



Complex Multimodal Management of Acute Pain in a Patient with Invasive Thigh Abscess

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Abstract

A 37-year-old incarcerated ASA 1E 78 kg male admitted to our facility on October 14, 2023, with left thigh and gluteal abscesses for the past 15 days associated with high grade fever and restricted left hip movement.

Keywords: Patient's anaesthetic management; Septicaemia; Gluteus medius; Rectus femoris muscles

Case Report

A 37-year-old incarcerated ASA 1E 78 kg male admitted to our facility on October 14, 2023, with left thigh and gluteal abscesses for the past 15 days associated with high grade fever and restricted left hip movement. He presented initially on October 10, 2023, with the same complaint. At the time, he was advised admission for further management, but he left against medical advice. No apparent cause was identified. On evaluation in the ER, the patient was anxious, in severe pain, anorexic, and nothing by mouth (NPO) for 2 days. During his hospital course, he underwent multiple surgical interventions by the orthopaedic surgeons. Numerous factors contributed to the complexity of the patient's anaesthetic management, notably: deep anatomical involvement of the abscess, septicaemia, his psychological condition, and lack of social support.

Encounter on October 14, 2023

He underwent debridement under general anaesthesia. He received Fentanyl 100 mcg intravenous (IV) for induction alongside paracetamol 1 gm IV and parecoxib 40 mg IV. Surgical findings at the time showed muscle necrosis involving vastus lateralis, gluteus medius, and rectus femoris muscles. For postop pain management, ultrasound-guided fascia iliaca compartment block with 20 ml of Ropivacaine 0.2%. In the postanesthetic care unit (PACU), the pain was controlled with a score 3/10. He was shifted to the ward on tramadol 50 mg intramuscular (IM) thrice

daily (TID) as needed and paracetamol 1 gm IV TID by the primary team.

Encounter on October 23, 2023

He received the same anaesthetic management as before alongside morphine 10 mg IV intraoperatively. Wound vacuum-assisted closure (VAC) machine was applied. However, despite receiving ultrasound-guided fascia iliaca compartment block with 20 ml of Bupivacaine 0.25% before extubation and starting a ketamine infusion with concentration 2 mg/ml at a rate of 2 ml/hr in PACU, the patient was still complaining of extreme pain with a score of 9/10. Ultrasound-guided femoral nerve block was administered using 10 ml of Bupivacaine 0.25% and the ketamine infusion was increased to 3 ml/hr. He was discharged from PACU with a pain score of 4/10 with instructions to monitor for signs of hallucination, delirium, and hemodynamic instability. In the ward, he was followed up regularly by the anaesthetist on-call and nurse in charge.

Pain Management on October 24, 2023

He was reassessed in the morning after the ketamine infusion was suspended in preparation for magnetic resonance imaging (MRI) study. According to the patient, the pain was severe at the operative site, and it was much more tolerable with the infusion ongoing. Ketamine infusion restarted with a concentration of 2 mg/ml at a rate of 5 ml/hr. The pain score decreased from 9/10 to

Received date: 03 January 2024; **Accepted date:** 08 January 2024; **Published date:** 12 January 2024

Citation: Masadeh IA, Ghanem AM, Thombare C (2024) Complex Multimodal Management of Acute Pain in a Patient with Invasive Thigh Abscess. SunText Rev Case Rep Image 5(1): 121.

DOI: <https://doi.org/10.51737/2766-4589.2024.121>

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4/10 so the infusion rate was decreased to 3 ml/hr. Two hours later, he complained of increasing pain to 6/10 so the rate was increased to 4 ml/hr. During that time, his pain was tolerable, and the MRI report showed acute osteomyelitis of the left acetabulum. During evening rounds, he reported that he developed an episode of dizziness, feeling delirious, and difficulty breathing 30 minutes before. The episode subsided shortly after a few minutes. An ECG done by the nurse in charge was within normal. At the time of assessment, there was no decrease in pain when the infusion rate was increased to 4 ml/hr, so the rate was decreased to 3 ml/hr with the instructions to contact the anaesthetist on-call in case of the development of a similar episode, to stop the infusion, and administer midazolam 1 mg IV (Figures 1,2).

procedure were to be done under general anaesthesia. Subsequently, an epidural catheter was inserted prior to extubation. The patient was in the right lateral decubitus position, the catheter was inserted in the midline at the level of L3- L4 vertebrae, and the space was confirmed using loss of resistance to air technique. Patient-controlled epidural analgesia (PCEA) protocol was initiated with the infusion of ropivacaine 0.125% at a rate of 7 ml/hr, patient-administered bolus 7 ml, and lockout time 30 mins. He was shifted to the ward with the following instructions to the nursing staff:

- For the infusion, vital signs monitoring every 2 hours for 24 hours
- For the bolus, vital signs to be checked after bolus every 5 mins for 30 mins, then every 30 mins for the 1st hour, then every 1 hour for 1st 6 hours
- Check for sensory level 1 hr after bolus, 2 to 4 hrs for 24 hrs, and prior to mobilization
- Check for ability to move the toes every 2 to 4 hrs and prior to mobilization
- Watch for signs of local anaesthetic toxicity like perioral numbness, change in mental status, hypotension, bradycardia

Within the first 24 hours of starting the PCEA protocol, his pain score was 0-2/10. The next day, his pain score increased to 6/10, so the infusion rate was increased to 10 ml/hr ropivacaine 0.125%. On follow up within one hour, the pain subsided to 0/10. By 28/10/2023, there were no further issues with the patient's analgesia regimen and at his request, the epidural catheter was removed.

Conclusion

Contrary to current practice, a single routine protocol for postoperative pain management should be avoided in most patients. Numerous intrinsic and extrinsic factors play a role in the customization of individualized protocols. To optimize adequate analgesic regimens, frequent assessment of the patient's response to the administered modality must be carried on. The involvement of patients in their own plans of care contributes to successful end results. Whether our goal is to decrease opioid consumption or to provide the appropriate analgesic modality, mutual trust should be established between the anaesthetist and the patient [1-3].

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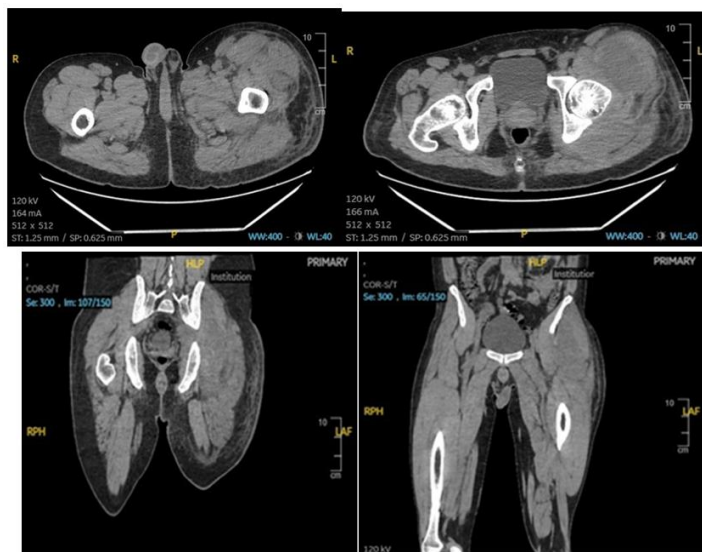


Figure 1: Computed tomography (CT) scan done on admission - axial and coronal views - showing posterodistal involvement of the left thigh's soft tissue.



Figure 2: MRI scan images - coronal view - showing left acetabulum wall bone marrow edema and cortical irregularity suggestive of acute osteomyelitis.

Encounter on October 25, 2023

The previous analgesic modalities were discussed with the patient preoperatively and he agreed to undergo neuraxial analgesia if the



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