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SUBTYPES AND TREATMENT OF AXIS FRACTURES – RETROSPECTIVE ANALYSIS OF 172 CONSECUTIVE CASES WITH AXIS FRACTURE

Study design: Retrospective cohort study

Objective: To identify the proportions of axis fracture subtypes and to present the current treatment strategy in a regional population subset.

Background: Very little retrospective data exists from the last century on the distribution of axis fracture subtypes. Along with the ageing population a change in the subtype distribution can be assumed.

Patients and Methods: A dataset of all patients treated in one level one trauma centre for axis fracture between 2002 and 2014 was extracted from the hospital data system using the ICD-10 code S12.1. In the investigated region all axis fractures are referred to these centres and the regional coverage of the extract is assumed to be complete. Odontoid fractures were classified according to Anderson and d'Alonzo, and hangman fractures according to Effendi. Subgroup analysis was performed for geriatric patients (age $\geq$ 75 years).

Results: 172 patients (female 49%, mean age: 72 years) were treated for axis fracture. 61% of these were $\geq$ 75 years of age. Odontoid fractures comprised 75% of axis fractures, of which 2% were type 1, 69% type 2, and 29% type 3, while 25% of axis fractures were hangman fractures and 9% other fractures. In the geriatric subgroup 92% of all axis fractures were odontoid fractures, of which 70% were type 2, and 30% type 3 odontoid fractures. 6% were hangman fractures and 3% other fractures. 37% of axis fractures were treated surgically, (47% of type 2, 5% of type 3).

Discussion: This study presents reliable subset proportions of axis fractures in a large dataset. Knowledge of these proportions facilitates future epidemiological study of axis fractures, which is not specified within the ICD-10 coding. Due to a shift in treatment trends and the ageing population future changes in the proportion of surgically treated patients cannot be excluded.