Air Medical Journal 35 (2016) 103–106

Contents lists available at ScienceDirect

Air Medical Journal

journal homepage: http://www.airmedicaljournal.com/

Case Review

A 58-Year-Old Man With Self-Inflicted Facial Trauma

W. Tyler Winders, MD, Elizabeth Powell, MD, Peter V.R. Tilney, DO, EMT-P, FACEP

A helicopter emergency medical service was dispatched to rendezvous with an advanced life support squad for a 58-year-old man who had sustained a self-inflicted gunshot wound to his anterior neck and face. The patient had called 911, and paramedics found him upright, maintaining his airway, and having difficulty phonating. He did not have increased work of breathing but was found to have an initial oxygen saturation of 92% on room air. He was placed on a nasal cannula by the emergency medical service. His heart rate was 110 beats per minute with a blood pressure of 134/90.

On arrival of the helicopter emergency medical service crew, the patient was alert and oriented. He was able to communicate with hand gestures but had significant bony and soft tissue injury to his neck and jaw. There was a wound beneath his mandible and another wound to his hard palate. His mandible had complete distraction anteriorly, with the remaining segments splayed laterally. No pulsatile bleeding was noted, but the patient did have significant continuous oozing, which was subsequently packed with procoagulant gauze. There was no noted subcutaneous air or expanding hematoma.

Before transport, the patient desaturated to 80%, with no improvement in oxygen saturation and worsening shortness of breath. Additionally, he was unable to tolerate lying flat, even for seconds. Thus, the decision was made to intubate because of the expected clinical course, failure to protect airway, and the concern for potential intracranial injury. The crew elected to perform a ketamine sedation to take an “awake look” given the many predictors of a difficult intubation. The patient was preoxygenated with a 100% nonrebreather mask that was already in place and a nasal cannula for apneic oxygenation. An oxygen saturation of 97% was obtained. Dual suction tubing was available given the amount of bleeding noted. Topical anesthesia was administered via atomized 4% lidocaine, and 1 mg/kg ketamine was given as a slow intravenous push.

A total of 3 attempts were required to secure the endotracheal tube. The first attempt was a failure because of blood pooling in the posterior oropharynx and the collapse of the soft tissues given the lack of bony support from the mandible. The patient continued to breathe spontaneously but did desaturate to the high 80s in approximately 20 seconds. The second attempt was unsuccessful because of adduction of the vocal cords, but a Cormack-Lehane grade 2a view was achieved with adequate suctioning. Succinylcholine was administered before the third attempt to optimize chances for successful passage. The third attempt was successful, with an 8-0 endotracheal tube passed over a gum elastic bougie.

The endotracheal tube was verified via auscultation and continuous end-tidal CO_2 monitoring. It was secured in place, and postintubation sedation was provided en route with push dose fentanyl and versed. No additional acute events occurred during the 15-minute flight. He had no episodes of hypotension en route, and his tachycardia improved. The patient arrived in the emergency department, and the endotracheal tube was noted to be in an adequate position with continued end-tidal CO_2 monitoring. After the initial evaluation, the patient received a computed tomographic scan of the head and face and computed tomographic angiography of the head and neck. Given the extent of his injuries, both trauma and plastic surgery were consulted. The patient was noted to have multiple mandibular and midface fractures with severe displacement of the mandible (Figs.1 and 2).

The patient was admitted to the surgical intensive care unit and required debridement of his wounds as well as tracheostomy placement given his severely distorted anatomy. He went on to have multiple other surgeries for both bony and soft tissue facial reconstruction. The first phase was mandibular fixation (Fig. 3).

Discussion

Critical care transport providers must consider the resources available to them and have a predetermined, algorithmic approach to the management of neck trauma as well as difficult airways. An understanding of the anatomy of the neck, types of trauma that can occur in that anatomic region, and having a standardized approach to airway management can improve patient outcomes.

Anatomy

The neck encompasses a high concentration of important vascular, aerodigestive, and neurologic structures in a relatively small space. Although some airway structures have cartilaginous support, only the spinal cord has any significant bony protection. Additionally, the neck contains several deep cervical fascial compartments that do not provide elasticity, and, thus, airway structures may be rapidly distorted from blood or air dissection. When classifying penetrating trauma of the neck, either triangles or zones have traditionally be used to risk stratify an injury.[1,2]

The 2 triangles, anterior and posterior, are divided by the sternocleidomastoid muscle (SCM). The anterior triangle borders include the mandible, the midline of the neck, and the anterior border of the SCM, whereas the posterior triangle is

1067-991X/$36.00
Copyright © 2016 by Air Medical Journal Associates
http://dx.doi.org/10.1016/j.amj.2016.02.003

Figure 1. A coronal view of dedicated maxillofacial computed tomographic imaging. Extensive soft tissue edema and emphysema with multiple mandibular and midface fractures noted.

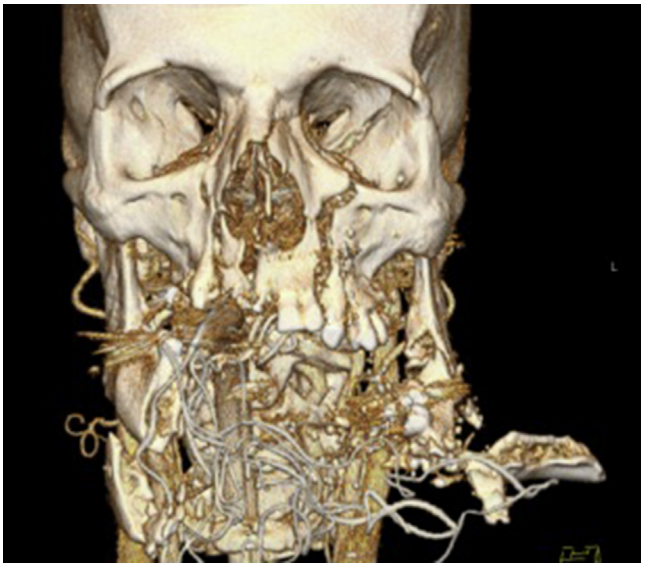

Figure 2. Three-dimensional reconstructed computed tomographic imaging shortly after the patient's arrival to the emergency department. Almost complete destruction of the mandible noted with severe displacement of the remaining fragments.

enclosed by the clavicle, the posterior border of the SCM, and the anterior border of the trapezius (Fig. 4). Aside from the subclavian vessels and apex of the lung, few vital structures are present in the posterior triangle. This is a stark contrast to the anterior triangle, which contains the aerodigestive structures, the carotid arteries, jugular veins, vagus nerves, phrenic nerves, and the thyroid gland.[1,2]

The zones of the neck are perhaps the more commonly used method of characterization. Originally described by Roon and Christensen in 1979,[3] the zones of the neck are vertically stacked. Zone I encompasses the region from the clavicles to the cricoid cartilage. Zone II begins at the cricoid cartilage and extends superiorly to the angle of the mandible, and zone III is located between the angle of the mandible and the base of the skull (Fig. 5).[4]

Initial Evaluation and Management: Airway

The evaluation of neck trauma begins with assessing and managing airway, breathing, and circulation, just as in any other critically ill patient. Multiple retrospective studies have shown that neck trauma significantly increases the level of difficulty in intubation.[2,5,6] One cohort of over 700 patients reports that approximately 10% of all patients with neck trauma will require immediate, life-saving interventions.[5] Thus, many of these patients will require interventions before arrival to the hospital, and, ultimately, as many as 60% of these patients require intubation at some point in their clinical course.[5] Providers should have a low threshold for airway intervention if there are any signs of significant vascular or airway injury such as expanding hematomas or subcutaneous emphysema. Simultaneously, however, providers must also weigh the risk of failed intubation in this patient population. In the setting of a significant penetrating neck wound with concern for vascular and airway damage, an early yet unnecessary intubation may lead to rapid deterioration from airway compromise.[7]

When oral endotracheal intubation is necessary, additional airway adjuncts should be considered. The most common is the gum elastic bougie, which can be initially used in placing a subsequent endotracheal tube. Fiberoptic intubation is a viable alternative if the airway does not have excessive secretions or bleeding, although it is not widely available on critical care transport services.[2] Depending on the degree of upper airway distortion, bag valve mask and supraglottic devices are reasonable rescue techniques. Surgical cricothyrotomy remains the last definitive rescue technique. However, it is important to note that expanding hematomas over the cricoid membrane and laryngeal fracture are relative contraindications to cricothyrotomy, and providers may use needle cricothyrotomy, tracheostomy, or direct tracheal intubation primarily. In these special circumstances, unless the providers are forced to act, delaying management until the patient can be taken to an operating room may be prudent.[1,2,8]

In some rare circumstances, the penetrating wound will create an open wound into the airway or inadvertent "tracheostomy." Intubation from above remains a possibility, but standard cricothyrotomy may not be a viable option. Using a bougie

Download English Version:

https://daneshyari.com/en/article/10162824

Download Persian Version:

https://daneshyari.com/article/10162824

Daneshyari.com