

# Intraoperative use of a cone beam CT in the treatment of atlanto-axial rotatory subluxation: a case report.

H. Maes (1,2), A. Janssen (1), S. De Muyenck (1), N. Vantomme (1)  
(1) department of neurosurgery, AZ Sint Jan Brugge, (2) UZ Leuven

## Introduction

Atlanto-axial rotatory subluxation (AARS) is a rare pathological condition of the upper cervical spine. It can be caused by multiple mechanisms: rheumatoid arthritis, Grisel syndrome, congenital dens anomalies... and trauma including minor neck manipulations. Children are more prone, due to weaker periarticular soft tissue and a steeper slant of the C1 facet plane against the vertical axis of C2.

If AARS does not resolve spontaneously, normal position of the atlanto-axial joint must be achieved by reduction and stabilisation.

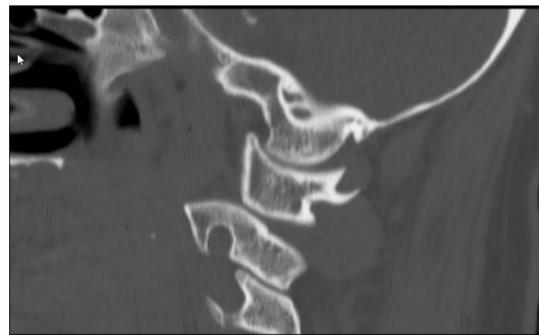
## Case

A 15-year-old girl presented with a painful torticollis, 4 weeks after trimaxillar jaw correction for skeletal class II malocclusion. CT scan of the cervical spine showed an AARS Field and Hawkins classification type I. We tried 1-week conservative treatment with a soft collar and prescription of muscular relaxant. As the AARS was persistent, we performed a transoral closed reduction under general anaesthesia, as described by Jeszenszky et al (1).

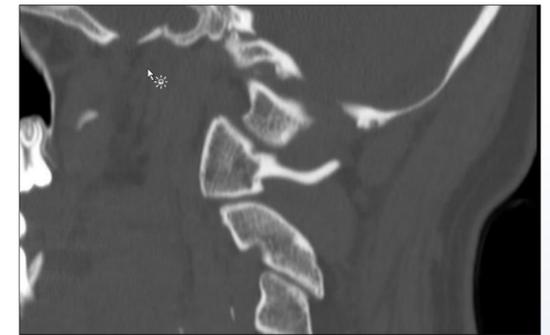
During this procedure, we used an intraoperative cone beam CT scan, to evaluate the degree of reduction. After we had obtained complete reduction, immobilisation with halo-vest was applied. After 20 weeks, we removed the halo and changed to a hard collar. We noticed a recurrence of the rotatory subluxation. We decided to perform a posterior fixation of C1 and C2.

## Discussion

There is no international consensus how to manage AARS. Since the AARS in our case already existed 4 weeks, we treated this patient as a subacute case. We achieved complete reduction with a closed intraoral procedure. We used an intraoperative cone beam CT scan, which turned out to be a very useful tool.

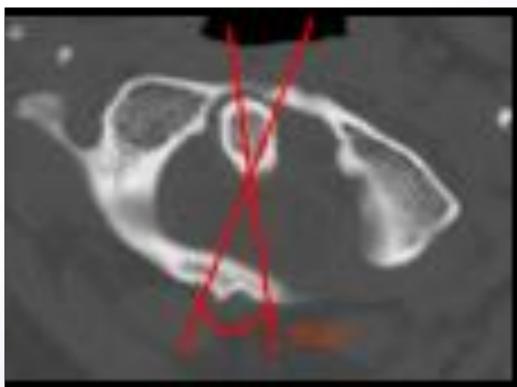


Left

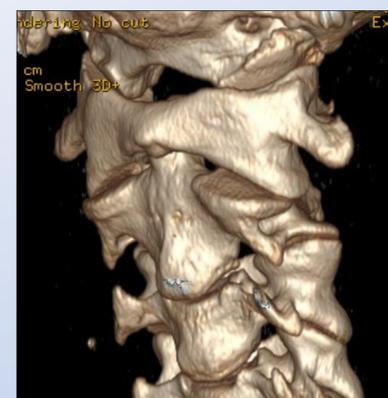


Right

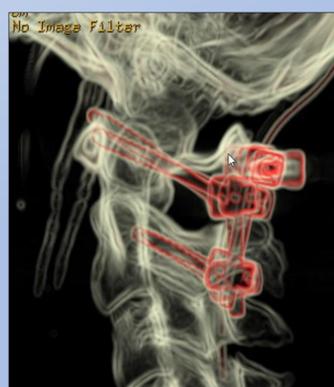
Preoperatively we can see posterior displacement of C1 relative to C2 at the left side and anterior at the right side.



The angle between the C1 and C2 antero- posterior axis amounts 35,8°.



Reduction obtained by transoral closed reduction.



Result after reduction and stabilisation by posterior fixation of C1 and C2.



SCAN ME