

Andrea Marvin MS4, Class of 2004
Department of Orthopedics

The Effect of Facial Fractures on the Treatment and Outcome of Trauma Patients Presenting with Acute Cervical Spine Fractures

Louis Jenis and David H. Kim

Investigation Performed at the University of Massachusetts Medical Center,
Worcester, Massachusetts

Background: While there have been a few reports involving identification of trauma patients with combined facial and cervical spine fractures, no study has specifically addressed the effects of a coexistent facial injury on evaluation and treatment of a significant cervical spine injury. The purpose of this study was to investigate whether coexisting facial fractures affect the timing, method, or rate of complications for treatment of acute cervical spine fractures.

Methods: A prospectively collected institutional trauma registry containing 50 patient records from the years 1998 to 2002 was reviewed for patients with combination facial and cervical spine fractures. Thirty seven patients were initially identified. Facial fractures were managed by Plastic Surgery while cervical spine injuries were followed by Orthopedics or Neurosurgery. Review of the patient records revealed that 5 patients died prior to any intervention, 2 patients had no acute facial fracture, and in 1 the cervical spine fracture was chronic. The remaining 29 patient records were thoroughly reviewed with specific attention to the timing, method and complications of cervical spine treatment while management of the facial fractures was ongoing.

Results: Of the 29 patients, there were 2 mandibular fractures, 4 orbital fractures, 7 nasal fractures, 7 maxillary fractures and 9 combination fractures not involving the mandible. The associated cervical fractures included 3 compression fractures, 1 burst fracture, and 7 facet fractures with the remainder being spinous or transverse process injuries. There was no appreciable correlation between a particular facial fracture and coexisting cervical spinal injury. A majority of the facial fractures were treated non-operatively, with 9 patients requiring plastic surgery intervention. 6 patients had soft tissue repairs to the face/ ears; 1 had an open repair of the zygomatic arch; and 2 had reconstructions of the nose. A distinct trend was identified in terms of lethality of injury, severity of cervical spine injury as well as delay and alteration in treatment of cervical spine injury in association with presence of a mandibular fracture. Among patients with non-mandibular facial fractures but requiring facial reconstruction, cervical spine interventions included: 1 patient who underwent anterior/posterior fusion for a C6-C7 flexion distraction injury/C7 superior facet fracture 4 days after their zygomatic arch procedure; 7 patients who were managed with hard collars; and 1 with a soft collar. In 1 patient, halo vest immobilization was originally recommended for a displaced C6 facet fracture; however the patient was treated with a hard collar because of a coexisting tripod fracture with a depressed orbit. Among patients with non-mandibular facial fractures not requiring facial reconstruction 5 patients were initially managed with halo vest immobilization for their cervical spine injuries with 1 of 5 eventually undergoing an anterior fusion of C1-C3 for a C2 Fx with C2-C3 subluxation. The remainders were managed with hard collars.

In contrast, the mandible fracture group consisted of 2 patients who both had additional facial injuries including maxillary and orbital fractures. 1 patient had a coexisting Type II odontoid fracture with mild diastasis/subluxation. Surgical treatment was delayed by inability to obtain an MRI due to acute placement of facial fixation implants, and the patient was treated initially in a halo vest. In the second patient definitive treatment of a displaced Hangman's fracture with surgery was deferred in lieu of halo vest traction due to the associated facial fractures.

Conclusion: This retrospective review of a busy level 1 trauma center revealed a significant rate of concomitant facial and cervical spine fractures. Non-mandibular facial fractures do not appear to interfere significantly with management of associated cervical spine injury. Mandibular fracture, however, appears to be a marker of more potentially lethal injury and is much more likely to alter the timing and choice of treatment with respect to associated cervical spine fracture. Further study is required to determine whether this alteration in care has an adverse effect on ultimate clinical outcome in these patients.