Management Of
Cervical Spine Fractures

An Essay For fulfillment of Master degree of general surgery

BY

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بسم الله الرحمن الرحيم

وَأَنْزَلَ اللهُ
عَلَيْكَ
الْكِتَابَ
والْحِكْمَةَ
وَعَلَّمَكَ مَا لَمْ
تَكُنْ تَعْلَمُ
وَكَانَ فَضْلُ
اللهِ عَلَيْكَ
عَظِيمًا

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Introduction

Approximately 5-10% of unconscious patients who present to the emergency department as the result of a motor vehicle accident or fall have a major injury to the cervical spine. Cervical spine injuries cause an estimated 6000 deaths and 5000 new cases of quadriplegia each year. Most cervical spine fractures occur predominantly at 2 levels. One third of injuries occur at the level of C2, and one half of injuries occur at the level of C6 or C7. Most fatal cervical spine injuries occur in upper cervical levels, either at craniocervical junction C1 or C2. **(Winslow et al, Sep 2006)**

The normal anatomy of the cervical spine consists of 7 cervical vertebrae separated by intervertebral disks and joined by a complex network of ligaments. These ligaments keep individual bony elements behaving as a single unit. The cervical spine considered as 3 distinct columns: anterior, middle, and posterior. Column disruption may lead to mechanical instability of the cervical spine. The degree of instability depends on several factors that may translate into neurologic disability, secondary to spinal cord compression. **(Hockberger et al, 1998).**

Cervical spine injuries are best classified according to several mechanisms of injury. These include flexion, flexion-rotation, extension, extension-rotation, vertical compression, lateral flexion **(Jacobs and Schwartz, Jan 1986).**

Clinical evaluation of the cervical spine in a patient with blunt trauma is unreliable. In a study of surgical residents' ability to

predict cervical injuries on the basis of clinical examination alone, sensitivity and specificity were 46% and 94%, respectively. Because of these limitations and potential for catastrophic morbidity if injury is missed, most patients with complex blunt trauma seen in the ED undergo radiographic evaluation before clearance, and some may need further evalution by CT scan and MRI **(Duane et al, Jun 2007).**

When a cervical spine injury is suspected, minimize neck movement during transport to the treating facility. Ideally, transport the patient on a backboard with a semi rigid collar, with the neck stabilized on the sides of the head with sand bags or foam blocks taped from side to side (of the board), across the forehead, management of cervical spine fractures varies according to type of fracture, instability and presence of cord compression from external fixation to surgical decompression and internal fixation **(Nordin et al, Feb 15 2008).**

Aim of work

Review anatomy, pathophysiology and biomechanics, classification, diagnosis and Recent modalities of conservative and surgical management of cervical spine fractures.

Anatomy

ANATOMY OF THE CERVICAL SPINE

Knowledge of cervical spine anatomy, normal alignement and biomechanics is important for the understanding of all aspects of clinical analysis and management of cervical spine problems, the cervical spine may be divided into an upper cervical region and a lower cervical region **(Savas, 2003).**

The cervical spine consists of the following components:
Osseous component :cervical vertebra
Soft tissue component:
Ligaments and Joints
Spinal cord

The osseous component of the cervical spine

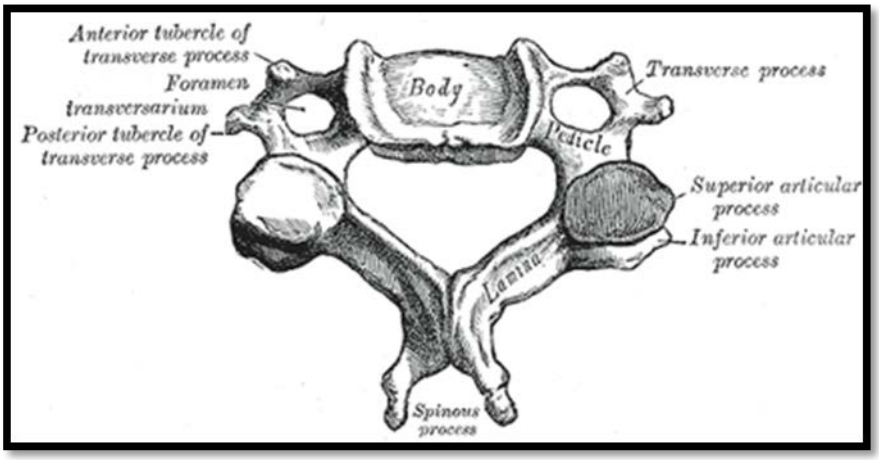

FIG. 01 A cervical vertebra (**Putz and pabst 1997).**

Cervical vertebrae are the smallest of the true vertebrae, and can be readily distinguished from those of the thoracic or lumbar regions by the presence of a foramen in each transverse process. The first, second, and seventh present exceptional features and must be separately described; the following characteristics are common to the remaining four. The body is small and broader from side to side than from before backward. The anterior and posterior surfaces are flattened and of equal depth; the former is