

Rehabilitation of a three-column cervical spine fracture in ankylosing spondylitis (AS): A case report

Stefan Hamaway, MD¹, Getahun Kifle, MD², Sanjeev Agarwal, MD¹

¹SUNY Downstate Health Sciences University, Department of PM&R, ²Kings County Hospital Center, Department of PM&R

INTRODUCTION

A 65-year-old with past medical history of ankylosing spondylitis, hypertension, peripheral vascular disease, and prediabetes presented to the emergency department after mechanical fall sustaining a 3-column cervical spine injury through C6-C7.

PATIENT PRESENTATION

A 65-year-old past medical history of ankylosing spondylitis, hypertension, peripheral vascular disease, and prediabetes presented to the emergency department after mechanical fall. CT scan showed a three-column injury with a transverse fracture through C6-7. The patient underwent a C6-7 Anterior Cervical Discectomy and Fusion. Post operative course was complicated by prolonged intubation for airway edema which was subsequently dislodged requiring an emergent cricothyroidotomy, then exploration revision tracheostomy and bronchoscopy. Patient then underwent C3-T3 cervicothoracic fusion and PEG tube placement. Patient had no active range of motion of the bilateral upper shoulders, bilateral hip flexor weakness 4/5, and functional decline requiring minimum assist for transfer, total assist ambulating 100ft with RW to assist with O2 tank.

MATERIALS/METHODS

As the case report is devoid of patient identifiable information, it is exempt from IRB review requirements as per SUNY Downstate Health Sciences University IRB-01 Policy.



CT CERVICAL SPINE

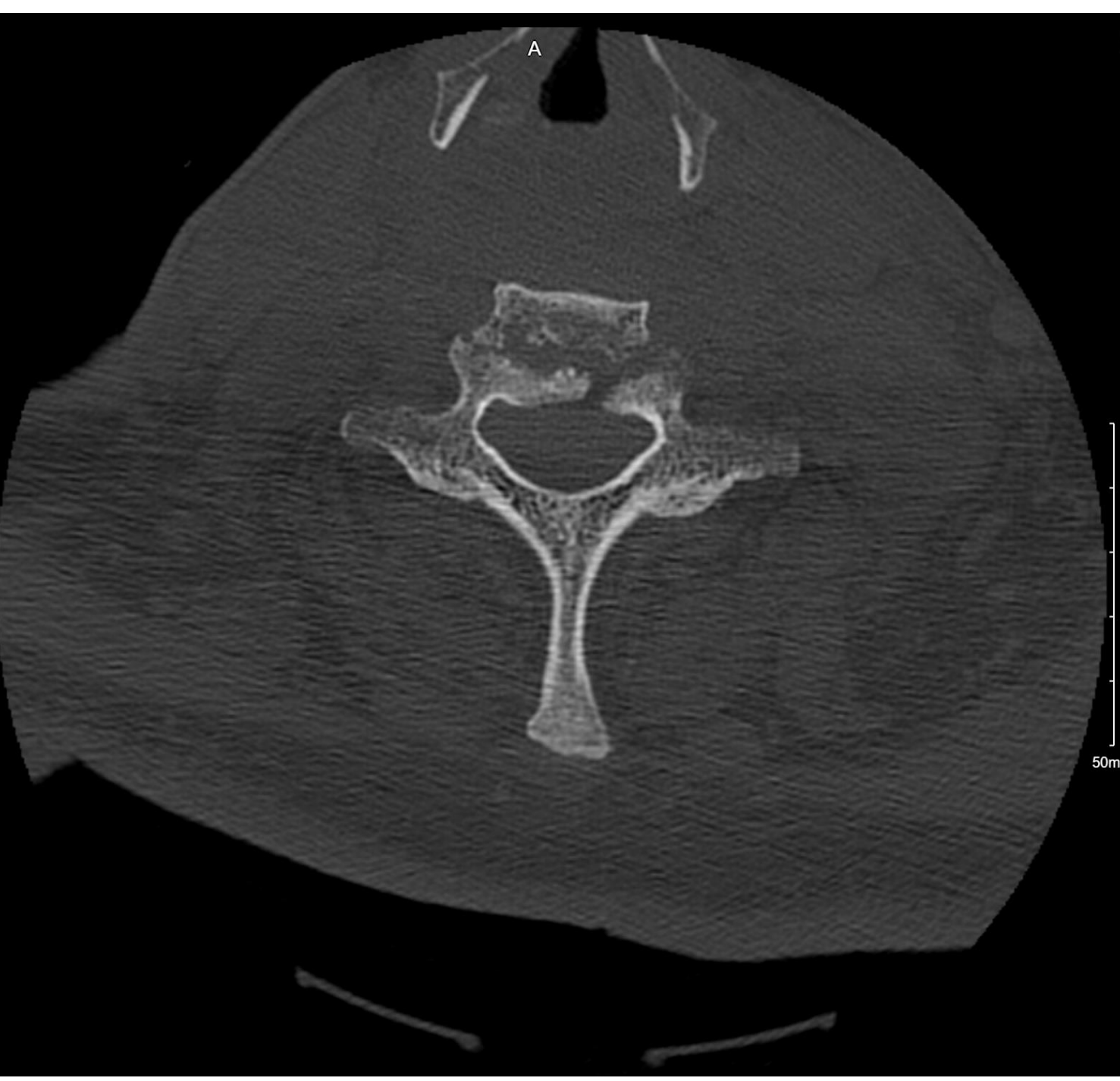
FINDINGS:

CERVICAL SPINE:
Status post anterior cervical discectomy and fusion at C6-7 with a disc spacer. There is trace retrolisthesis of the C6 fracture fragment on the C7 fracture fragment. There is posterior fixation with lateral mass screws at C3-4 and C6-7 and transpedicular screws at T1-T3.

Redemonstrated evidence of ankylosing spondylitis with extensive ankylosis of the cervical vertebral bodies, cranial cervical junction, and posterior elements. There is associated ossification along the posterior longitudinal ligament which is contributing to mild bony stenosis of the upper cervical spine. The cervical lordosis is straightened, which may be positional or due to fusion. The remaining vertebral body heights are maintained. Multilevel ankylosis of the intervertebral disc spaces. Multilevel bilateral facet joint arthrosis and ankylosis. There are no fractures, osseous lytic or blastic lesions noted.

Multilevel narrowing of the cervical spinal canal associated with ossification of the posterior longitudinal ligament. There is no high-grade neural foraminal stenosis.

Postsurgical changes in the paraspinal soft tissues with antibiotic beads and an external drain. Small amount of edema and subcutaneous emphysema.



REHABILITATION COURSE

Patient was started on multi-modal pain management and began a course of intensive inpatient physical therapy and occupational focusing on transfers, lower extremity and lumbar strengthening, and gait training. Pain was well controlled, and tracheostomy was downsized and then finally decannulated. At time of discharge, lower extremity strength improved grossly 5/5, patient was set-up to supervision with ADLs and ambulating 200ft RW with supervision. He was discharged home with home based therapy.

CONCLUSION

A three-column cervical spine fracture is rarely reported. This case was especially challenging managing comorbid ankylosing spondylitis which increases the spine’s vulnerability to fracture, and the patient’s baseline restricted spinal ROM and pain from ankylosing spondylitis combined with chronic respiratory failure requiring tracheostomy. This case emphasizes the integral role of physiatry in reducing morbidity and improving functional status in cervical spine injuries and the importance of a team based approach in managing these patients.

REFERENCES

1. Chaudhary, S. B., Hullinger, H., & Vives, M. J. (2011). Management of acute spinal fractures in ankylosing spondylitis. *ISRN rheumatology*, 2011, 150484. <https://doi.org/10.5402/2011/150484>
2. Garg, K., Rafiq, R., Mishra, S., Singh, P., Agrawal, D., & Chandra, P. S. (2022). Cervical Spine Fracture with Extreme Dislocation in a Patient with Ankylosing Spondylitis: A Case Report and Systematic Review of the Literature. *Neurology India*, 70(Supplement), S296–S301. <https://doi.org/10.4103/0028-3886.360906>
3. Zhu, W., He, X., Cheng, K., Zhang, L., Chen, D., Wang, X., Qiu, G., Cao, X., & Weng, X. (2019). Ankylosing spondylitis: etiology, pathogenesis, and treatments. *Bone research*, 7, 22. <https://doi.org/10.1038/s41413-019-0057-8>