

Can break-dance break your neck? C1/C2 luxation with a combined dens fracture without neurological deficits in an 11-year old boy after a break-dance performance

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Abstract

Atlantoaxial dislocation in children is a very rare condition. We present the case of a dislocation happened during a break-dance maneuver. The purpose of this report is describing dangers of break-dancing and discussing the treatment we chose. The patient was followed up until 12 months after surgery. Magnetic resonance imaging and computed tomography of the cervical spine were evaluated. Translaminar fixation of C1/C2 had been performed after manual reposition under X-ray illumination. After a 12-month follow-up, the patient shows a stable condition without neurological dysfunction. He is not allowed to perform any extreme sports.

Introduction

We present a rare case of a combined odontoid dens fracture type I (Anderson/D'Alonzo) with an anterior C1/C2 luxation, without neurological deficits in an 11-year old boy. To our knowledge, this is the first case of such a combined cervical spine trauma without neurological disorders described in children. Furthermore, we report a 6- and 12-month follow-up showing an excellent neurologic outcome. We also stress out dangers which can occur in break-dance.

Case Report

An 11-year old boy was admitted to our Neurosurgical Department after he was break-dancing with his brother. During a *head-spin* stunt he injured his neck. After this performance, he was talking about pain in his neck. We did not find any neurological deficits like paresis, except the violent pain in his neck. Because of the fast paced trauma, we decided to perform a computed tomography (CT) examination of the neck-spine.

Diagnostic

The CT shows a C1/C2 dislocation with a combined dens fracture (Figure 1). The dens axis lies in front of the atlas. To foreclose an injury of the vertebral artery, a CT-angiography has been performed (Figure 1).

Therapy

Surgical repositioning was performed. In a first step the patients head was fixed into a Mayfield clamp in the supine position. Under X-ray control we started the reposition itself by axial extension. After this maneuver we were able to get the dens axis back in his normally position.

In the next step the patient was turned into the supine position. Another X-ray control shows that the dens axis and the atlas arch are well positioned.

A translaminar fixation of C1/C2 had been performed. Two 16 mm screws were placed into the C2 arch and two smaller ones with a length of 14 mm were screwed into the arch of C1. This construction was finally fixed with side and cross rods. The post-operative CT control is shown in Figure 2.

Follow-up

In the 3-, 6- and 12-month follow-up examinations the patients does not show neurological deficits. He is wearing his soft collar for protecting the neck. We decided to treat him with this collar, longer than usual, because of missing experiences in the literature. We are planning to remove the screws in December, one year after the accident.

Discussion

There are no comparable cases as the present one in the literature. For this reason we had to decide empirically which kind of treatment would be most appropriate. In our opin-

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ion the protection of the articulation and cervical spine movement was most important. This is the reason why we preferred a translaminar screw fixation with preservation of the joint in this young patient instead of transarticular screw fixation, which is used in other cases, even if they are not really comparable to our case.¹⁻³ If this long-term strategy will be as successful as we hope, all actual limitations for the patient, like the long time soft collar wearing, will be justified.

Conclusions

We are presenting a rare case of neck dislocation after break-dancing. A head-spin maneuver could almost turn a young boy paraplegic. Because of no similar cases in the present literature we relied of our personal expertise and experience of more than 25 years. The joint C1/C2 was preserved and the spine was surgically fixed as described in the report.

More and more sports go into extremes and endanger young athletes. Extreme sports are popular and the rate of *extreme* injuries not dealt with before is also increasing. The rate of treating these accidents just by personal experience will grow and therefore it is important to publish the results of newly treatments on such rare and never described before accidents.

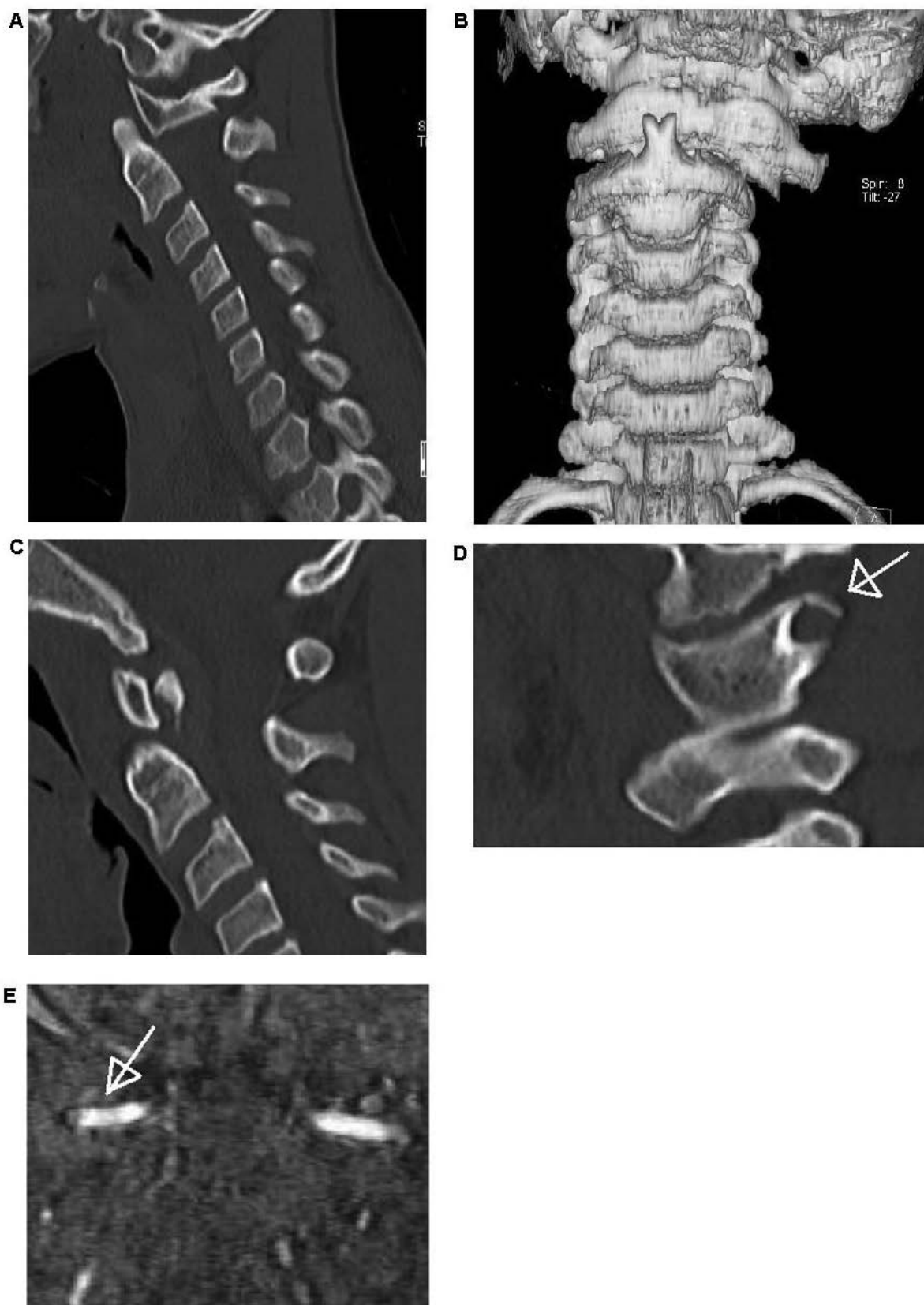


Figure 1. C1/C2 dislocation with combined dens fracture: A) sagittal cervical computed tomography (CT) showing the anterior dislocation of the dens axis; B) 3D reconstruction of the preoperative cervical CT; C) the fractured dens axis is shown; D) the vertebral foramen seemed to be injured, too (arrow); E) to exclude any lesions of the vertebral artery a CT angiography has been performed. No dissection of the vertebral artery could be seen (arrow).

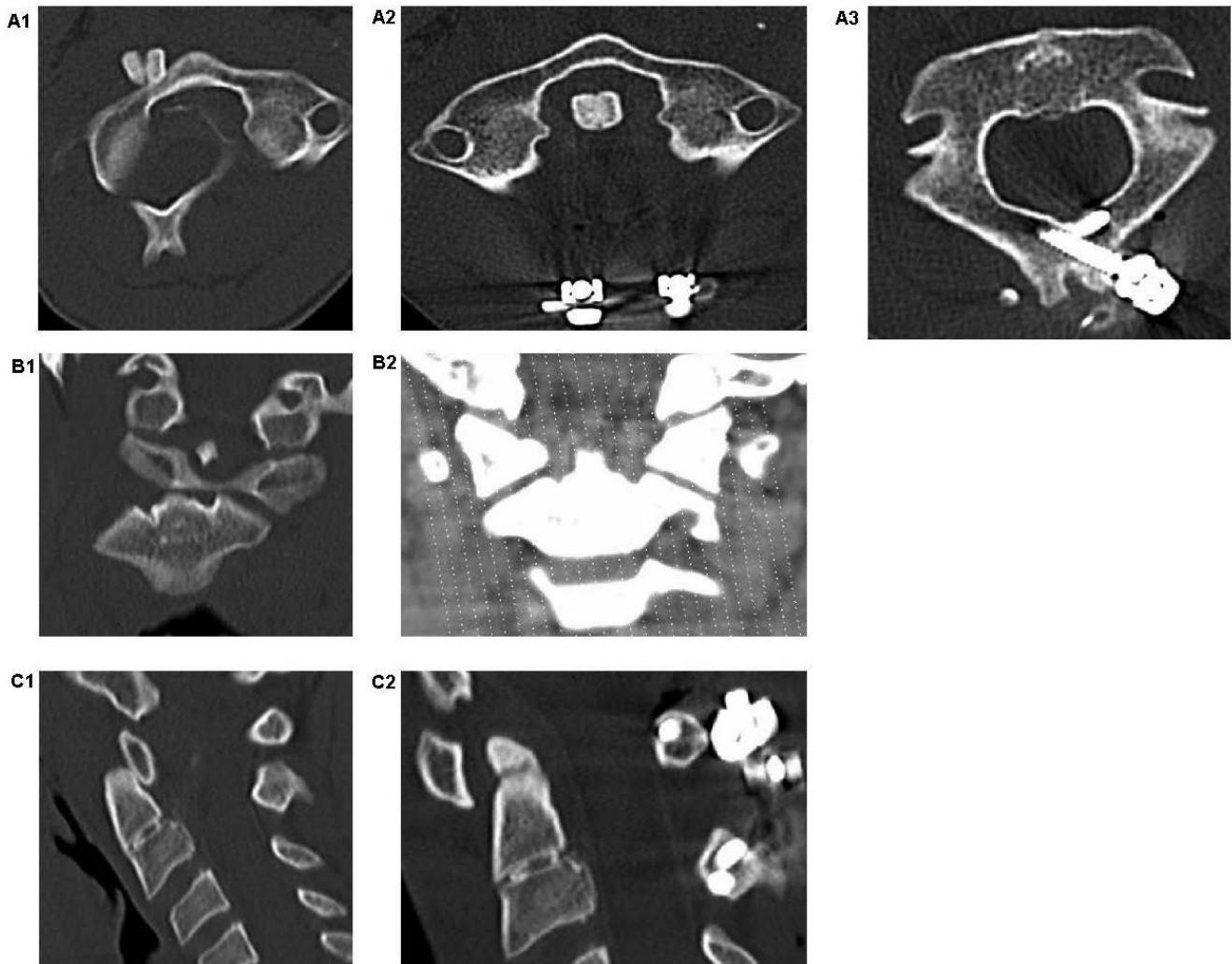


Figure 2. Surgical results of C1/C2 fixation: A1) presurgical; A2 and A3) transversal computed tomography (CT) after dorsal cervical fixation; B) coronal CT before (B1) and after repositioning of C1/C2 (B2); C) sagittal reconstruction of cervical spine before (C1) and after fixation (C2).

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