



**"Lodox full-body scan is the perfect tool to evaluate the whole body of an injured child in just a few minutes. This evaluation can give you more information than only about the condition of the bones, and that makes the Lodox full-body scanner indispensable for good care at a Paediatric Trauma Unit."**

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## A case study from the Red Cross Children's Hospital, Cape Town, South Africa.

### INTRODUCTION

Trauma is the leading cause of morbidity, mortality and disability in childhood. Diagnostic errors in trauma departments are primarily attributable to inadequate radiographic practice, with missed fractures comprising the largest proportion of such errors<sup>2</sup>. Inadequate assessment may contribute up to 30% of early deaths in children with polytrauma<sup>3</sup>. The ability to perform extensive radiographic evaluation could overcome these problems. However, the risks associated with ionising radiation are especially high in children, demanding caution with imaging procedures, even in the trauma setting<sup>4</sup>. Although viewed as a simple, minor procedure, insertion of an intercostal chest tube is a procedure with complication rates of 2 – 25%, with the potential to cause life-threatening conditions when placed incorrectly<sup>5</sup>, and requiring radiographic evaluation to ensure correct placement.

### CASE PRESENTATION

A 4 year-old child was referred from a general practitioner to the Red Cross Children's Hospital Trauma Unit with the history of being struck on the head by a falling table. He had a Glasgow Coma Scale less than 8, respiratory distress with respiratory rate of 40 breaths per minute, blood pressure of 130/90 mmHg and pulse of 70 beats per minute. On route to the hospital, the child began to clinically decompensate, was intubated and ventilated by paramedic staff. Blood pressure and pulse rate had both increased on arrival at the hospital. Oxygen saturation was 50%. Massive subcutaneous emphysema was noted clinically.

### IMAGING, DIAGNOSIS AND TREATMENT

Clinically, the endotracheal tube was in situ but ventilation was not possible due to high pressure. There was no air entry on the left side of the chest. A left tension pneumothorax was clinically decompressed and a left intercostal chest drain placed. This resulted in temporary oxygen saturation of 90%, but this decreased to below 70%. A total body Lodox radiographic image was obtained demonstrating a) a well-placed left intercostal drain, b) a tension pneumothorax on the right with a mediastinal shift to the left and c) massive subcutaneous emphysema involving the head, neck, trunk and all four extremities (see X-ray image). The right tension pneumothorax was immediately decompressed and right-sided chest drain inserted, resulting in saturation of 100%. Further CT scan demonstrated a right-sided small subdural collection associated with a small right-sided temporal contusion and fracture of the greater wing of the sphenoid. Four hours after injury, the patient was weaned from the ventilator and extubated. He had an unremarkable clinical course and both chest drains were removed in due course. The patient was discharged 6 days after admission, in a stable state.

### DISCUSSION

Routine full-body radiography for trauma patients would eliminate some diagnostic errors and delays associated with paediatric trauma practice. Total body X-ray imaging with low radiation dose (Lodox) has been shown to be effective for triage evaluation in paediatric polytrauma, affording image quality comparable to that of a standard CR system, and giving the possibility to compare the left and right side of the patient in one image<sup>6</sup>. The system has also been shown to be able to detect abnormalities including systemic complications without associated clinical signs<sup>7</sup>. In this case, Lodox provided the ability both to diagnose the previously missed right-sided tension pneumothorax, as well as check for correct placement of the intercostal chest tubes.

### CONCLUSION

This case report shows that total body imaging can not only be effective in the initial assessment, but can also be utilised for radiological reassessment after the initial resuscitation and to verify the placement of chest tubes.

### References

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