Head & Facial Trauma Case Study

As a Level II trauma center, HDH is prepared and required to manage complex trauma patients including complex facial trauma and neurosurgical trauma. Many times, trauma patients require multiple surgical specialties to work in concert with one another to address multi-system trauma. Below is a case presentation that highlights just such a case where trauma surgery, neurosurgery, and facial trauma surgery had to simultaneously provide emergent surgery.

In this case a person in their 40’s was bracing the bottom of a ladder that a coworker was on while removing the top section of a tree. A section of the tree with a six-inch diameter fell 20 feet striking the patient in the head and face. EMS arrived on scene in seven minutes to find the patient sitting up with significant bleeding, including an arterial bleed from their head and face. The laceration measured 11.8-inches by 1-inch running from the middle of their head and face to the lip. A portion of the laceration on the head was full-thickness. For EMS, the patient was alert and oriented (GCS 15) did not recall being struck and there were conflicting reports of loss of consciousness (LOC). There was also obvious boney deformity.

Prehospital treatment included high concentration Oxygen to treat a room-air pulse ox of 88%, patient positioned to protect the airway, airway suctioning as needed, hemorrhage control using direct pressure with a trauma dressing, spinal immobilization (c-collar and long-board), administration of one liter of normal saline via two large bore IVs, and on scene time limited to eight minutes.

In the Trauma Room: The patient arrived with a GCS of 15, blood pressure was mildly labile and she could protect her own airway. There were no further issues with the pulse ox and except for secretions in the airway, there was no respiratory compromise. The secondary exam mirrored the injuries found by EMS. Once the primary and secondary exams where complete the patient was transported to CT for scans of the head, face, neck, thoracolumbar spine, chest, abdomen, and pelvis.
The patient was found to have a scant epidural hematoma and a slightly depressed skull fracture through the left frontal bone extending to the left middle cranial fossa and crossing the left internal carotid artery (ICA) canal and basilar skull fractures. The patient also had significant facial fractures including a LeFort II fracture, orbital floor fractures, and zygomatic arch fractures. The patient was returned to the trauma bay where she was electively intubated in anticipation of her going to the OR for facial fracture repair.

Because there were fractures to the ICA canal it was determined that she needed angiography to rule out arterial dissection prior to going to the OR for management of her fractures. On the way to the OR she had her angiography while the neurosurgeon, facial trauma surgeon, and trauma surgeon looked on and planned the patient’s needed surgical repairs.

The patient’s surgery started with the neurosurgeon, Dr. Murphy, addressing her growing epidural hematoma. She evacuated the hematoma and repaired her skull fracture. Dr. Chen then performed an open reduction of her complex nasal fracture, a closed reduction of her septum, and a complex repair of the scalp, forehead, and intraoral laceration. Her other facial fractures were minimally displaced and did not warrant surgical repair.

To support the patients recovery from her head injury and facial repairs, the patient received a tracheotomy and feeding tube. Care of this patient was managed by a diverse team led by the Trauma Service and included the Critical Care Intensivists, Neurosurgery, Maxillofacial/Plastic Surgery, Ophthalmology, Nursing, Pharmacy, Respiratory Therapy, OT/PT, Case Management, and Nutrition.

The patient spent a total of 23 days in the hospital before going to Acute Care Rehab, where she was discharged home with services after five days of inpatient rehab. Upon being discharged home, the patient needed assistance with stairs, and taking a shower, but was otherwise independent.

The neurosurgeon, Dr. Katrina G. Murphy, MD, PHD, attended and graduated with honors from University Of California, San Diego School Of Medicine in 1997. Her neurosurgical residency was performed at the University of Maryland Medical Center, Baltimore, Maryland.

Dr. Stephen M. Chen works with Richmond Plastic Surgeons and previously practiced for eight years at Virginia Commonwealth University MCV/VCU Health System. He received his Medical Degree and completed the Plastic Surgery residency program at Virginia Commonwealth University. Dr. Chen is board certified in plastic surgery by the American Board of Plastic Surgery and has extensive experience in microvascular surgery. Dr. Chen brings a wealth of skills and knowledge to Henrico Doctors’ Trauma Service. Dr. Chen lives in Richmond with his wife and three children.