

ACADEMY OF SPINAL CORD INJURY PROFESSIONALS



Botulinum toxin to help prevent neurosurgery after an acute cervical spine injury

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Context

Torticollis can be caused by trauma to the bones of the cervical spine, resulting in atlantoaxial rotatory subluxation, atlantoaxial dislocation, or cervical vertebral fractures. This is known as osseous torticollis.

Findings / Case Description

Patient A is a 20-year-old male who was a pedestrian struck by a vehicle. Initial cervical spine imaging showed patient to have fracture through the right lateral mass of C2 and possible C1 fracture, however, no severe displacement or instability was noted. Subsequently, patient developed clinically apparent osseous torticollis. Repeat imaging 1 month later demonstrated atlanto-axial instability, thus neurosurgical team was potentially considering an O-C3 fusion to prevent worsening injury. However, no significant ligamentous injury was appreciated on imaging thus neurosurgical team in collaboration with physiatry team decided that conservative management was the best for the patient.

Patient was injected with a total of 100 units of onabotulinumtoxinA (Botox®) soon after repeat imaging was obtained. The injection plan consisted of 40 units into the right sternocleidomastoid, 20 units into the right anterior scalene, and 40 units into 2 different locations in the right trapezius.

Imaging

9/2/2022, Initial CT cervical spine without contrast (Figure 1):
"Fracture through the right lateral mass of C2. Additional calcific densities along the posterior aspect of the C1 lateral masses could represent additional fractures, although no donor site is identified. Vascular calcifications may also be considered."

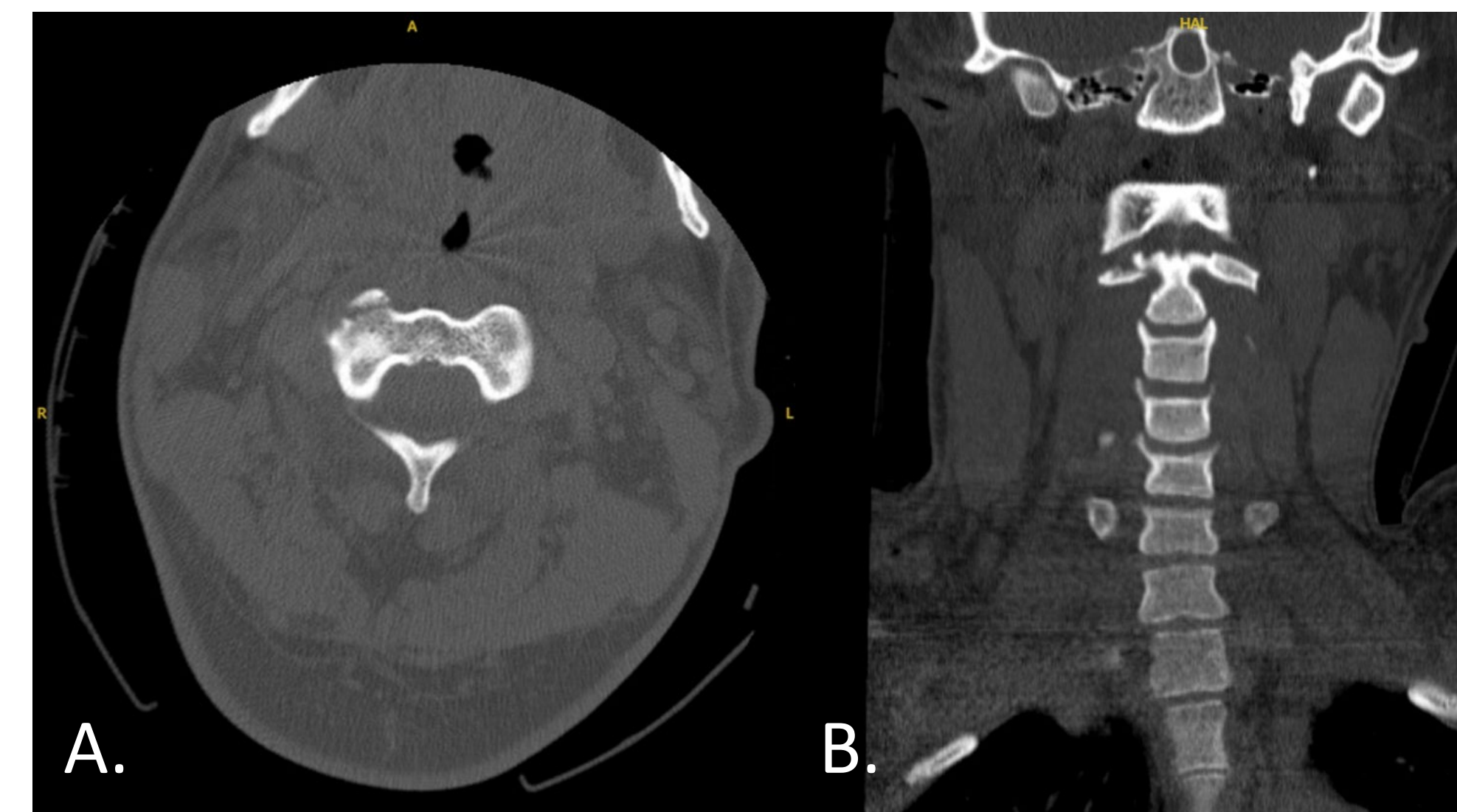


Figure 1. CT cervical spine without contrast showing fracture through lateral mass of C2. (A) Transverse view. (B) Coronal view.

10/23/2022, Follow up CT cervical spine without contrast (Figure 2):
"Fractures of the right C2 lateral mass and posterior right C1 ring, with interval development of narrowing of the atlantoaxial joints, subluxation of C1 upon C2, marked rotation of C2 relative to C1, and erosive change at the right lateral atlantoaxial joint. Instability at these levels cannot be excluded. Hyperattenuation within the spinal canal at C2-C3 could represent hemorrhage or ligamentous thickening."

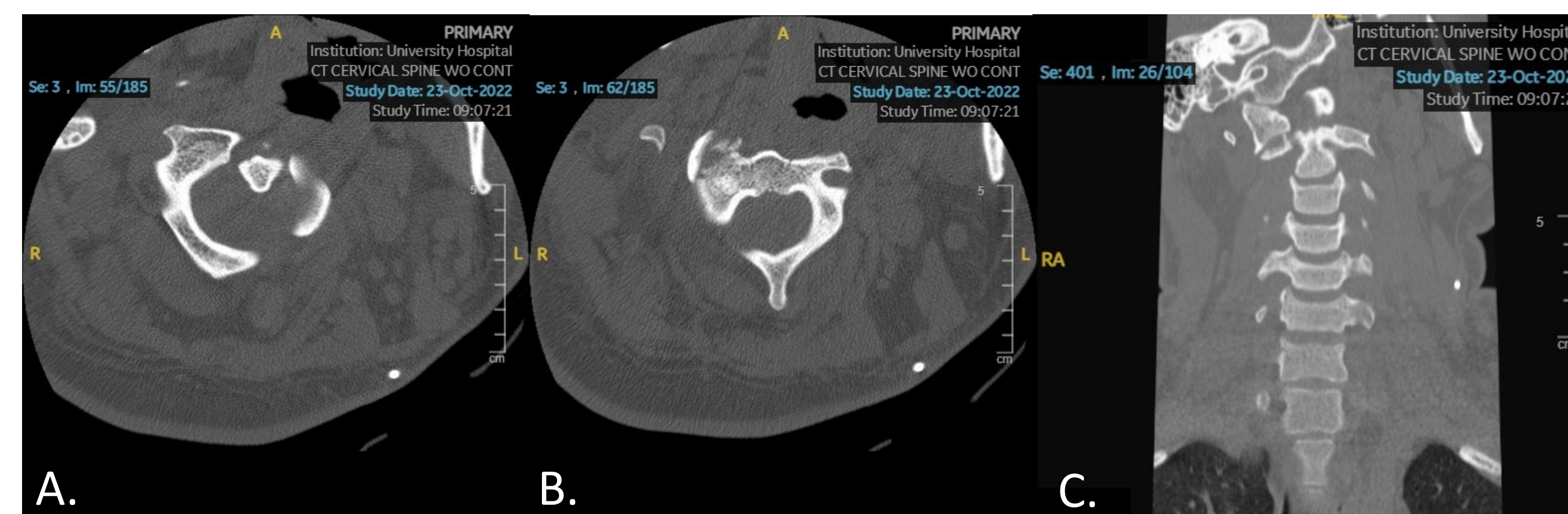


Figure 2. CT cervical spine showing signs of osseous torticollis. (A) Transverse view of C1. (B) Transverse view of C2. (C) Coronal view.

Discussion / Conclusions

Upon follow-up 10 weeks post-injection, patient was able to avoid surgery without decrement of his neurological exam.

Avoiding cervical immobilization via surgery helps maintain potential function by preserving cervical range of motion as well as saving healthcare spending. Physiatrists should be aware that chemodenervation of cervical muscles is a technique in their repertoire that can be used to potentially aid patients with post-traumatic torticollis.

References

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