

## 전위를 동반한 갑상연골 골절의 자연 치유 치험 1례

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— Abstract —

### Spontaneously Healed Thyroid Cartilage Fracture with Displacement: Report of a Case

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A thyroid cartilage fracture is a rare entity and can be overlooked easily. Such cases are difficult to diagnose, and assessment and treatment guidelines are difficult to determine. CT of the neck region may be useful when acute airway intervention is not required or when more information regarding the neck's anatomy is required for management decisions. We describe a case of a thyroid cartilage fracture with displacement. In the emergency department (ED), neck CT and fiberoptic nasopharyngoscopy were used to assess the status of the patient's (a male) vocal chords immediately. He remained unable to phonate continuously. After an immediate assessment, we decided to use steroid and conservative therapy. The patient had a good recovery and was without symptoms one month after injury. There is no question that early surgical repair of neck injuries affords the best results for airway and voice patency in most cases however, we suspect that surgical repair is not needed in all cases. Early recognition and an accurate therapy plan for a thyroid fracture with displacement are essential. Therefore, the emergency physician's immediate and careful decision based on endoscopy and neck CT is important for the patient's long-term recovery. (J Korean Soc Traumatol 2010;23:53-55)

**Key Words:** Thyroid cartilage fracture, Blunt trauma, Laryngeal

#### I. Introduction

Acute laryngeal trauma caused by either blunt or penetrating injury poses a difficult airway management challenge. Blunt laryngeal injuries are rare and usually associated

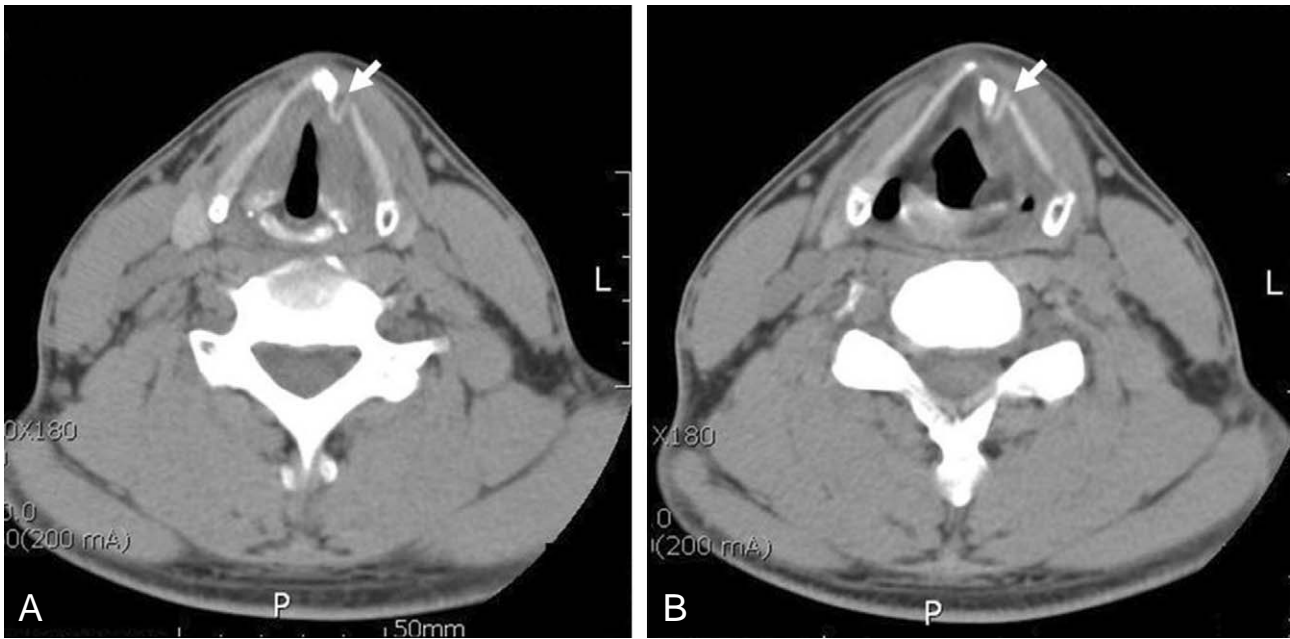
with multiple traumas: they account for less than 1% of all the cases seen at major trauma centers.(1) Thyroid cartilage fracture is common among external laryngeal traumas, and isolated thyroid cartilage fractures, when properly managed, do not pose a long-term airway problem.(2,3) We describe a case of thyroid cartilage fracture with displacement, due

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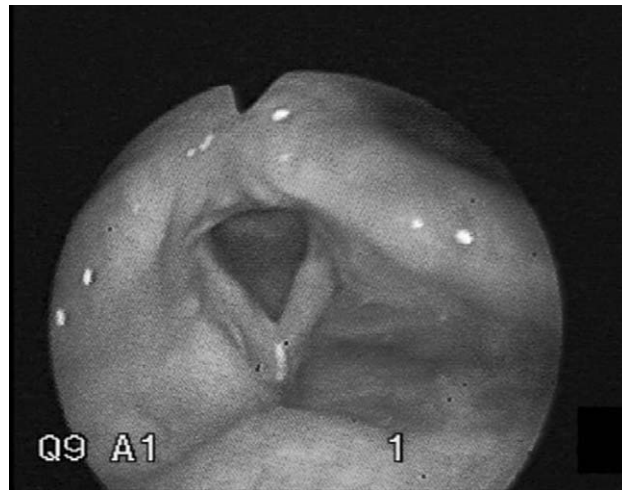
**Fig. 1.** Neck CT scan showed left thyroid cartilage fracture (white arrow **A** and **B**).

to an unusual cause, that healed spontaneously.

## II. Case Report

A previously healthy 39-year-old male presented to the emergency department (ED) after a neck injury. The patient had struck his neck against the washstand in his bathroom when he accidentally slipped on the bathroom floor. On arrival at the ED, he complained of inability to swallow solids, lowering of the pitch of his voice, hoarseness, and pain at rest. He had no dyspnea, hemoptysis, evidence of subcutaneous emphysema, respiratory compromise, and bruising of the neck. His past medical history was unremarkable.

Vital signs were as follows: blood pressure, 130/80 mmHg; pulse, 80 beats/min; respirations, 18 breaths/min; and temperature, 36.7°C. The initial physical examination was within normal limits except a tender swollen nose and mild tenderness on palpation over the anterior neck. The chest X-ray was unremarkable. Computed tomography (CT) of the neck revealed a fracture line of the left anterior thyroid cartilage with mild to moderate displacement (Fig. 1). No intralaryngeal hematoma or endolaryngeal edema was seen on the CT scan. Also, in the ED, we performed the laryngoscopy for his vocal cord status immediately. This procedure demonstrated edema of the right vocal cord and ecchymosis of the left vocal cord, but nor-



**Fig. 2.** Laryngoscopy showed edema of the right vocal cord and ecchymosis of the left vocal cord with intact vocal cord mobility.

mal vocal cord movement on both sides (Fig. 2). Final diagnosis was thyroid cartilage fracture with displacement. The patient was treated with bed rest, continuous humidified air, voice rest, and a liquid diet. Also, prednisone 1 mg/kg/day were prescribed orally for 1 week. Two weeks after the injury, he reported improved swelling difficulty of solids and improved hoarseness. On follow-up examination one month later, there was no problem of voice quality and airway.

### III. Discussion

Thyroid cartilage fracture is a common feature of external laryngeal trauma. External laryngeal trauma can be classified as penetrating or blunt. The latter is rare, with a frequency of 1 in 30,000 visits to the emergency department, and a mortality rate as high as 40%. Mortality is generally resulting from acute airway obstruction and asphyxiation.(4) The most common mechanism of laryngeal trauma occurs when the steering wheel or dashboard strikes the neck of an unrestrained driver in a motor accident; this leads to extension of the neck and exposes the larynx.(5) The injury may also be seen after a blow to the neck with a blunt object, as in our case. Recently, Lin et al reported a case of neck hyperflexion causing isolated thyroid fracture in a motor vehicle accident.(6) Thus, together with our case, we think that the causes of laryngeal trauma are unexpected. The clinical presentation of patients with this trauma may be subtle and may be misdiagnosed. The diagnosis is often overlooked, or the histories obtained can be limited in severely injured patients.(7)

The essential diagnostic step to identify the extent of trauma and determine the need for operation is endoscopy. In recent years fiberoptic nasopharyngoscopy has replaced indirect laryngoscopy, because it offers improved visualization and better patient cooperation.(8) We used fiberoptic nasopharyngoscopy and this procedure revealed mucosal edema and ecchymosis of the right band. CT scan is the procedure of choice for the radiographic evaluation of laryngeal trauma; it is extremely useful for estimating the degree of cartilage displacement, which can be obtained by variants of Harris and Tobin's original protocols.(9) Most patients with non-displaced fractures and minimal intralaryngeal injuries are treated with nonsurgical conservative therapy, which consists of humidified air, voice rest, and a liquid diet, with or without antibiotics and steroids.(10) The decision concerning the treatment of patients with displaced thyroid cartilage, especially with moderately displaced thyroid cartilage fracture, is difficult. Bent et al, suggest that nonsurgical therapy of certain displaced thyroid cartilage fractures is better, and they treated five of twelve patients with moderately displaced thyroid cartilage fractures conservatively.(3) We believe that surgery is indicated for those with immediate vocal cord paralysis, glottic lacerations, and

exposed intralaryngeal cartilage. Our presented patient had displacement but did not have vocal cord paralysis, subcutaneous emphysema, and other signs of airway obstruction. Hence he was treated conservatively with steroid, and recovered fully. Although steroid therapy is controversial, it is thought that steroid will be effective within a few hours after thyroid fracture. Our patient was treated with steroid within 6 hours after trauma.

Our case illustrates that the successful management of acute laryngeal trauma depends on proper recognition of the injury, initial successful stabilization in the emergency room, and appropriate airway and voice care. Hence, we suggests that emergency physician should use of flexible fiberoptic endoscopy in the emergency room setting immediately to evaluate the mobility of the cords and mucosal changes. After that, treatment for this fracture will be decided sooner either surgery or conservative therapy with steroid.

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