

Post-Op Stabilization Following Femur Repair

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Chief Concern: Recovery for L femur repair

History of Present Illness:

67 yo F with PMH of HTN, COPD, GERD, OSA, and s/p R BKA presents for recovery POD#1 s/p L femur repair. The surgery was without complications, and she feels well overall post-op. Pain in her L leg is well-controlled with soreness at rest. She denies abdominal pain, has been tolerating PO liquids, and would like to try solids. She feels slightly fatigued but is otherwise not confused with her mentation at baseline. Patient is breathing comfortably without wheezing, SOB, or chest pain. She notes that she has not worn her CPAP in many years because it does not fit, and she would like to be fitted for a new one. She takes her antihypertensives as prescribed, except her water pill, because it increases her frequency of urination.

Earlier this week, patient was diagnosed with a UTI after complaining of increased urinary frequency and burning upon urination. She does not have a known medical history of UTIs and was started on double strength Bactrim 3 days ago with improvement of symptoms.

Past Medical History: HTN, COPD, OSA, GERD

Past Surgical History: L TKA, L femur repair, R BKA (vehicular trauma)

Medications:

UTI: Bactrim/160 mg, TMP/800 mg SMX, 1 tablet PO BID x 5 days **HTN:** Well-controlled, continue losartan **COPD:** Fluticasone/salmeterol BID, albuterol nebs **OSA:** Bicarb QD, CPAP 10 mmHg **GERD:** Famotidine

Allergies: NKA

Social History:

Alcohol: Wine, 1-2x per week. Tobacco: Smokes on and off. Substance abuse: Denies. Lives alone with assistance, uses walker/cane as needed. Employment: Retired. Regular diet, 1x per day decaffeinated coffee and tea. Exercises 2-3x per week. Sexual hx: Not sexually active.

Review of Systems:

General: Fatigue as per HPI, no weakness, fever, chills, night sweats, or weight loss. **Skin:** No changes in hair, nails, itching, rashes, new sores, lumps, or moles. **Head:** No trauma, headache, dizziness, or vertigo. **EENT:** No changes in vision or hearing, tinnitus, rhinorrhea, epistaxis, bleeding gums, sore throat, changes in voice, or swollen neck. **Respiratory:** No cough, hemoptysis, SOB, or DOE. **CV:** No chest pain, palpitations, edema, PND, or orthopnea. **GI:** No abdominal pain, changes in appetite, nausea, vomiting, changes in bowel habits, BRBPR, or melena. **GU:** No frequency, urgency, dysuria, hematuria, incontinence, unusual discharge, or itching. **MSK:** Leg soreness as per HPI, no arthralgias, muscle weakness, bone pain, or back pain. **Hematologic:** No unusual bleeding or easy bruising. **Extremity:** No edema, muscle weakness, joint pain or stiffness, limited range of motion, redness, or swelling. **Neurologic:** No headache, paresthesias, tremors, weakness, or syncope. **Psychiatric:** No anxiety, depression, or suicidal ideations.

Objective:

Vital Signs: Temp: 97.9/36.6 BP: 122/73 Pulse: 79 RR: 20 SPO2: 95

Physical Exam:

General: Well appearing, in no acute distress. **Skin:** No new rashes, bruises, petechiae, jaundice. **HEENT:** Atraumatic, normocephalic, EOMI, PERRL, no icterus, no LAD. **Pulmonary:** Bibasilar crackles, normal work of breathing on room air. **CV:** Regular rate and rhythm, no murmurs, rubs, or gallops. **Abdominal:** Soft, non-tender, non-distended. **Extremity:** No swelling, peripheral pulses 2+ in 3 extremities including LLE. R BKA, no edema, L thigh wrapped, gauze is clean and dry. **Neurologic:** Alert and oriented x3, answering questions and following commands appropriately. **Psychiatric:** Normal mood and affect.

Labs/Imaging: Elevated CO₂ (31 mEq/L)

Diagnosis with Assessment/Plan:

Patient is a 67 yo F with PMH of HTN, COPD, GERD, OSA, and s/p R BKA who is POD#1 s/p L femur repair, admitted for monitoring s/p surgery and treatment of prior UTI diagnosed clinically and with urinalysis on a prior clinic visit. She is doing well s/p surgery, has been hemodynamically stable, has adequate pain control, and is awaiting physical therapy evaluation prior to discharge. Her UTI symptoms have improved on Bactrim so that patient no longer has increased frequency.

Femur Repair: Surgery successful and without complications. Healing well with no signs of infection. Physical therapy ordered.

UTI: Urinary frequency and dirty urine analysis confirmed the suspicion that the patient has a UTI due to bacterial inflammation of the bladder, inducing inflammation, urinary frequency, and burning upon urination. To treat, the patient should continue double-strength Bactrim q12 and could discontinue if considered a simple UTI (fever < 99.9/37.7, no signs or symptoms of systemic illness, no flank pain, no costovertebral angle tenderness).

HTN: Well-controlled (BP 120/70s while in hospital), continue home medications as previously prescribed: Losartan and restart hydrochlorothiazide if BP >140/90.

Discussion of Disease Process/Clinical Correlations:

Anatomy: Both TKA and femur repair necessity can arise from mechanical wear-and-tear. In this case, the patient's L TKA and L femur repair may have been needed due to additional stress on the L joints after her R BKA as she puts her full weight on her L leg while standing or moving upright.

Micro & Pharmacology: *E. coli* causes 80% of UTIs and is classically treated using TMP-SMX (Bactrim) when the patient has no associated symptoms such as diarrhea, meningitis, and sepsis. *E. coli* is a Gram negative bacillus that is lactose (+) and catalase (+). It is encapsulated, which contributes to its pathogenicity. Uropathogenic *E. coli* adheres with type I fimbriae and P pilli. It also contains hemolysin and other toxins. Bactrim inhibits folate synthesis, which is necessary for purine/DNA synthesis. Side effects include hypersensitivity, rash, pruritis, bone marrow suppression, Stevens-Johnsons syndrome, and nephrotoxicity. There is widespread *E. coli* resistance due to bypass mechanisms such as synthesis of drug-resistant, plasmid-coded dihydrofolate reductase or dihydropteroate synthetase or use of exogenous folate.

Pathology: In 95% of cases, hypertension is primary and arises from unknown etiology. Risk factors include age, race (with increased risk in African Americans and decreased risk in Asians), obesity, stress, lack of physical activity, and high-salt diet. In this case, the patient possesses many of these risk factors (African American, obesity, stress, lack of physical activity due to injuries to the lower extremities).

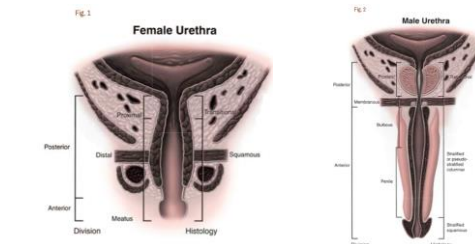
Current Research and New Treatments:

Left Femur Repair

- ❖ The most rapid recovery occurs within 6 months post-injury, but there may be residual deficits in function 12 months post-injury. Anterograde locked intramedullary nail is successful when malalignment is avoided and union occurs predictably; however, patients may still report disability, even if the surgery is considered successful⁵.
- ❖ Femur repair is increasingly difficult in osteoporotic patients because osteoporotic bone cannot hold the osteosynthetic components as well as normal bone. This leads to high bending loads and failure of osteosynthetic anchorage to the center of the femoral head. As such, the bone quality of the patient must be assessed before choosing the appropriate procedure⁶.

UTI

- ❖ Urinalysis and/or urine dipsticks are used to diagnose UTIs¹.
- ❖ Bactrim has become the standard therapy for uncomplicated UTIs; however, many strains of *E. coli*, the leading cause of UTIs, are resistant to the antibiotic².
- ❖ Prognosis is typically better in uncomplicated cases (i.e., lacking anatomical abnormalities, immunocompetent, typical UTI-causing organisms)³.
- ❖ Since the urethra of females is shorter, females are at increased risk for acquiring UTIs⁴.



Conclusions:

Patients often have multiple acute and chronic illnesses that are addressed during a hospitalization. In the case of this patient, the acute problem revolved around L femur repair due to wear-and-tear injuries likely related to increased weight bearing on her L leg from a prior R BKA. The surgery was successful and uncomplicated, with the patient recovering well in post-op setting. This patient also had a previously diagnosed UTI which did not prohibit surgery, though should continue to be monitored until symptoms resolve with the Bactrim usage. Warning signs of complicated UTI would include fever and flank pain concerning for pyelonephritis. Lastly, blood pressure may vary on hospital admissions when patient is under stress from surgery/recovery and pain management so it is critical to have a plan how to increase and decrease HTN regimens while inpatient.

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Acknowledgements:

We greatly appreciated the opportunity to shadow and learn from Dr. Vivek Mehta.