technique should be individually weighed and fully explained to the patient and family.

Prior to placing an epidural catheter, careful review of the intrathecal catheter placement should be undertaken. Surgeons usually use a paramedian approach for catheter placement [5], therefore it is important to identify both the side as well as the spinal level at which the intrathecal catheter was inserted. The position of the catheter tip should also be identified. It is imperative that x-rays of the patient’s spine be reviewed to localize the catheter. Placing the epidural catheter one or two interspaces away from the dural entry level of the intrathecal catheter should minimize the risk of damage to the intrathecal catheter. If a paramedian approach is used for epidural placement, we would suggest a contralateral approach to that of the intrathecal catheter. We believe there should be little risk of damaging the intrathecal catheter with the epidural needle, provided these precautions are undertaken.

Epidural catheterization should be performed in a strictly aseptic manner, including the use of a hat, mask, sterile gloves and gown [3]. An anesthesiologist skilled in epidural placement should perform the procedure. Multiple needle insertions increase the risk of epidural hematoma formation [3] and, as a hematoma may become the focus for bacterial colonization and subsequent infection, needle passes should be limited. The epidural catheter should be removed as soon as the patient has successfully transitioned to oral analgesia. There are no reports of epidural abscess formation in patients with short-term epidural analgesia (≤2 days) [3], so it seems reasonable to remove the epidural catheter within this time period.

**Conclusion:** We present a case of successful use of an epidural catheter for postoperative analgesia in a patient with an intrathecal catheter and subcutaneous pump to deliver baclofen. We believe that the presence of an intrathecal catheter and subcutaneous pump to deliver baclofen does not preclude the use of epidural analgesia for an operative procedure. Postoperative epidural analgesia in this setting merits specific considerations and careful patient selection. Further evaluation of the safety of this technique is warranted.
References: