Postoperative pain management for a patient undergoing radical excision of tibial sarcoma with a free fibular graft from the contralateral side.

**Moderators:** Harshad Gurnaney, MBBS, MPH, Arjunan Ganesh, MBBS.

**Institution:** Children’s Hospital of Philadelphia, Philadelphia, Pennsylvania.

**Objectives:**

i. Discuss the options for postoperative pain management for an extensive orthopedic procedure involving the below knee area.
ii. Identify the issues related to postoperative pain management in an oncology patient.
iii. Understand the concerns for regional anesthetic techniques in thrombocytopenic patients. Compare the risks of a neuraxial block to a peripheral nerve block.
iv. Discuss the sciatic perineural catheter placement techniques in different locations. Describe the intraoperative and postoperative management of the sciatic perineural catheters.
v. Discuss the follow up plan for patients with peripheral nerve catheters.

**Case history:**

An eleven-year-old presents to the preoperative clinic for assessment prior to a radical excision of her left tibial sarcoma with a free fibular graft from the contralateral side. She has been diagnosed a year ago with Ewings sarcoma of the right tibia. The surgical plan is to perform a wide resection of the left tibial sarcoma to just below the knee joint followed by a free fibular graft from the contralateral leg for reconstruction of her right tibia. She has undergone 3 cycles of chemotherapy and had radiation to the site of the sarcoma. There is no evidence of metastatic disease. She has severe pain in her leg and is currently on oral oxycontin 10 mg bid and oxycodone 5 -7.5 mg every 4 hours as needed. The child and family are very anxious about her pain management postoperatively.
Questions:

What are your concerns with a major orthopedic procedure in the lower extremity? What are special concerns with performing a free fibular graft for this procedure? What risks would you discuss with the family at this stage? What are the options for postoperative pain management in this patient? If you use an epidural technique at what level would you place the epidural catheter tip? What medications would you administer via the epidural catheter?

Physical examination and preoperative laboratory work:

The patient and her family are keen on having a neuraxial blocks. They do mention that she has some paresthesia in both feet, which was attributed by the oncology team to vincristine induced neuropathy. The surgical team has ordered baseline CBC, PT, PTT and INR, electrolytes for her.

Questions:

Are there any other tests you would add? What risks would you discuss with the family with regard to the regional block? How would the preexisting paresthesia affect your treatment plan and risk discussion? What is the mechanism of vincristine induced neuropathy?

Preoperative laboratory work:

Her CBC is notable for a platelet count of 58,000 and a normal PTT, PT/INR. All electrolytes are within normal levels. The surgical team would like to proceed with the surgery and have platelets available in case of excessive intraoperative or postoperative bleeding.

Questions:

How would this platelet count affect the choice of placing a continuous epidural block? Would you place an epidural catheter in this patient? If so, what are the possible risks of epidural hematoma with a platelet count < 80,000? What is the lowest platelet count at which you would be comfortable in placing an epidural? Would you be comfortable in placing an epidural after transfusing platelets to this patient?

(1)

Preoperative discussion:

The parents are not comfortable with the risks of epidural placement in the setting of thrombocytopenia. The family wants to explore other options for postoperative pain management.
Questions:

What other regional technique could be used to provide postoperative analgesia? What are the risks of placement of these blocks? Would you place these with the patient awake or after induction of general anesthesia? What are the risks of performing these nerve blocks asleep vs. awake?

Intraoperative management:

You have decided to place bilateral sciatic nerve blocks in this patient for postoperative analgesia after induction of general anesthesia.

Questions:

What technique (nerve stimulation/ultrasound) would you use to place these sciatic nerve blocks? Is there an advantage to one over the other? At what level would you place the sciatic nerve block (subgluteal vs. popliteal) and Why? What local anesthetic would you use for the bolus injection and what volume for each sciatic nerve catheter? What local anesthetic would you use for postoperative infusion and what concentration?

Recovery room:

After the procedure the patient was comfortable in the recovery room. She was noted to have motor function in the sciatic distribution with a sensory block. Later that evening the nurse taking care of the patient calls to report that the patient is unable to move her foot on the Left side.

Questions:

What precautions and orders would you place for the management of a peripheral nerve catheter for an inpatient in your hospital? How would you manage a change in the neurological examination for a patient with a peripheral nerve block? If you were to discontinue the infusion temporarily when would you restart the infusion?

Post-operative care:

The patient is comfortable with the nerve catheters on postoperative day # 2. The surgical team would like to transition the patient to the oncology team and wants to know your plan for transitioning the patient to oral pain medications.

Questions:

How long would you continue to use the peripheral nerve catheters? Would you remove them at the same time or in a stepwise fashion? What are your plans for pain control after the removal of the peripheral nerve catheters?
Discussion:

Management of postoperative pain in an extensive orthopedic surgery involves using multiple modalities to control the patient’s pain. Regional anesthesia is being increasingly used to help control postoperative pain in these patients and may improve graft survival. Oncology patients who have pre-procedure pain related to their cancer and also the medications used for chemotherapy are at increased risk for severe post-procedure pain.

Thrombocytopenia is one of the absolute contraindications to placement of central neuraxial blocks (epidural). In these patients other modalities for providing analgesia should be explored. In this patient with most of the procedure being limited to the region below the knee on both extremities we elected to place bilateral sciatic nerve blocks. The patient had good postoperative analgesia with these peripheral nerve catheters which were maintained for 4 days postoperatively. She was transitioned to oral pain meds prior to being discharged home.

References:


