

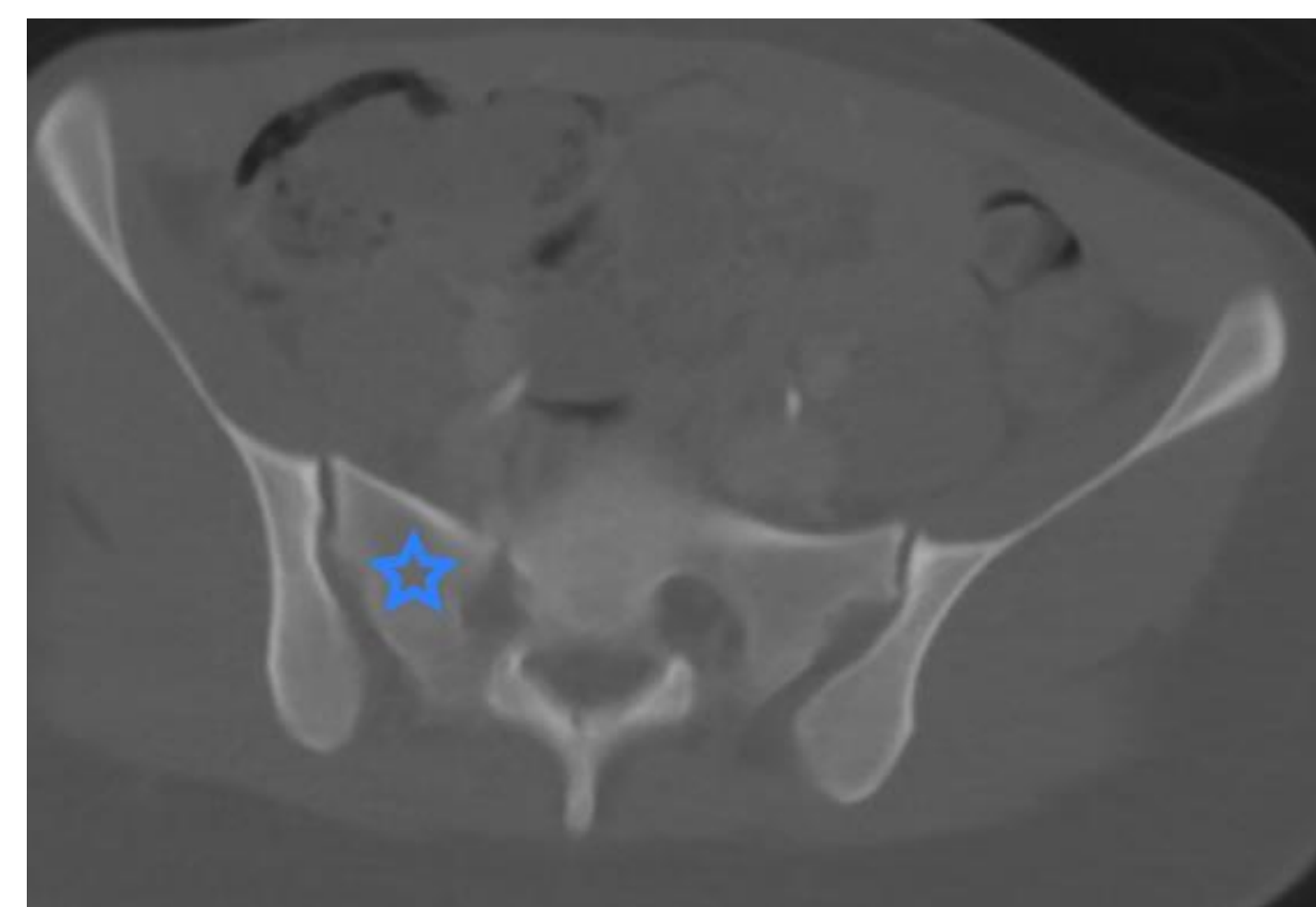
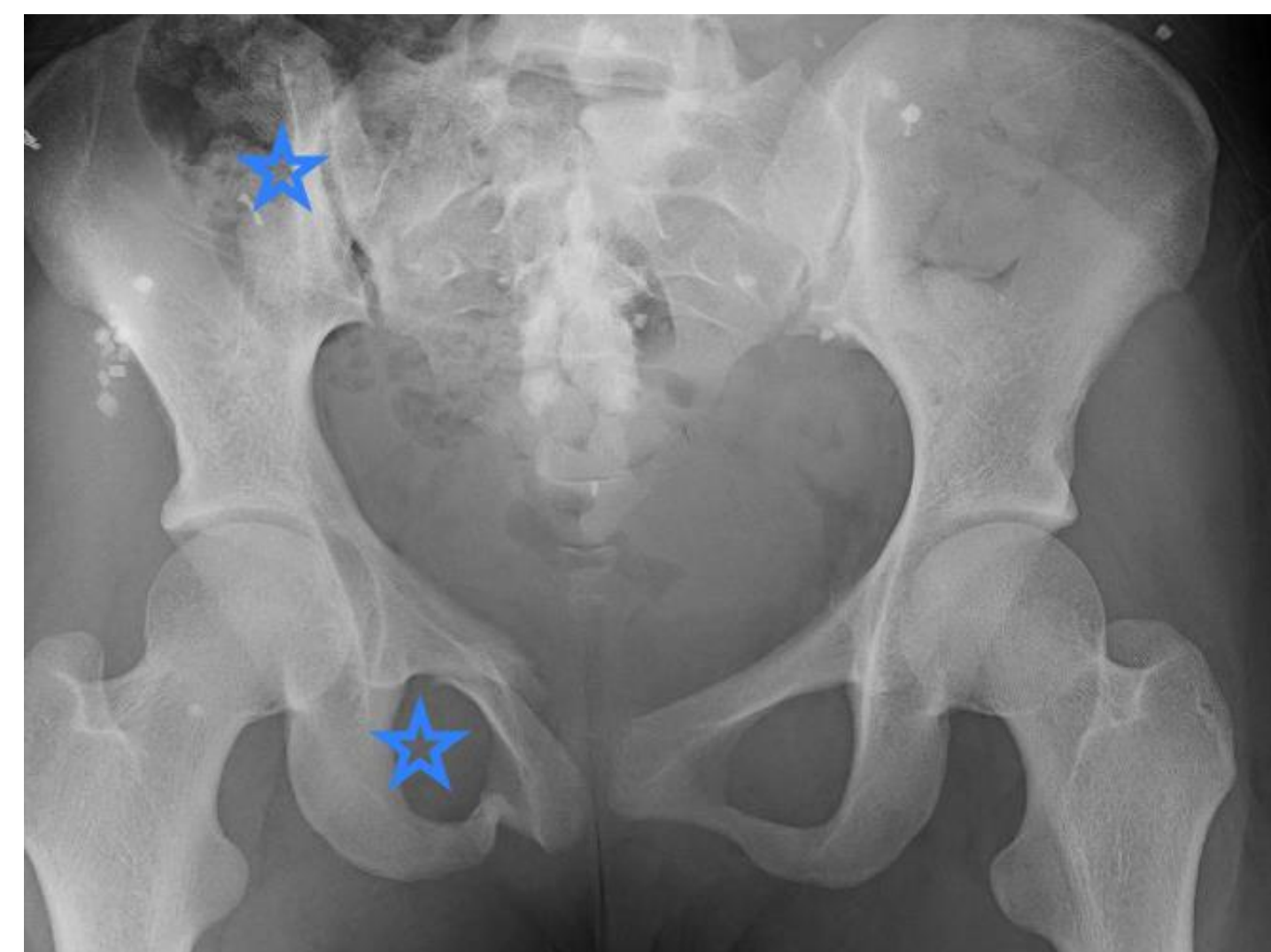
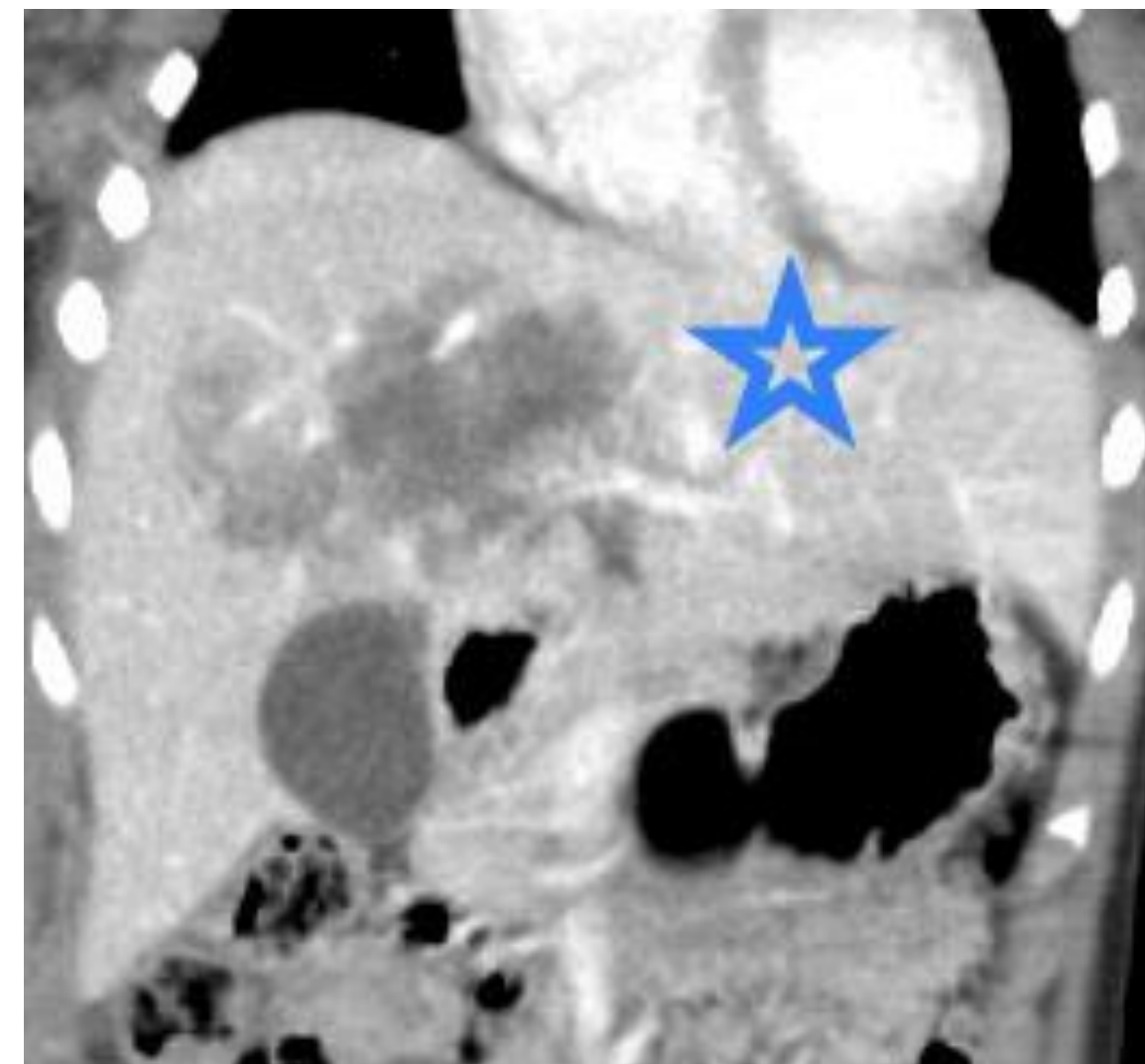
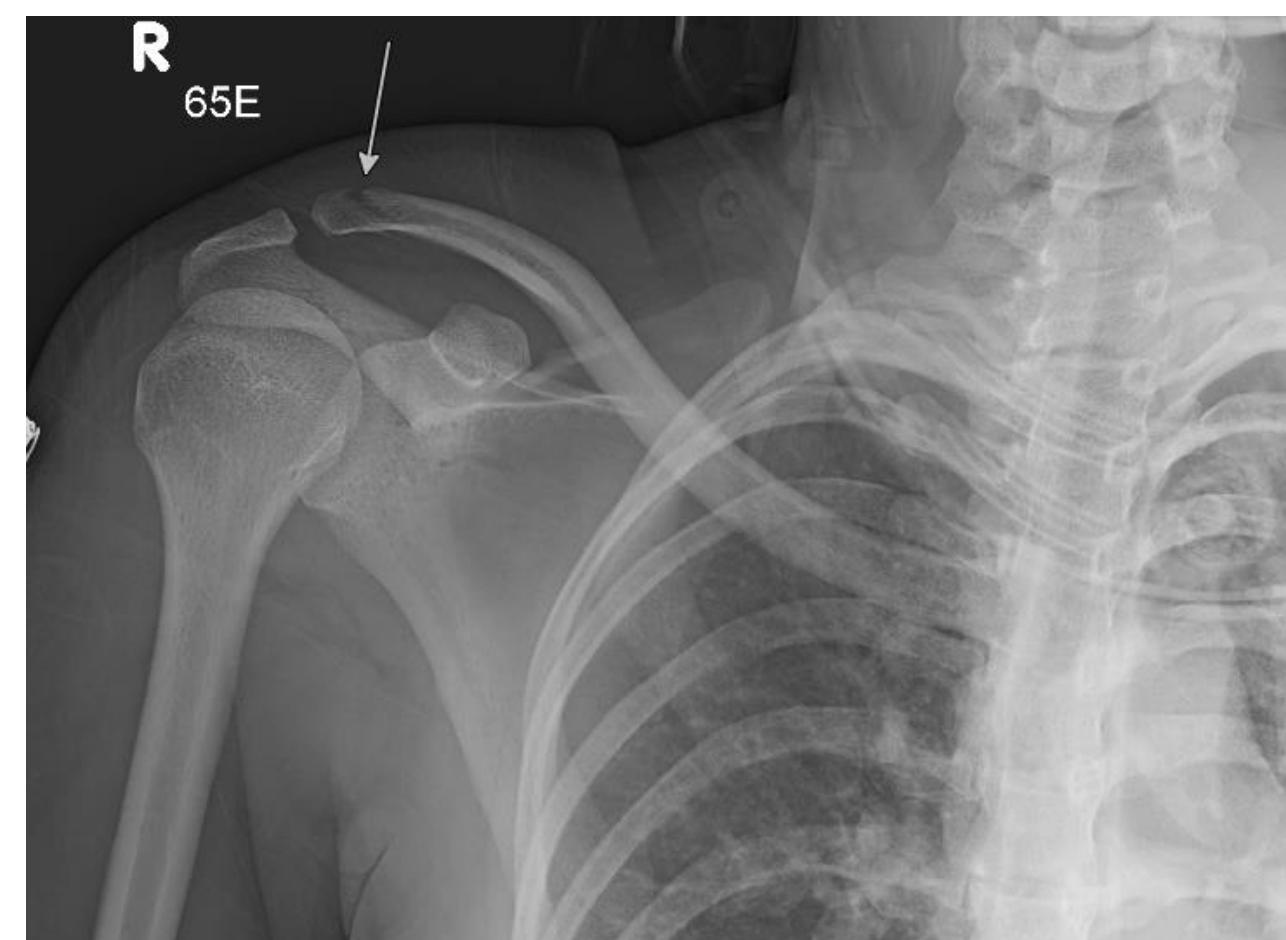
# Uncharted Dominion: Sickle Cell Disease and Multi-system Trauma

## A Case Report

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### BACKGROUND

- Multi-system trauma injuries are common, and the physiologic milieu of sickle cell crisis usually occurs in the peri-trauma setting (hypovolemia, hypoxia, acidosis).
- There is limited literature on the management of acute crisis pain in such settings.



### CASE DESCRIPTION

- A 17-year-old with sickle cell disease (SCD) endorsed a 3-day history of typical crisis pain that was progressively unresponsive to oxycodone, prompting a higher level of care.
- En route to the emergency department, the patient was involved in an MVA.
- A complete trauma evaluation revealed:
  - grade IV liver laceration of multiple segments
  - right clavicle fracture
  - right-sided pubic rami and sacral fractures
  - multiple right-sided rib fractures
  - right pneumothorax.
- Our institution's acute pain service was consulted for pain management.
- A multimodal analgesia plan, including morphine PCA, gabapentin, Valium, and acetaminophen, was implemented.
- Our regional anesthesiology team performed multiple nerve blocks, including:
  - right clavipectoral fascial plane block
  - right thoracic levels 1-2 erector spinae block
  - bilateral lumbar levels 1-2 erector spinae nerve blocks with catheter placement for continuous ropivacaine infusion.
- The patient underwent open reduction with internal fixation of the right-sided pubic rami fractures.
- Postoperatively, pain control was unsatisfactory; therefore, the morphine PCA was switched to a hydromorphone PCA.
- The remainder of the hospital course was uneventful, and the patient was discharged with an oral pain regimen for continued outpatient rehabilitation.

### DISCUSSION

- Our case underscores the intricate pain management challenges associated with an acute sickle cell crisis, compounded by multi-system trauma.
- Frazer et al. elucidated the physiological parallels between multi-system trauma and an acute sickle crisis, while simultaneously emphasizing the dearth of research investigating the impact of SCD on the outcomes of multi-system trauma.

### QUESTIONS RAISED

- How can multimodal pain management strategies be optimized in patients with sickle cell disease experiencing acute vaso-occlusive crisis compounded by multi-system trauma?
- What is the impact of concurrent sickle cell crisis on trauma outcomes, and how should trauma protocols be adapted to account for the unique pathophysiology and pain management needs in this patient population?

### REFERENCES

Tessema FA, Lapping-Carr G, Affini MI, Selkridge IK, Oppong AY, Jones TA, Zakrison T. Sickel cell trait and multisystem trauma: an unaddressed urgent knowledge gap. *Trauma Surg Acute Care Open*. 2022 Jun 5;7(1):e000955. doi: 10.1136/tsaco-2022-000955. PMID: 35719190; PMCID: PMC9171217.