History
3 year old restrained passenger involved in motor vehicle accident.

Diagnosis
Hyperextension Injuries Thoracic Spine

Additional Clinical
Minimal prepontine extraaxial hemorrhage on CT of the brain. Extensive abdominal visceral injuries including splenic laceration, left renal laceration, mesenteric hematoma, and right adrenal hematoma with extensive hemoperitoneum.

Discussion
The thoracic spine is fairly resilient to injury owing to stabilization by the shoulder girdle and rib cage. Most thoracic injuries are related to hyperflexion giving rise to compression fractures and hyperflexion-dislocation injuries. Hyperextension injuries in the thoracic region are very uncommon and not usually even mentioned in the various classification schemes. Hyperextension injuries are usually due to falls with the patient's back landing across a narrow structure such as a fence or a tree limb. The upper thoracic spine may have a slight lordosis and predispose to hyperextension injuries which may be potentiated in children because of the increased ligamentous and joint capsular laxity, decreased muscle mass and overall flexibility.

Findings
CT-Anterior-inferior corner fracture of T2 with the height of the fragment greater than the width and transverse splitting of the posterior elements of T3 extending anteriorly beneath the superior endplate of the vertebral body.
MR-Sagittal T2 and IR MR images show significant craniocervical junction injury (precervical hemorrhage and edema, disruption of the anterior longitudinal and apical ligaments, central cervicomediullary edema, and posterior interspinous and paraspinous edema; subluxation of the atlanto-occipital joints not shown) and hyperextension teardrop fracture of T2 and hyperextension distraction injury of T3. The anterior longitudinal ligament is functionally disrupted by the teardrop fracture, the posterior longitudinal ligament is buckled but intact, and the posterior ligamentous complex is likely disrupted at T2-T3. Cervicothoracic epidural hematoma is seen anteriorly.

Reference
Disclaimer
This teaching site is partially funded by an educational grant from GE Healthcare and Advanced Radiology Services, PC. The material on this site is independently controlled by Advanced Radiology Services, PC, and GE Healthcare and Spectrum Health have no influence over the content of this site.

Content Download Agreement
The cases and images on this website are owned by Spectrum Health. Permission is granted (for nonprofit educational purposes) to download and print materials to distribute for the purpose of facilitating the education of health professionals. The authors retain all rights to the material and users are requested to acknowledge the source of the material.

Site Disclaimer
This site is developed to reach healthcare professionals and medical students. Nothing this site should be considered medical advice. Only your own doctor can help you make decisions about your medical care. If you have a specific medical question or are seeking medical care, please contact your physician.

The information in this website is provided for general medical education purposes only and is not meant to substitute for the independent medical judgment of a physician relative to diagnostic and treatment options of a specific medical condition.

The viewpoints expressed in these cases are those of the authors. They do not represent an endorsement. In no event will Advanced Radiology Associates, PC, Spectrum Health Hospitals (Helen Devos Children's Hospital) or GE Healthcare be liable for any decision made or action taken in reliance upon the information provided through this website.