



بسم الله الرحمن الرحيم

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A Systematic Review of Surgical Intervention versus Conservative Management in Treatment of Type II Odontoid Fracture in the Elderly

Systematic Review

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قالوا

لَسْبَدَانِكَ لَا عِلْمَ لَنَا
إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ
الْعَلِيمُ الْعَظِيمُ

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List of Abbreviations

Abb.	Full term
AAS.....	Atlantoaxial subluxation
ADI	Anterior atlantodental interval
ARDS	Acute respiratory distress syndrome
CO.....	Cervical orthoses
CT	Computed tomography
CVJ	Craniovertebral junction
HVI	Halo vest immobilizer
LZ	Lax zone
MIVs	Major injuring vectors
MRI	Magnetic resonance images
NZ	Neutral zone
POS.....	Prospective observational study
ROM	Range of motion
ROS	Retrospective observational study
SPSS	Statistical Package for Social Science
SZ	Stiff zones
VA	Vertebral artery

INTRODUCTION

The atlas, and axis are part of the craniovertebral junction (CVJ), which is a complex area that houses vital neural and vascular structures while achieving the most mobility of any segment within the spine¹.

It represents the transition between the brain and cervical spine. The majority of the spine's rotation, flexion, and extension occur between the occiput, the atlas, and axis².

The atlas lacks a vertebral body and instead articulates with the odontoid process or dens. The atlas also communicates inferiorly with the axis by flat, wide articular facets. The odontoid process and horizontal facets permit rotation of the skull, the predominate motion of the C1–2 vertebral junction¹.

Largely C1-C2 segment depends on the ligamentous supports and the integrity of the odontoid for its stability. Fusion of the C1-C2 complex may be required in cases of atlantoaxial instability. Its extreme mobility places heavy demand on the atlantoaxial fixation construct for sufficient rigidity required for its fusion³.

The odontoid process (dens, processus epistrophysis) (Fig. 1) of the axis (C2 or vertebra dentata) is the anchoring pivot of the craniovertebral junction (CVJ) and as such unique to the mammalian spinal column⁴. It projects superiorly from the C2 vertebral body with a diarthrodial articulation on its ventral

surface interfacing with the dorsal concavity within the anterior arch of the atlas. The anatomy of the odontoid process of the axis has many variations that stem from congenital variants or acquired forms, which lead to mild or severe instability of the atlanto-axial joint causing potential defects on the medulla or upper cervical cord with resultant neurological symptoms. A clear understanding of the embryologic and phenotypical variations of the odontoid process is the foundation for enlightened clinical decision-making in the assessment and management of the many disorders associated with the cranio-cervical junction that affect all stages of life.

Odontoid fractures are classically divided into three groups, as introduced by Anderson and D'Alonzo⁵. Type I fractures represent an avulsion fracture of the odontoid tip at the insertion of the alar ligament, Type II fractures occur through the base of dens, and Type III fractures extend into the C-2 vertebral body. (fig 1)

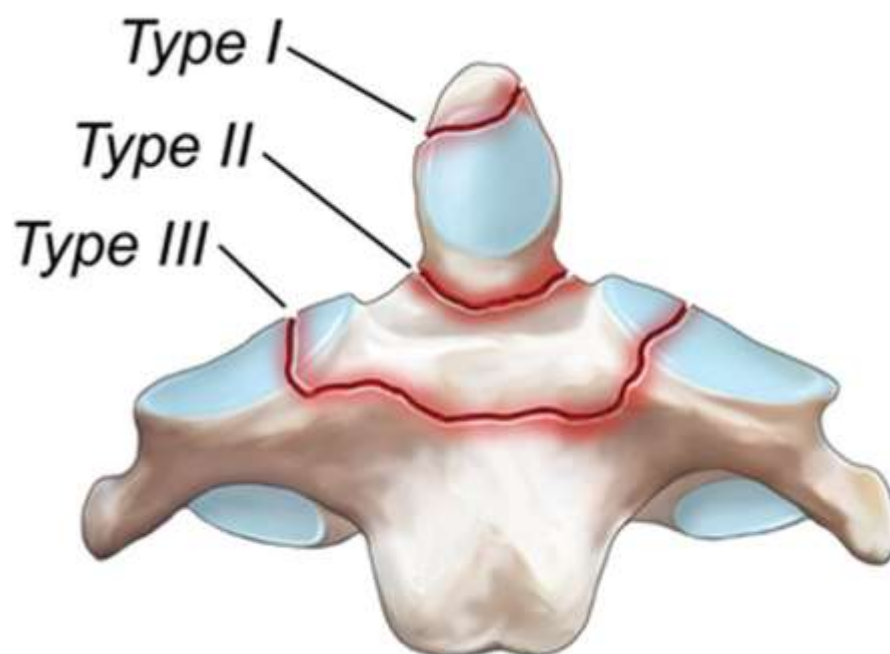


Fig. 1: Types of odontoid fracture ⁵

AIM OF THE WORK

To compare the outcome of conservative external immobilization versus surgical fusion in terms of morbidity, mortality, fusion rates and quality of life estimates in treatment of odontoid fracture type II in elderly. This will be done through a systematic review of literature addressing this research question.