

Pathological burst fracture in the cervical spine with negative red flags: a 12-year follow-up

Jocelyn Cox, DC¹

Chris DeGrauw, DC, FRCSS(C)²

Erik Klein, DC³

In 2004, a 61-year-old male presented to a chiropractic clinic complaining of neck pain after hearing a ‘crunch’ when getting out of bed that morning. The initial history intake and physical examination identified no red flags or indications for the patient’s pain, with the exception of traction being pain-provoking. Conventional radiographs were ordered, which identified a pathological burst fracture of the fourth cervical vertebra. This Imaging Case Review (ICR) is to provide clinicians with a follow-up to the patient’s care and current state.

(JCCA. 2017;61(1):65-67)

KEY WORDS: chiropractic, red flags, multiple myeloma

En 2004, un homme de 61 ans se présente à une clinique de chiropratique en se plaignant de douleur cervicale après avoir entendu un craquement en se levant du lit le matin même. Au début, les antécédents et l’examen physique n’ont pas permis de déceler de signal d’alerte ou d’indication expliquant la douleur du patient, sauf pour la traction qui provoquait de la douleur. On a procédé à des radiographies traditionnelles qui ont décelé une fracture-éclatement pathologique de la quatrième vertèbre cervicale. Cet examen de cas d’imagerie a pour but de fournir aux cliniciens un suivi des soins prodigués au patient et de son état actuel.

(JCCA. 2017;61(1):65-67)

MOTS CLÉS : chiropratique, signal d’alarme, myélome multiple

¹ Department of Graduate Education and Research Program, Canadian Memorial Chiropractic College

² Department of Undergraduate Education, Canadian Memorial Chiropractic College

³ Private practice

Corresponding author:

Jocelyn Cox

Department of Graduate Education and Research Program, Canadian Memorial Chiropractic College, 6100 Leslie Street, North York, ON, M2H 3J1

Email: drjocelyncox@gmail.com

© JCCA 2017

The authors have no competing interests to declare. There was no financial support received in preparation of this manuscript.

Informed consent was obtained from the patient for the publication of this manuscript. All efforts to ensure anonymity have been attempted.



Figure 1.
Anterior-poster open mouth plain film image: read as osteopenic, otherwise normal.



Figure 2.
Anterior-posterior cervical spine: decreased vertebral body height of C4 (arrow), moderate degenerative joint disease of the Lushka and facet joints at C4-5, C5-6, and generalized osteopenia, deviation of the tracheal air shadow to the right.



Figure 3.
Lateral cervical spine plain film image: severe pathologic compression fracture of C4 vertebral body, increase in the AP dimension (arrow) with focal anterior displacement of the retropharyngeal soft tissue, posterior displacement of the posterior wall of the vertebral body compromising the spinal canal, moderate to severe generalized osteopenia, with a decrease in cervical lordosis.

Case Presentation

This case is a follow up on the care the patient received after being sent to hospital by the chiropractor in January 2004 (Figures 1-3).¹ The patient was referred to the local hospital where he underwent a computerized tomography (CT) scan that afternoon. The report identified extensive osteolytic destruction of the vertebral body with extension into the pedicles and superior articular processes. The fracture appeared chronic and included retropulsion of the bone and 50% spinal canal compromise. The radiologist suggested multifocal osteolytic lesions with a chronic pathologic fracture of C4. On the same day, an abdomen and pelvis CT was ordered which showed no intra-abdominal metastasis. For a week following admission to the hospital, the patient received chest radiographs, which identified lobar atelectasis. After two weeks in hospital, his liver enzymes increased, though no cause was found on abdominal ultrasound. By February 4th 2004, he was stable and able to begin chemotherapy through a peripherally inserted central catheter line, which was inserted in the cavoatrial region. On the same day, the patient underwent a cervical and thoracic spine CT to assess for further bony destruction, which revealed that the pathologic fracture had not yet healed. The severe spinal canal stenosis had progressed to 9mm width at its narrowest². The

osteolytic lesions had expanded into the ribs and there was greater than 50% bone destruction at C6, and near complete replacement of bone in T5 with erosion through the posterior cortex into the spinal canal. Although the T5 vertebral body height was preserved, the radiologist warned of imminent pathological fracture at that level.

In March 2004, a cervical spine CT with contrast was ordered. The C4 pathological fracture had further collapsed with increased retrolisthesis of C3 on C4. Mild cord compression was noted. By April 2004, these findings had stabilized, and no further progression of findings was noted on monthly monitoring follow-ups. In late August 2004, a cervical spine CT without contrast revealed min-

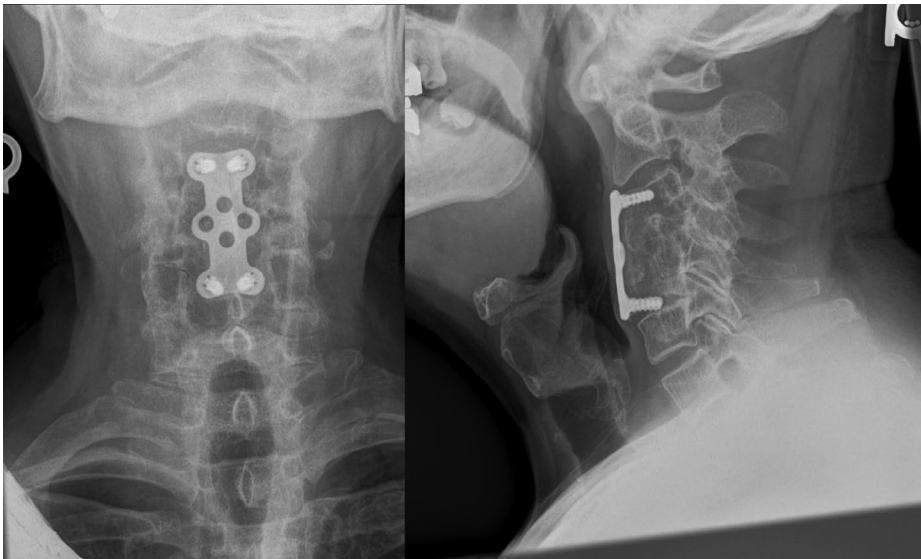


Figure 4.
Stable fusion C3-5, mild degenerative joint disease C5-6, moderate facet arthrosis C2-3, mild facet arthrosis C5-T1, mild osteopenia.

Table 1.

Key imaging features and aetiologies of pathological burst fractures.²

Key imaging features:
<ul style="list-style-type: none"> • Loss of vertebral height on AP and lateral views involving both anterior and posterior vertebral body wall • Interpediculate widening • Possible retropulsion of vertebral body into spinal canal
Aetiologies: metastatic carcinoma, multiple myeloma, Langerhan histiocytosis

or healing had occurred. In September 2004, the patient elected to undergo an internal reduction-fixation with partial corpectomy. The surgery was performed with a metal plate and screws bridging C3-C5. On post-surgical follow up imaging, there remained mild retrolisthesis of C3 on C4 but with marked improvement in alignment and stenosis. Final radiographs performed in late October 2004 confirmed that the fusion was stable without subluxation on flexion-extension views.

The case report on this patient was published in March 2016.¹ The patient is currently receiving follow up assessments every six months from his oncologist and has ceased chiropractic management. The most recent radiographs are shown in Figure 4. The key imaging features and aetiologies for pathological burst fractures are listed in Table 1.

As discussed previously¹ this case serves to emphasize that it is pertinent to recognize the limited accuracy of many orthopaedic tests. In this case, clinical examination failed to reveal a pathologic fracture of the cervical spine that was ultimately identified radiographically. This case further illustrates the need for practitioners to be diligent in their clinical assessment of patients, to be aware of subtle signs of disease processes, and to utilize diagnostic imaging when appropriate in ruling out possible sinister differential diagnoses. These rare cases do present in chiropractic offices and with diligent and attentive care, the likelihood of a positive outcome increases.

Key Messages

- Diligence is essential in the clinical assessment of subtle signs of disease processes
- Although rare, cases of pathological spinal fractures do present to chiropractic offices
- Radiographic intervention is the diagnostic tool of choice to confirm a pathological fracture

References

1. Cox J, DeGrauw C, Klein E. Pathological burst fracture in the cervical spine with negative red flags: a case report. *J Can Chiropr Assoc.* 2016;60(1):81-87.
2. Yochum TR, Rowe LJ. *Essentials of skeletal radiology.* 3rd ed. Philadelphia, Pa: Lippincott Williams & Wilkins; 2005.