

Balancing Analgesia and Infection Risk: A Case of a femoral nerve catheter infection in an immunocompromised patient

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Introduction

Continuous femoral nerve catheters provide effective postoperative analgesia but carry a risk of bacterial colonization and infection, particularly when used in high-risk patients. This case is focused on femoral catheter–associated soft tissue infection in a patient with multiple infection-predisposing factors including cancer, MRSA colonization, acute deep femoral venous thrombosis. We want to discuss when not proceeding with a nerve catheter placement when the infection risk outweighs the benefits.

The Case

75-year-old male (BMI 20 kg/m²) with metastatic urothelial bladder **carcinoma** with bone metastases, **prior MRSA sepsis**, a ventriculoperitoneal (VP) shunt **infection** requiring removal, chronic tobacco use, and an acute right **femoral DVT**, was admitted for a right proximal femur fracture scheduled for operative fixation.

For perioperative analgesia, a Femoral Nerve Catheter was placed **one day prior** to surgery **under sterile technique** using ultrasound guidance and nerve stimulation. Placement was achieved in a single attempt without immediate complications.

Postoperatively, the patient received cefazolin prophylaxis for 24 hours. The catheter remained in place for **five days**, with **daily uneventful examinations** (clean, dry, and nontender insertion site).

Learning Points

In prior MRSA carrier: **pre-procedure infection prophylaxis protocol** (chlorhexidine wipes and mupirocin swabs).

Femoral location and prolonged **dwell time** amplify colonization risk in high-risk patients; we suggest standardizing femoral **catheter tunneling**.

Institutional protocols incorporating **antibiotic prophylaxis** for patients who require **perineural analgesia** prior to surgical **procedures**.

Reconsider **candidacy** of patients with **known deep venous thrombosis** near the placement area.



Results

On postoperative Day (POD) 6 → Right groin pruritus and erythema.

Normal WBCs and vital signs, negative blood cultures, elevated CRP 160 up trended from admission → ceftriaxone started for suspected cellulitis.

POD 8 → right groin abscess with purulent secretion → Bedside incision and drainage

Patient discharged with oral antibiotics with clinical resolution.

Discussion

Patients at increased risk for nerve catheter infection include those with MRSA colonization, immunocompromised status, femoral catheter placement, catheter dwell time, tobacco use, deep venous thrombosis (DVT), and limited antibiotic prophylaxis.

Concurrent DVT has been associated with sepsis, reflecting the bidirectional relationship between thrombosis and infection, which is driven by inflammation, hypercoagulability and endothelial injury.

The risk of infection rises markedly by the fourth day after catheter placement. These findings support reinforcing antibiotic prophylaxis practices and considering tunneled catheter placement or earlier catheter removal in high-risk patients.