ABSTRACT

Objective: To describe the first reported atraumatic laryngeal fracture requiring surgical repair.

Method: Case report and review of the current literature

Result: Laryngeal fracture is a rare but potentially life threatening injury, which is commonly associated with direct external trauma to the neck. The authors present a case of an otherwise healthy 31 year old man who sustained an explosive barotraumatic laryngeal fracture from coughing, which was identified clinically and radiographically. He failed conservative management. The patient was taken to the operating room for a neck exploration and an acute anterior thyroid ala fracture was found, which was successfully repaired with open reduction and internal fixation.

Conclusion: This is the first reported case of a laryngeal fracture in the absence of trauma with intraoperative confirmation of an acute fracture requiring surgical repair. Although previous case reports have labeled these as "atraumatic" or "spontaneous," explosive barotrauma is a more accurate description of the mechanism of injury. A high index of suspicion is required when considering laryngeal fractures, as there is significant morbidity and mortality if not properly identified and treated.

INTRODUCTION

Laryngeal fracture is a rare but potentially life threatening injury, which is commonly associated with direct external trauma to the neck. The two most common mechanisms of injury are motor vehicle accidents and attempted strangulations or hangings (1). The clinical presentation can vary greatly, from a completely asymptomatic patient to someone in severe respiratory distress. As there is a significant associated morbidity and mortality with this type of injury, a high index of suspicion is necessary in order to ensure proper identification and treatment. Here we present a rare case of a thyroid cartilage fracture following a coughing episode, with no associated trauma to the neck.

Patient Presentation

An otherwise healthy 31 year old man presented to the emergency department with a hoarse voice, dysphagia and odynophagia, with significant pain in his anterior neck. He reported URI symptoms for the week prior to presentation, but 3 days prior he had a coughing spell during which he felt a "pop" in the front of his throat, associated with immediate pain in his neck. This persisted as a dull but tolerable pain in his neck, with some mild discomfort while swallowing. On the morning of presentation the patient sneezed and felt like his "throat ripped open," with severe pain, inability to swallow even his own secretions, and difficulty breathing when laying flat. Physical exam revealed crepitus of the neck with swelling and tenderness to palpation of the anterior neck. No external signs of trauma were present. There was an easily palpable "click" of the larynx with any neck movement or palpation of the thyroid cartilage. Flexible fiberoptic laryngoscopy was performed and revealed edema and hyperemia of the left true vocal fold and left arytenoids. The airway was patent and there was no evidence of mucosal injury or hemATOMA. A computed tomography (CT) scan of the neck with contrast was obtained, which showed an extensive amount of subcutaneous emphysema, as well as a minimally displaced fracture of the anterior thyroid cartilage (See Figure 1).

Patient Management

The patient was admitted to the ICU for monitoring of oxygen saturation and bedrest for observation, and he was started on IV antibiotics and IV decadron. After 24 hours of conservative management his symptoms were improving, with greatly improved swallowing ability, no respiratory distress while lying flat, and improvement in pain. After 48 hours a repeat flexible laryngoscopy was repeated with near-complete resolution of edema and the patient’s symptoms. On physical examination there was no crepitus, but a palpable click and instability of the thyroid cartilage remained. Approximately 72 hours after the initial injury, after the patient’s symptoms had resolved, he sneezed and instantly felt the pain return in his neck, along with recurrence of palpable crepitus in the neck following this sneeze. Given the instability of the fracture and the high likelihood that his symptoms would continue to recur, the patient was counseled regarding surgical repair of the fracture, and the decision was made to proceed with definitive repair of the fracture.

The patient was taken to the operating room for open reduction and internal fixation of thyroid cartilage fracture. A fracture extending the length of the thyroid cartilage was identified and plated (See Figures 2 and 3), with good re-alignment and stability. The patient remained intubated following surgery to allow for resolution of post-operative swelling. He was extubated on post-operative day 2, and he had no further symptoms for the remainder of his hospital stay.

Patient Follow-up

He was seen 3 weeks post-operatively and reported normal swallowing and no pain or swelling. He did report a continued intermittent "click" sensation when he swallowed, but no further pain or neck swelling, even when sneezing or coughing. A flexible fiberoptic exam was normal as well.

DISCUSSION

To our knowledge there are only four other previously published case reports of similar atraumatic laryngeal fractures following episodes of coughing or sneezing (2-5). All prior reported cases were successfully managed with conservative medical management, which includes steroids, observation and airway monitoring with bedrest. This case represents the first published case report that required surgical repair, and therefore the first case report to our knowledge in which a fracture was confirmed with direct visualization rather than by imaging alone.

REFERENCES