



## CLINICAL IMAGES

### Severe high cervical spinal cord injury

John R Ouma

The problem of managing severe high cervical spinal cord injury can be a difficult one indeed, especially in the public sector where the life support equipment and intensive care personnel required for the task are not always readily available, and questions abound as to the futility or otherwise of the exercise.

As a result, different hospitals have devised their individual protocols for handling these patients based on their unique circumstances. Frequently, these protocols vary widely between state hospitals and grossly between the state and private sectors, and range from 'do not resuscitate' orders at one extreme to full and unrestricted management at the other.

Severe high cervical spinal cord injury results in, *inter alia*: (i) respiratory insufficiency from diaphragmatic and intercostal muscle weakness, leading to respiratory acidosis and hypoxia; (ii) hypotension from the associated sympathectomy; (iii) metabolic acidosis from hypotension; (iv) renal malfunction due to the associated hypotension and acidosis; and (v) complete quadriplegia in the worst case scenario, otherwise varying degrees of quadriparesis.

In dealing with these cases, several dilemmas arise, including:

- Is there any prognosis for any recovery, and if incomplete recovery, what will be the quality of such life? Who decides on what is acceptable quality of life?
- Should the patient be ventilated?
- Should inotropic support be commenced?
- What are the treatment limits?
- Should the patient be admitted to ICU at all?
- What is the role of the law in this decision-making process?
- What is the ethically correct approach?
- What are the affordability and availability of technologies such as diaphragmatic pacers and home ventilation, especially with regard to the majority of the population? Will the patient's socio-economic standing therefore dictate the course of the clinical decision making?
- What are the wishes of the patient, where these can be expressed, bearing in mind that patients are frequently awake and mentally orientated?

- What are the wishes of the family?

A middle-aged woman who presented to casualty with a crossbow bolt lodged in her neck, the bolt having transected the spinal cord at the C2 level (Figs 1 and 2), is a case in point.

Though hypotensive and quadriplegic, she was fully awake and aware of her predicament.

There is a need for universally agreed-upon standards of care for this group of patients.



Fig. 1. Lateral plain cervical X-ray showing a section of the crossbow bolt lodged in the neck at the level of the second cervical vertebra.

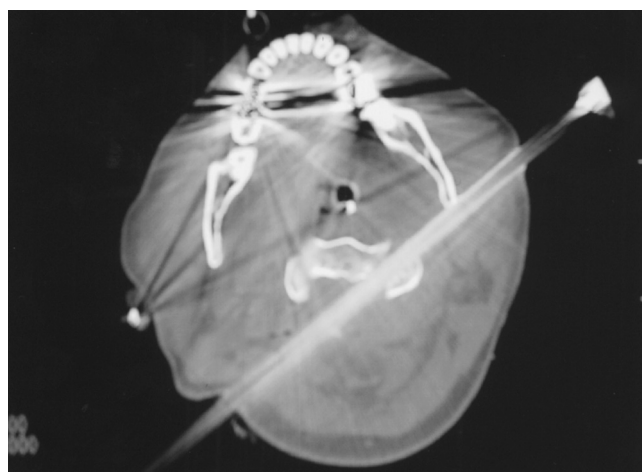


Fig. 2. Axial computed tomography scan (bony window) at the level of the second cervical vertebra, showing transection of the cord by the crossbow bolt.

The author is a senior specialist neurosurgeon at Johannesburg General Hospital and the University of the Witwatersrand. Although engaged in all areas of neurosurgical practice, he is especially interested in the neurovascular, neuro-oncology and spine fields.