Congenital non-union of C1 leading to quadriplegia following a roller coaster ride.

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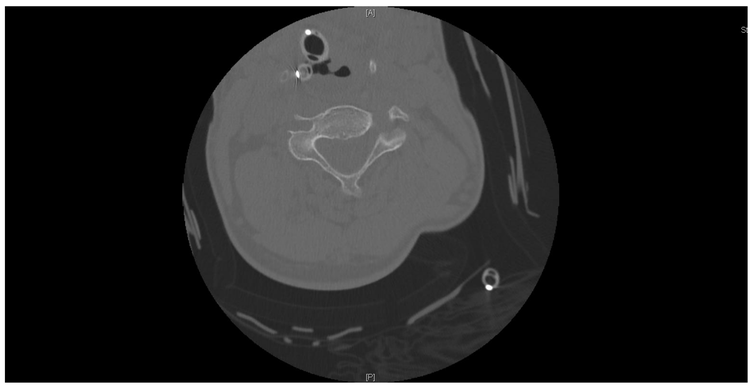
Background

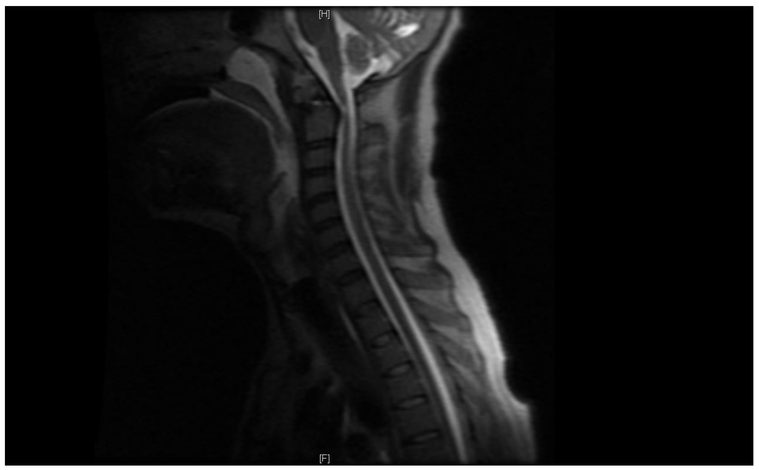
Neurologic complications after roller coaster rides are rare but potentially catastrophic. Physicians should have a high index of suspicion and prompt appropriate investigation. The acceleration and abrupt changes of direction might lead to indirect trauma that is applied to mobile portions of the cervical vertebrae. The mechanisms of most complications are ill understood but are likely to involve sudden head and neck flexion-extension movements. Reported data include one cervicoencephalic arterial dissection, brainstem dysfunction due to extending syringobulbia; carotid artery occlusion, subdural hematoma, subarachnoid hemorrhage, cerebrospinal fluid leak, Brown-Séquard syndrome secondary to an enterogenous cyst of the spinal cord all presenting with pain. The common congenital upper cervical disorders are platybasia, Atlantoaxial Instability, Atlas Hypoplasia, Klippel-Feil malformation, Chiari Malformation and syringomyelia, Os Odontodeum, Achondroplasia.

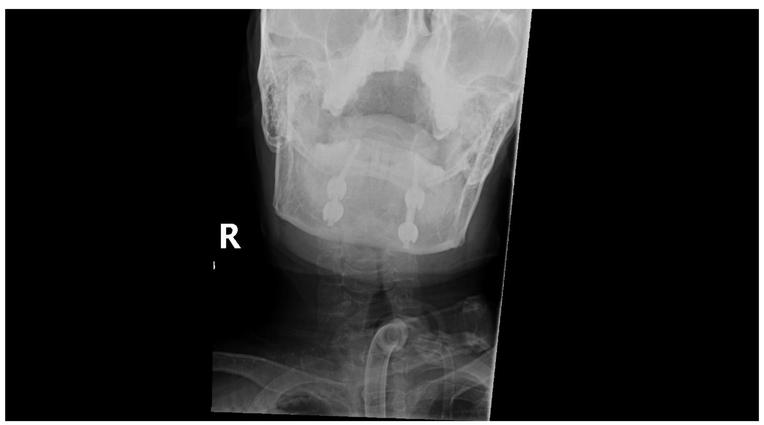
Case Presentation

We present a case of a 37 y/o male who was on a roller coaster and became suddenly unresponsive. He presented to the trauma bay with a GCS 3 and was intubated. No external signs of trauma was visible. Right and left upper and lower extremity retained sensation to touch. Left upper and lower extremity was 0/5 power throughout on the right side 1/5 bicep and deltoid, 0/5 tricep.

Images







Discussion

Trauma pan scan did not reveal any intra cranial hemorrhage, cervical CT scan showed no fractures and CTA showed no vascular injury. He underwent a trauma workup and was found to have a congenital nonunion of C1.

Early tracheostomy and PEG was placed for supportive care. MRI was performed of the cervical spine showing a nonunion of a C2 fracture as well as ligamentous injury, subluxation of C1-2 with resulting spinal stenosis and evidence of cord injury within the spinal cord at this level.

Conclusion

Open treatment and reduction of C1-2 fracture; C1-2 posterior fusion; C1-2 laminectomy were completed. His subsequent hospital course was prolonged when he remained ventilator dependent. He was discharged to a LTAC.

References

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2. T O'Brien Sr, W., Shen, P., & Lee, P. (2015). The dens: normal development, developmental variants and anomalies, and traumatic injuries. *Journal of clinical imaging science*, *5*.

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