

## INTRODUCTION

Pain in pediatric cancer patients is prevalent, but difficult to control. Multimodal regimens are often required, but still prove inadequate in many patients. Repetitive treatments and surgeries confound acute and chronic pain making it difficult to manage. They can also lead to side effects that complicate pain management. We successfully treated a patient with acute on chronic pain related to recurrent osteosarcoma using regional anesthesia and multimodal opioid regimen, after failed attempts at epidural catheter placement.

## CASE DESCRIPTION

- 16 year old male with chronic pain, right tibia osteosarcoma s/p limb sparing tumor resection, secondary ALL.
- Presenting for right AKA for local recurrent disease.
- Plan for GETA + post-induction lumbar epidural.
- Using loss of resistance to saline with a Tuohy needle, epidural space was accessed successfully, however, the epidural catheter was unable to thread.
- Different catheters were attempted, midline & paramedian approaches, at L2/3 & L3/4 spaces.
- Epidural placement was aborted and patient received gluteal sciatic and lumbar plexus nerve block catheters.
- Surgical procedure continued as planned. Patient emerged from anesthesia uneventfully and the PNBs were managed post-operatively by the pediatric pain service.
- Post-op, adequate pain control was achieved with a 0.2% ropivacaine infusion at 5 ml/hr through each catheter, in addition to oxycodone, acetaminophen, & gabapentin.
- The indwelling PNB catheters were removed on POD 5, and patient was maintained on oral pain medication regimen.

## DISCUSSION

Our patient had a history of multiple diagnostic and therapeutic LPs. The literature supports that epidural fibrosis can be caused by hematoma, infection, surgical trauma or IT contrast media<sup>1</sup>. The invasion of fibrous connective tissue into a post-procedural hematoma can cause epidural fibrosis potentially making future catheter placement at that level challenging. While epidural fibrosis has not classically been reported in oncology patients as a result of repetitive LPs, the potential exists. Even in the absence of fibrosis, the epidural space is filled with fatty tissue, fibrous connections, nerve roots and blood vessels which may be responsible for unilateral epidural analgesia, entrapment, and coiling of epidural catheters<sup>5</sup>. Although not performed in this case, epidurography would have been of great diagnostic value.

### Benefits of Epidurography

- Confirm correct epidural needle / catheter placement
- Prediction of dermatomal distribution of analgesic block (cephalad, caudal, unilateral spread)
- Diagnosis of epidural or disc abnormalities (canal stenosis, disc prolapse, epidural fibrosis)

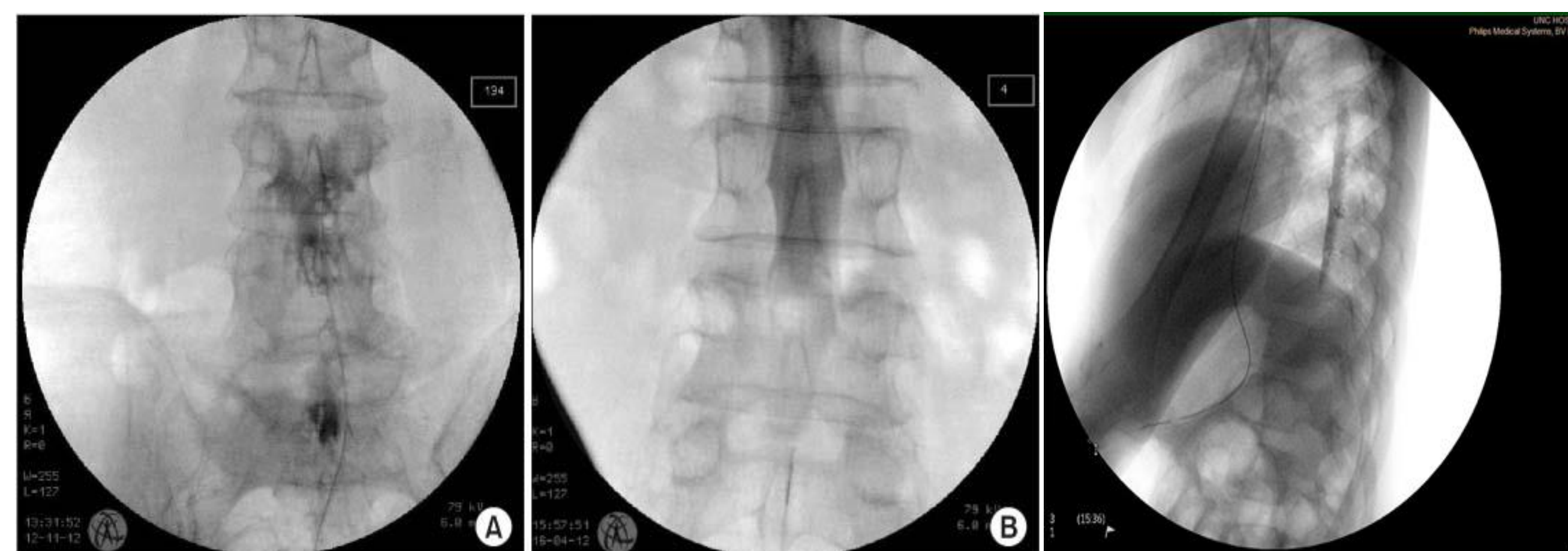
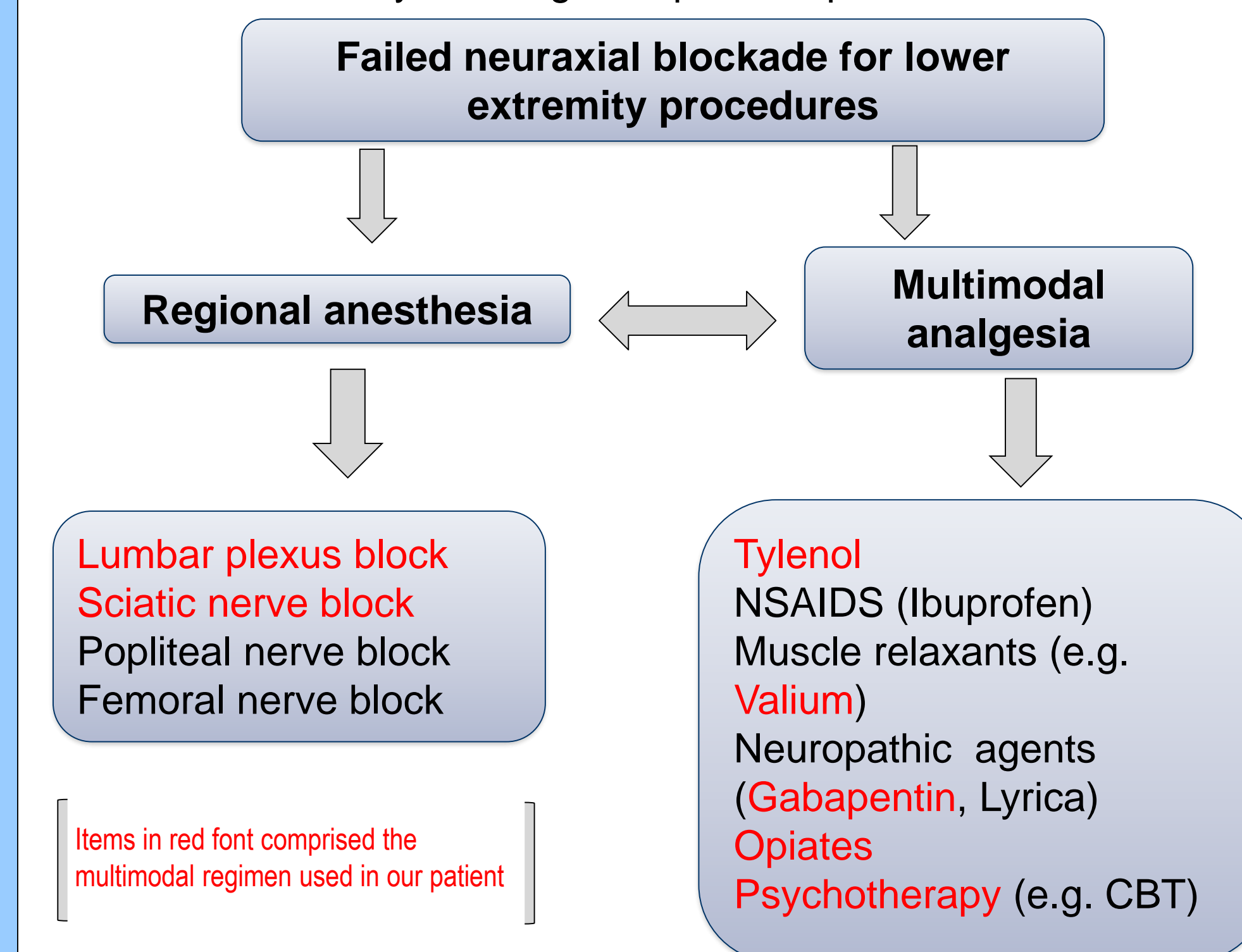


Figure 1: (A) In the presence of epidural fibrosis, contrast media spreads asymmetrically with multiple small sized filling defects. The margin of dye spread is irregular.<sup>4</sup> (B) After dural puncture, contrast media spreads symmetrically without filling defects.<sup>4</sup> (C) Lateral view of contrast media spreading in the epidural space without filling defects.

- It is important to recognize when the risks from repetitive neuraxial blockade attempts outweigh the benefits, especially in a patient who is under general anesthesia and unable to report paresthesias<sup>2,3</sup>.
- Therefore, the decision in our case to pursue another route for pain management was prudent, and multimodal alternative therapies for pain management ought to be anticipated in populations such as these.
- Few studies have documented predictors of difficult spinal or epidural block. Most of these factors involve patient characteristics such as age, BMI & position. None have explored the challenges of being unable to thread a catheter after successfully entering the epidural space.



## REFERENCES

- Manchikanti et. al. Spinal Endoscopy and Lysis of Epidural Adhesions in the Management of Chronic Low Back Pain. *Pain Physician* 2001;4(3):240-265
- Bromage et. al. Paraplegia following intracord injection during attempted epidural anesthesia under general anesthesia. *Reg Anesth Pain Med* 1998;23:104-107
- Krane et. al. The safety of epidurals placed during general anesthesia. *Reg Anesth Pain Med* 1998;23(5):433
- Moon and Kim. Percutaneous Epidural Neuroplasty. *J Korean Orthop Assoc.* 2015; 50(3): 215-224
- Khan, T. Epidurography. *Anaesthesia, Pain and Intensive Care*, 2017:21 (4)
- Ruzman T et al. Factors Associated with Difficult Neuraxial Blockade. *Local and Regional Anesthesia*, Volume 2014:7, pp 47-52