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TYPE 2 ODONTOID FRACTURE IN THE ELDERLY AND FUSION OF ATLANTO-ODONTOID JOINT: CORRELATION OR CAUSATION?

Introduction/Aim

Our aim was to explore the possible association of type 2 odontoid fracture in elderly with fusion of the Atlanto-Odontoid joint. We hypothesised that etiologic mechanisms proposed thus far in the current literature although may have considered degenerative changes of cervical spine in general, however the specific correlation/causation with regards to these anatomically close structures has not been adequately investigated.

Materials and Methods

60 cases of C2 fractures aged 50-94 years were investigated for type2 fracture as well as radiologic (CT on admission) evidence of fusion of Odontoid to anterior arch of Atlas. Moreover extent of observed fusion was graded G0 to G3 as: 'Not fused' to 'Completely fused'.

Results

All (100%) had sustained the fracture by mechanical fall, of the verified type2 odontoid fractures (n=22) 77% (17) had evidence of fusion ranging from less than 1/3 contact area fused 36% (8), to extensive fusion of Odontoid to Atlas 27%(6).

Discussion

77% of the geriatric Type 2 Odontoid fractures due to mechanical fall had associated fusion of the Odontoid process to anterior arch of atlas. Moreover type 2 fracture was observed regardless of the extent of the fusion surface of the odontoid to atlas.

Conclusion

We speculate that considering the findings the fusion of odontoid to atlas appear to play a significant role in the type 2 odontoid fracture in the elderly; possibly creating a single unit of Head,C1 and the fused odontoid in the geriatric population, thereby predisposing the already fragile neck of odontoid to fractures. Interestingly even fusion over a minor area was enough to render the structures vulnerable. Wider studies would be beneficial. We would suggest a closer analysis of the odontoid fractures in elderly and other observable degenerative changes for a correlation of mechanism of injury during cervical motion.