Spontaneous Fracture of the Larynx after Coughing
Victoria R. C. Alexander and Stephen Toynton
Otolaryngology -- Head and Neck Surgery 2012 147: 801 originally published online 24 April 2012
DOI: 10.1177/0194599812445744

The online version of this article can be found at:
http://oto.sagepub.com/content/147/4/801
Spontaneous Fracture of the Larynx after Coughing

Victoria R. C. Alexander, MBChB, DOHNS, MRCS, and Stephen Toynton, MBBS, FRCS

No sponsorships or competing interests have been disclosed for this article.

Keywords
thyroid, cartilage, fracture, larynx

Received February 14, 2012; revised March 20, 2012; accepted March 28, 2012.

Laryngeal fractures are often seen after direct trauma to the neck from motor car accidents and from suicide by hanging.1 We present a case of thyroid cartilage fracture with an unusual etiology. This case report was deemed exempt from ethical review by the South West of England National Research and Ethics service.

A 29-year-old man presented with a change in his voice, odynophagia, and dysphagia. Three days previously he had coughed violently and simultaneously heard a crack. Breathing also became difficult for a few seconds. Since then, he had experienced pain over the laryngeal prominence and some difficulty with swallowing. On the day of presentation, he had sneezed and immediately coughed up fresh blood with clots for approximately 10 minutes. Once this settled, he found that his voice had become husky and he could swallow only saliva. His voice was hoarse but on examination there was no evidence of stridor or any breathing difficulty. Tenderness was elicited on palpation over the thyroid and cricoid cartilages with palpable crepitus. On fiber-optic examination, there was a hematoma of the superior aspect of the left vocal cord and the adjacent vestibular fold with surrounding edema; however, movement of both cords was normal (Figure 1A). The vocal cords appeared level with each other, and there was no displacement or widening of the anterior commissure. A gastrograffin swallow was normal, and a computed tomography (CT) scan showed subcutaneous emphysema and a midline thyroid cartilage fracture with slight displacement (Figure 1B). A nasogastric tube was inserted, and the patient was kept nil by mouth until his voice and swallowing returned to normal 3 days later. The patient was reviewed 7 days later in the outpatient clinic; the only residual symptom was a slightly deeper voice. Repeat fiber-optic nasendoscopy showed normal vocal cord movement, with erythema over the left vocal cord and slight shortening of this cord. Repeat magnetic resonance imaging showed that the surrounding edema and emphysema had settled.

Discussion
There are only 2 other previously published case reports of this type of laryngeal fracture.2,3 In both cases, the patients were male and, in common with the above case, experienced sudden dysphonia and odynophagia after a violent episode of sneezing/coughing. The CT findings of a midline thyroid cartilage fracture without significant displacement in this case were also similar to those previously described in 2007.3

It is possible that each of the individuals described in the previous case reports had an inherent congenital abnormality resulting in a focal weakness in the thyroid cartilage. The CT appearances in our case suggest this, as the fracture edges looked mature, and this may represent minimal displacement of a preexisting anomaly. A search of Medline (1950 to 2011) using the PICO (patient/population, intervention, comparison, and outcome) method did not reveal any such previously reported congenital abnormality. It is possible that the mineralization and ossification process was abnormal in these subjects.4 This process does differ between men and women,5 which could account for the observed male predominance of spontaneous thyroid cartilage fractures. It is difficult to define the true etiology, however; further investigation of what defines the parameters of a normal adult thyroid cartilage would potentially shed light on this issue.

The management philosophy should not differ from that of acute laryngeal trauma.1 A careful clinical assessment is mandatory with CT scanning for suspected fractures. Surgery and fracture reduction with wire or low-profile microplate fixation would be indicated only for displaced fractures that alter the native length of the vocal cords or if the displaced thyroid cartilage fragment protrudes into the airway.

1Plymouth Hospitals NHS Trust, Plymouth, England

Corresponding Author:
Victoria R. C. Alexander, MBChB, DOHNS, MRCS, Plymouth Hospitals NHS Trust, 41 Pounds Park Road, Plymouth, PL3 4QP, England
Email: victoriaalexander@nhs.net
Endolaryngeal or external drainage of an acute glottis or paraglottic hematoma as described is reserved for severe cases and is unlikely to be required in minimal trauma such as this. Otherwise, a conservative approach is recommended: bed rest for observation, oxygen saturation monitoring, and voice rest. Antibiotics would not be routinely given unless there was evidence of a mucosal rupture or tear. Referral to a voice clinic for stroboscopy and speech therapy assessment is recommended for these cases that result in an imperfect voice. It would be expected that most patients with spontaneous laryngeal fractures would make a complete recovery.

Acknowledgment
Dr Abdul Gafoor, MBBS, DMRD, FRCR.

Author Contributions
Victoria R. C. Alexander, completed literature review and wrote case study; Stephen Toynton, reviewed article and helped formulate a response to reviewers’ comments.

Disclosures
Competing interests: None.
Sponsorships: None.
Funding source: None.

References