

## Introduction

- Vertebral osteomyelitis (VO; i.e., spinal osteomyelitis or spondylodiscitis), is a rare and potentially life-threatening disease that can develop because of surgical site infection, spinal trauma, or hematologic spread<sup>1</sup>.
- Only 3–6% of all spinal osteomyelitis cases affect the cervical vertebrae<sup>3</sup>.
- Risk factors include advanced age, diabetes, chronic corticosteroid use, immunosuppression, cancer, malnutrition, and intravenous (IV) drug use<sup>1</sup>.
- VO treatment guidelines are not standardized and primarily rely on physician preference<sup>5</sup>.
  - Absence of neurologic deficit or severe deformity → conservative management (IV antibiotics)
  - Neurologic deficits or anatomic compromise → Surgical intervention (anterior corpectomy, +/- posterior cervical fusion)<sup>5,6,7</sup>
- Posterior cervical fusion is routinely performed in the prone position but is contraindicated if there is a risk of airway obstruction, or if body habitus may obstruct exposure<sup>8</sup>.
  - The sitting position offers a similar safety profile and outcomes, and confers enhanced control of an unstable spine, especially in morbidly obese patients<sup>8,9</sup>

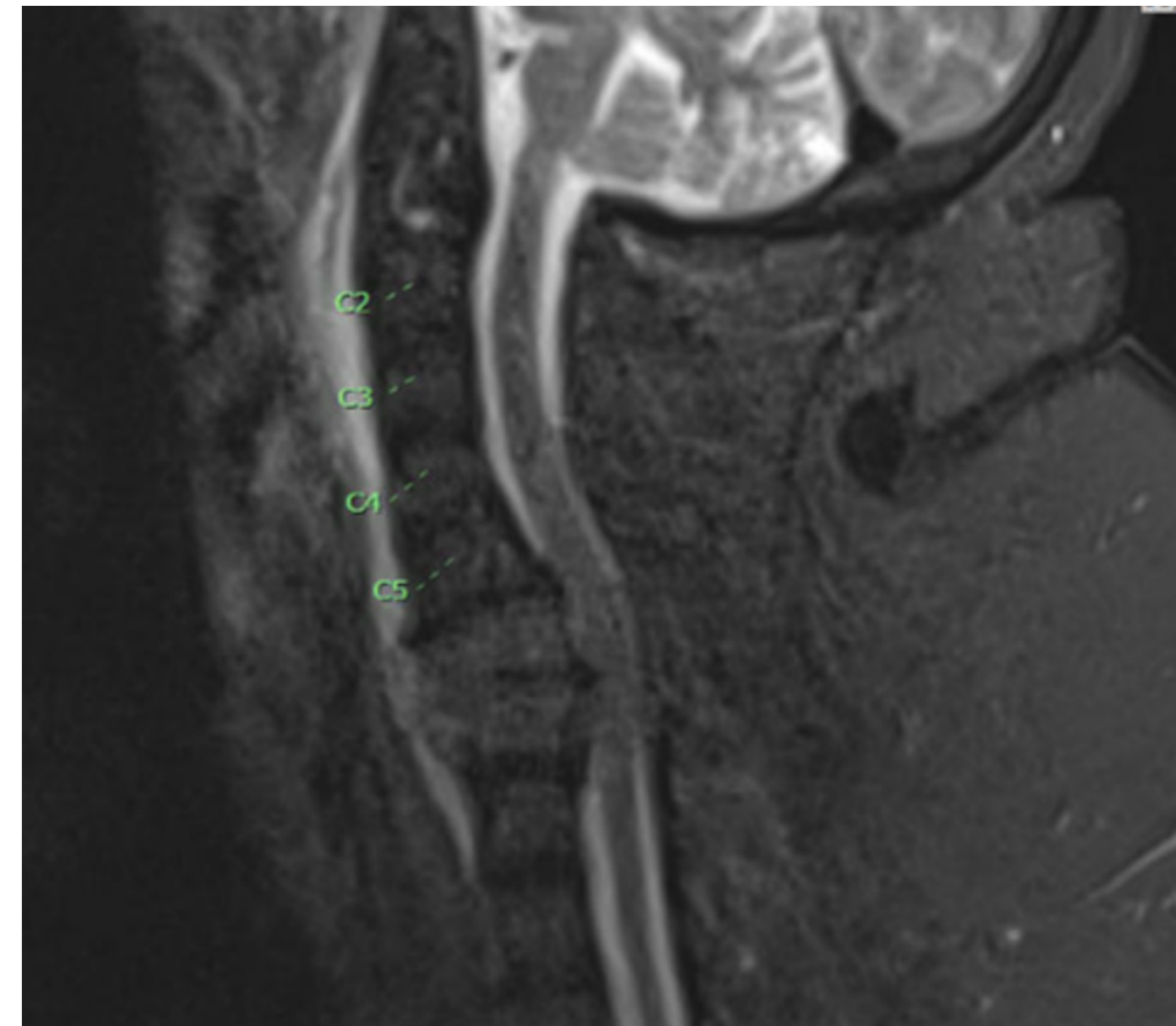
## Case

- **54-year-old female with C6/7 osteomyelitis in the setting of tracheostomy dependent obesity hyperventilation syndrome, treated by 360° approach in the sitting position**
- Chief complaint: Upper back pain post-fall
- Medical history: Tracheostomy dependent obesity hypoventilation syndrome, essential hypertension, and class 3 morbid obesity

### Hospital course:

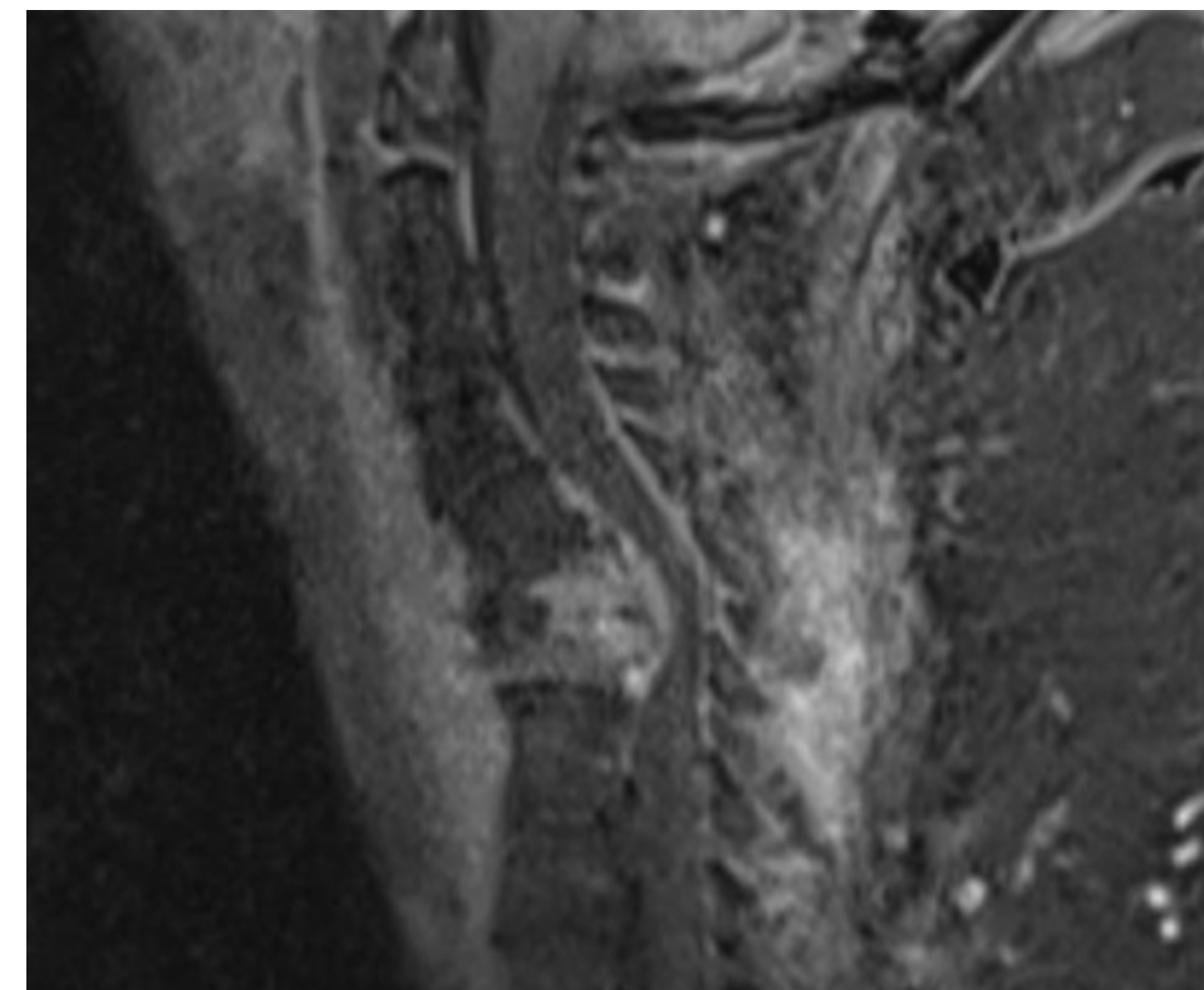
- Initial cervical spine CT and MRI demonstrated early stages of discitis/osteomyelitis at C6/7 with disc space collapse and end plate erosion.

- Managed conservatively with IV antibiotics



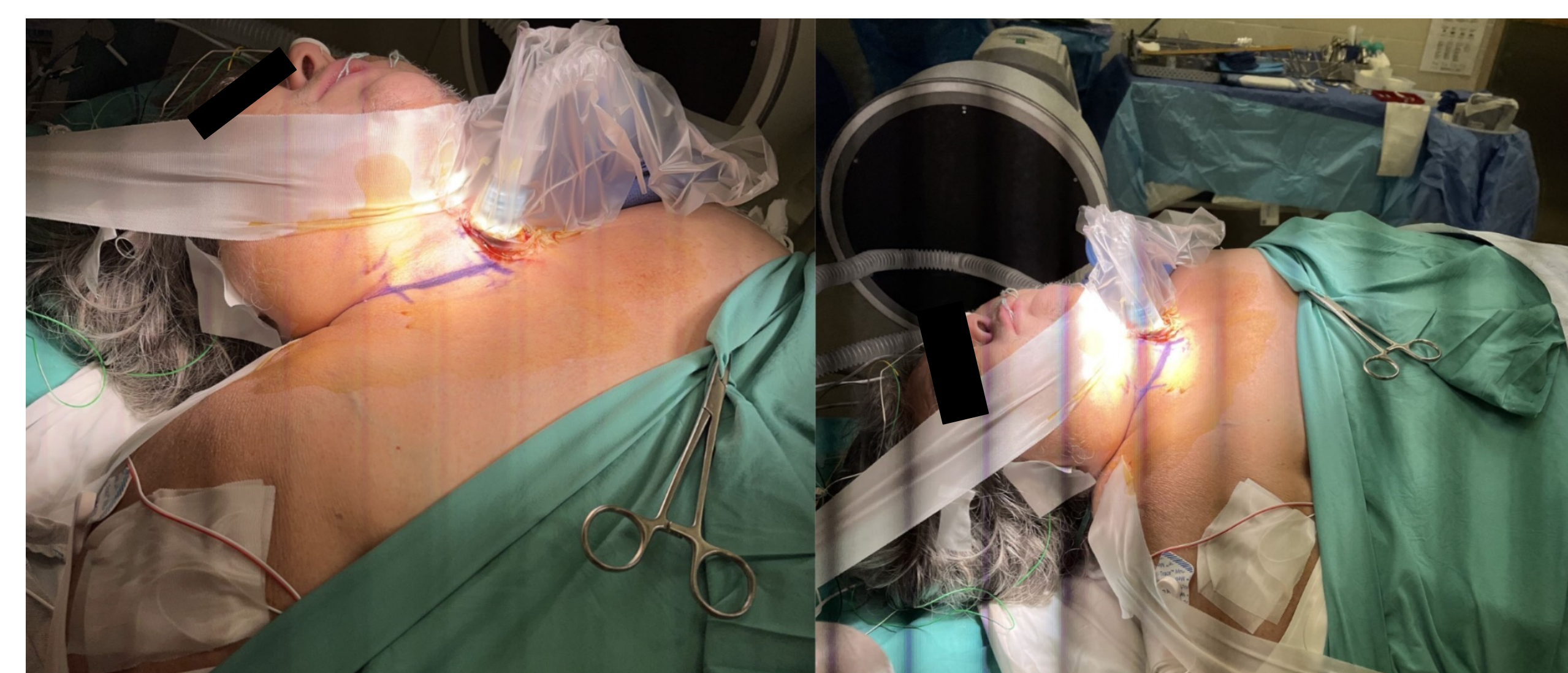
**Fig. 1.** MRI cervical spine upon presentation.

- Day 7: Began experiencing intermittent shocking sensations and numbness in her arms and legs, especially notable in her LUE in a C7 distribution.
- Day 12: Reported worsening pain, hyperesthesia, and allodynia throughout her body with distinct severity in her LUE.
  - Additional cervical MRI revealed cervical cord compression with worsening vertebral body destruction and significant kyphotic deformity



**Fig. 2.** Repeat MRI cervical spine prior to surgery

- Day 19: C6/7 anterior corpectomy was performed



**Fig. 3.** Anterior approach debridement and C6-7 corpectomy with tracheotomy tube in place

- Day 20: C5-T1 posterior cervical fusion was performed in the sitting position



**Fig. 4.** C5-T2 posterior cervical fusion in sitting position

### Post-op course:

- Included ENT consult for the patient's tracheal condition and IV antibiotics (Daptomycin and Cefepime) with a planned end date of two months out from her original presentation, per the guidance of Infectious Disease specialists.

## Discussion & Conclusion

- This case highlights the unique surgical approach warranted in the face of complex anatomy compounded with multiple comorbidities in a patient presenting with degenerating cervical osteomyelitis.
- The primary observation of this report is that the complex anatomy of the patient, specifically large body habitus in the setting of morbid obesity, required a combination of unique approaches many neurosurgeons do not often encounter
  - Specifically, this is the **first cited cervical osteomyelitis case utilizing anterior corpectomy and debridement with tracheostomy dependent obesity hypoventilation syndrome followed by a posterior cervical fusion in the sitting position.**
- Given the rarity of this condition along with the patient's characteristics and lack of standardized VO treatment guidelines, this report is instrumental in instructing neurosurgical patient-care decision making for high-risk patients.
- The complex anatomy in the face of a large body habitus is especially pertinent due to increasing rates of morbid obesity across the United States<sup>10</sup>.

## References

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