

Small bowel incarceration in the lumbar spinal canal from hyperextension seat belt injury

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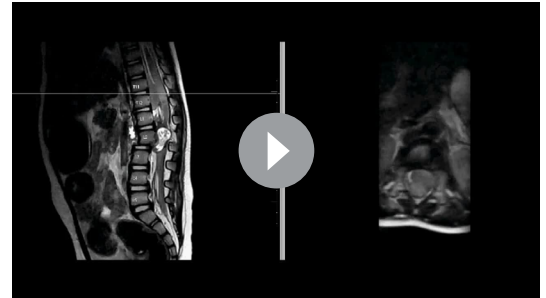
DESCRIPTION

A female toddler presented following a motor vehicle rollover (MVC) in which she was seated on her parent's lap facing backward with a lap-only seat belt over her lumbar spine. On assessment, she had a T10 ASIA Impairment Scale grade A (AISA) complete spinal cord injury.

Initial abdominal CT showed a renal laceration, hypoenhancing pancreas, retroperitoneal haematoma and an L2–3 extension-distraction injury with fracture of the pars and lamina, L1–L2 interspinous widening, 4 mm retrolisthesis and a complex mass inside the spinal canal (video 1).

An MRI spine was performed to better evaluate the L2–3 injury and intraspinal mass, which showed complete disruption of the ligaments and disc with avulsion of the L2 inferior endplate (video 2). The mass was deemed to represent a loop of herniated small bowel thought to be proximal jejunum containing a 180° twist. The CT was reviewed again and found to show small bowel mesentery thickening with heterogeneous enhancement concerning for vascular compromise and oedema. There was severe compression of the spinal cord, conus medullaris and cauda equina from T11 to L2 from the entrapped small bowel loop and epidural blood products, with spinal cord oedema present and suspected avulsion of the dura and cauda equina.

A combined procedure with trauma and paediatric surgery was planned for exploratory laparotomy (ex-lap) and anterior spinal fusion, followed by posterior spinal decompression and fusion. The L2–3 level was noted to be extremely hypermobile via fluoroscopy during positioning for the ex-lap, and care was taken to achieve anatomical alignment. The ex-lap procedure

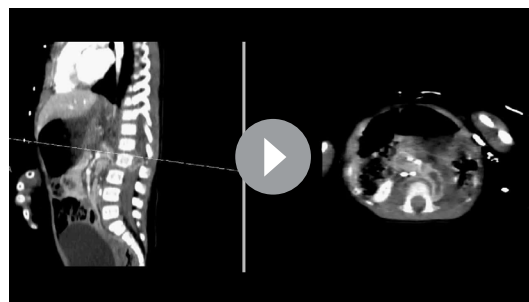


Video 2 MRI with extension-distraction injury at L2–3 and entrapped bowel in the spinal canal, in addition to a ventral epidural haematoma compressing the spinal cord at T11–L1.

revealed bowel trapped in the L2–3 disc space that was carefully extracted, and due to devascularisation required a short-segment resection. There was also a grade V left kidney injury with ureter avulsion requiring a nephrectomy. The anterior spine was then exposed and an L2–L3 discectomy and instrumented fusion was performed. To follow closure of the laparotomy, the patient was positioned prone and a T11–L1 laminectomy and L1–L2 fusion with navigated pedicle screw placement was performed. The patient tolerated the procedure well with stable upright radiographs on postoperative day 7 with restored alignment good hardware placement. She was discharged on postoperative day 11 to inpatient rehabilitation.

At 9 months follow-up, the patient had no back pain, but remained AIS A without movement or sensation below L1. She had started school and was working with physical therapy.

Bowel entrapment in the spine is a rare complication that is often secondary to high intensity traumatic injury from motor vehicle accidents.¹ There are five reported paediatric cases with vertebral fractures, all of which involved the jejunum and lumbar spine between L1 and L4.^{2–6} Four cases had complete recovery with no residual deficits; however, one case report had similar persistent lower extremity motor and sensory loss.^{2–6} Diagnosis may be delayed and subsequently detected on laparoscopy. This case highlights not only the catastrophic complications secondary to inappropriate seat-belt use, but also the importance of preoperative MRI in providing critical data for surgical planning.⁷



Video 1 CT with fracture in the lumbar spine at the L2–L3 level and a complex mass inside the spinal canal.



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Learning points

- ▶ Bowel entrapment in the spine is a rare complication that is often secondary to high intensity traumatic injury from motor vehicle accidents.
- ▶ Diagnosis of bowel incarceration in the spine is difficult and should be considered for paediatric patients in MVC with a lap-only seat belt over their lumbar spine.
- ▶ MRI can be used for diagnostic purposes and patients with incarceration of their bowel need emergent laparotomy and stabilisation on their spine.

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Case reports provide a valuable learning resource for the scientific community and can indicate areas of interest for future research. They should not be used in isolation to guide treatment choices or public health policy.

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