



# Surgical Treatment of Traumatic Cervical Spine Injury in the Elderly

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## Introduction

Cervical Spine Injury presents with morbidity and mortality. Surgical treatment has evolved with more selective and secure techniques to decompress, fix and stabilize the spine. With increasing life expectancy, there has also been an increment of this injury in elderly patients, posing special challenge to Spine Surgeons.

## Methods

The authors retrospectively report the surgical series of Traumatic Cervical Spine Injury in elderly patients (>70) from January 2010 to January 2014, operated on our department in Lisbon - Portugal. The group was divided in two: the cranio-vertebral junction and sub-axial spine injuries.

## Results - PART I

In the sub-group of Cranio-vertebral injuries there were 10 surgeries in 9 patients (5 female). The average age was 82 years (72-89). Five patients presented with type II odontoid fracture; 2 with C2 Hangman type fracture; 1 with type III odontoid fracture and 1 with severe atlanto-axial dislocation. All patients were neurological intact. Four (44%) patients were assigned primarily to conservative treatment between 4 and 16 weeks (medium 10 weeks). The anterior approach was used 4 times (2 odontoid screws and 2 C2-C3 fixations) and the posterior approach 6 times: 4 with Harms/Goel C1-C2 fixation, 1 with longer C1-C3-C4-C5 lateral masses fixation and other with C0-C2 fixation. One anterior odontoid screw loosened (revision with posterior fixation) and other patient had C2 pars malpositioned screw. No neurological morbidity or mortality was reported.

## Results - PART II

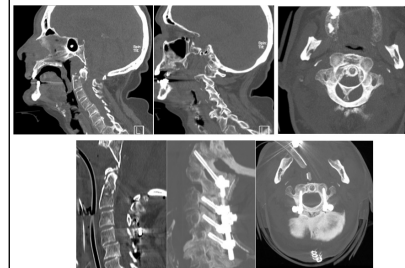
The Sub-axial Spine Injury group reported 18 surgeries in 14 patients (80% female) between 71-85 years. In eight surgeries, the patient presented in good neurological status (Frankel D/E) and in 4 in Frankel A or B. The anterior approach was used in 14 surgeries, 3 were posterior and 2 were combined approaches. The complication recorded were: 1 superficial wound infection; 1 deep cervical hematoma; 2 pull-out screws; 1 patient increased the dislocation in the follow-up and other persisted the compression with need of revision surgery. One patient died.

## Conclusions

In the cranio-cervical sub-group, surgery may be applied with good outcome and avoiding lengthy and hazardous conservative treatment.

In the sub-axial group the outcome is mainly dictated by the previous medical and neurological status.

### Odontoid fracture with severe C1-C2 dislocation

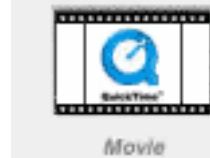


83 years old female treated with traction and posterior fixation (C1-C3-C4-C5)

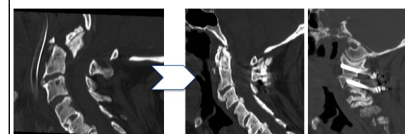
### Odontoid fracture



82 years old male with sub-acute odontoid fracture treated with single odontoid screw

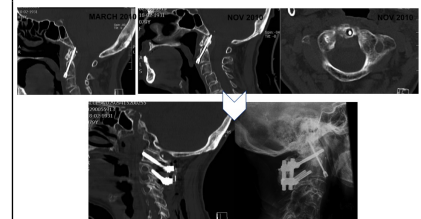


### Odontoid fracture



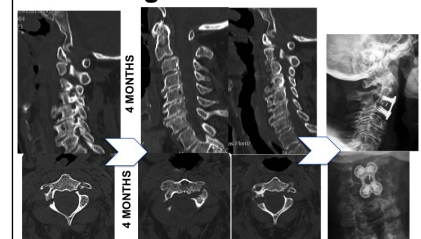
79 years old male treated with Harms posterior C1-C2 fixation for an odontoid fracture

### Odontoid fracture



79 years-old female with Harms posterior C1-C2 fixation after failure of anterior odontoid screw

### Hangman's fracture



79 years old male treated with anterior C2-C3 fixation after failure of conservative treatment for an Hangman's fracture

### Sub-axial dislocation



C5-C6 dislocation in a 75 years old male treated with 360° fixation