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OLGU BİLDİRİSİ / CASE REPORT

Isolated hyoid bone fracture with pharyngeal laceration caused by road traffic accident: a case report and review of the literature

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Trafik kazası sonucunda oluşan farengeal yırtıkla beraber izole hyoid kemik fraktürü: Olgu sunumu ve literatür taraması

Strangülasyon dışında künt boyun travmasına bağlı izole hyoid kemik fraktürü görülmesi çok nadirdir. Teşhisi zordur. Biz bu yazıda farengeal yırtıkla birlikte izole hyoid kemik fraktürü olan 37 yaşındaki bayan hastayı bildirdik. Teşhisi indirekt fleksibl nazal faringoskopik muayene ve boyun BT tetkiki ile koyduk. Hastayı konservatif yaklaşımla başarılı bir şekilde tedavi ettik. Bu nadir görülen yaralanmayı erkenden ve başarılı bir şekilde tedavi etmek için öncelikle klinik olarak şüphelenmek çok önemlidir. Bu makalede 1954 yılından beri trafik kazasına bağlı ortaya çıkmış farklı hyoid kemik fraktürlerinin sebeplerini ve yaklaşımlarını gözden geçirip tartıştık.

Anahtar Sözcükler: Hyoid fraktürü, farengeal yırtık, trafik kazası.

Abstract

The isolated hyoid bone fracture because of blunt neck trauma other than strangulation is very rare. Diagnosis is difficult. We reported a case of 37-year-old woman who presented with an isolated hyoid bone fracture and laceration of the pharynx. Diagnosis was made by indirect flexible fiberoptic nasal pharyngoscopic examination and computed tomography scan of the neck. The patient was treated conservatively with success. A high degree of clinical suspicion is very important for an early diagnosis and successful management of this rare injury. The causes and management of different hyoid bone fractures due to road traffic accidents that occurred since 1954 are reviewed and discussed.

Key Words: Hyoid fracture, pharyngeal laceration, road traffic accident.

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Introduction

Fractures of the hyoid bone caused by blunt trauma other than strangulation are very rare, accounting for only 0.002% of all fractures.[1-3] Pharyngeal perforation secondary to blunt neck trauma is rare, account-

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ing for less than 2% of perforations in the pharyngoesophageal region.[4] A high degree of suspicion is mandatory for early diagnosis and appropriate treatment. The mortality rate of an unrecognized perforation has been reported to be as high as 92%.[5] In this article we reported a very rare case of isolated hyoid bone fracture with laceration of the pharynx caused by road traffic accident. We also reviewed the causes and management of different hyoid bone fractures that occurred since 1954.

Case Report

The patient who was a 37-year-old woman applied to our ENT Department with minimal hemoptysis, odynophagia, dysphagia, dysphonia, swelling in the neck on the second day after a road traffic accident. Physical examination showed 2 cm scratch on the corner of the chin and swelling on the right side of the neck. Direct intraoral examination revealed no bleeding or traumatic lesion. She had severe pain with palpation of the swelling on the right sternocleidomastoid muscle. The thyroid cartilage was on the left side from midline. During thorough clinical examination, slight tenderness of the anterior neck at the level of hyoid bone was noted, but there were no signs of external trauma or subcutaneous emphysema. Opening the mouth and swallowing was painful. She had hoarseness. The indirect flexible fiberoptic nasal pharyngoscopic examination showed mucosal laceration in the right lateral posterior pharyngeal wall (Figure 1). The vocal cords and arytenoids showed nothing pathologic.

Radiographic examination showed a hyoid bone fracture but no mandibular or other bone fractures were seen. A non-contrasted computerized tomography scan demonstrated the fractured corpus of the right greater cornu of the hyoid bone (Figure 2). There was no associated fracture of the remaining

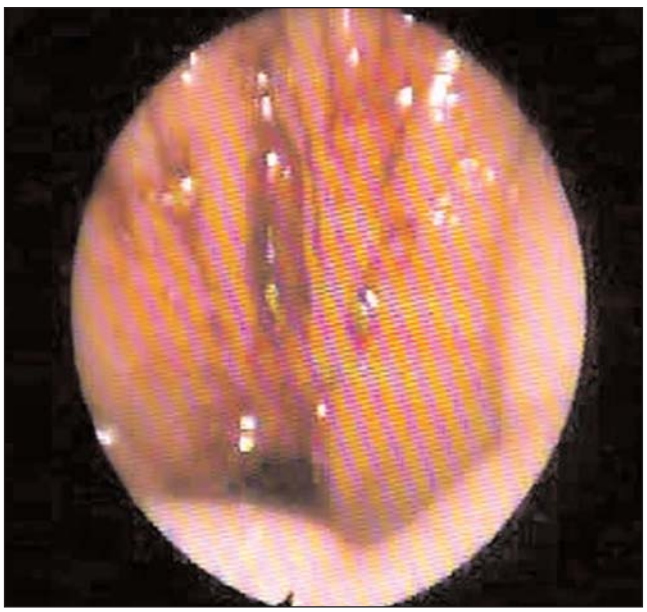

Figure 1. The flexible fiberoptic laceration in the right lateral posterior pharyngeal wall. [Color figure can be viewed in the online issue, which is available at www.turkarchotolaryngol.org]

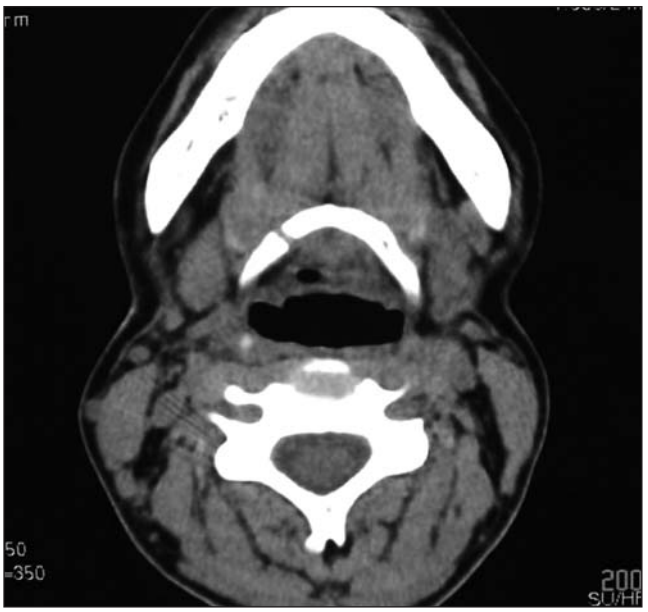

Figure 2. Preoperative coronal CT scan of lesion.

laryngeal skeleton. She received 750 mg oral ampicillin sulbactam for 10 days, 1 mg/kg methylprednisolone for 3 days with tapering the dose by 10 mg, paracetamol and etodolac to reduce the swelling and pain. In addition, the fracture was fixed in the midline using external bandage and stiff neck collar to reduce the symptoms. The patient was discharged with the recommendation of rest and soft diet.

At follow-up examinations performed 15 and 30 days after accident her complaints were improved. The laceration of the pharynx was recovered completely, she was well and asymptomatic. Control computed tomography scan revealed no findings of the rare late complications such as deep neck abscess and pseudoaneurysm of the external carotid artery.

Discussion

Isolated hyoid bone fractures with pharyngeal perforation secondary to nonpenetrating external blunt trauma caused by road traffic accidents are even rarer and occur more frequently in young individuals.[1]

Based on our review of the English literature, only 18 hyoid bone fractures due to road traffic accidents except our case have been reported since 1954 and only 3 of them were with laceration of the pharynx (Table 1).[1,6-15] Hyoid fractures can be asymptomatic in the beginning and overlooked in emergency room if other complaints are present.[16] A high degree of suspicion must be necessary in multiple trauma cases involving the head and neck if it is initially asymptomatic. The patient may present with

Table 1. Reported cases of hyoid bone fracture in road traffic accidents since 1954 (19 cases).

Author	Year of report	Age	Sex	Associated injuries
Guernsey	1954	45	M	Bilateral mandibuler fractures
Chadwick	1960	34	M	Pharyngeal lacerations
Krekorian	1964	21	M	Pharyngeal lacerations
Graf	1969	15	M	Cervical spine injury
Eliachar et al.	1980	35	M	LeFort III fracture, bilateral mandibuler fractures, pharyngeal lac erations, cervical spine injury
Eliachar et al.	1980	23	F	Bilateral mandibuler fractures, pharyngeal lacerations,
Whyte	1985	29	M	Mandibuler fracture
Zachariades	1985	34	M	None
Zachariades & Mezitis	1987	15	F	LeFort III fracture, multipl mandibuler fractures, temporal bone fracture, loss of eye
Padgham	1988	15	M	None
Szeremata & Morovati	1989	55	M	None
Olu Ibekwe	1991	37	M	Pharyngeal lacerations
Kaufman et al.	1999	34	M	Facial lacerations, fracture of the third lumbar vertebral body
Kaufman et al.	1999	35	M	Mid facial fractures
Sethi	2005	33	M	Pharyngeal lacerations, resultan neck abscess
Levine	2006	50	M	Mandibuler fracture, gastric perforation
Wang	2007	46	M	Atlantoaxial subluxation
Kou	2008	19	M	None
Yilmaz et al.	2010	37	F	Pharyngeal lacerations

ecchymosis of the neck, crepitus, stridor, hemoptysis, odynophagia, dysphagia, dysphonia, painful coughing, gaging, tenderness, swelling in the neck in symptomatic cases.[1,3,16,17]

Most cases in the literature have occurred in males (16 cases), whereas only 2 cases were found in females. The present case is a young woman of an isolated hyoid bone fracture with laceration of the pharynx after road traffic accident. Ten of the hyoid bone fractures due to road traffic accidents were including additional injuries or fractures. Two cases of these were including pharyngeal lacerations secondary to bilateral mandibular fractures, thus diagnosis was relatively easy.

The hyoid bone is protected by its mobility in all directions.[18] Isolated hyoid bone fractures were seen in 7 cases. Four of them were including pharyngeal laceration. Diagnosis of isolated hyoid bone fractures is difficult and usually can be made only with a high degree of suspicion, usually can be masked by other injuries and fractures, therefore needs additional investigations. Hyoid bone fractures usually result from direct trauma to the neck due to manual strangulation, hanging or injuries of projectile.[16]

The frequency of blunt head and neck trauma has decreased since the use of seat belts. The biodynamics of injury to the pharynx and larynx in road traffic accidents have been adequately described by Nahum and Siegel in 1967.[19] Pharyngeal lacerations caused by fractured sharp ends of the hyoid bone impacting the prevertebral muscles may result in hemorrage into the airway and surgical emphysema.[1,16,17] Emergency exploration of the neck to detect and repair lacerations of the pharyngeal mucosa may also be required.[17,20] Treatment must be planned according to the patient's symptoms.[20] Sethi et al. reported a hyoid bone fracture with pharyngeal perforation and neck abscess after blunt trauma to the neck.[21]

There is no consensus on the management of hyoid bone fractures in the literature.[1,17,20] Successful treatment depends on the number, size and location of the perforation. Management decisions can be made also according to the classification of the fracture. Closed hyoid fractures are usually managed conservatively provided that the airway is secure. Severe comminuted open fractures may necessiate neck explorations, debridement, stabilization or removal of parts or all of the hyoid bone.[3] Laryngoscopy are performed to show number, location and size of the lesion. Lesions less than 2 cm in size and limited to the pharynx can be treated nonoperatively with success. Conservative treatment are including intravenous antibiotics, steroids and observation. If lesions are extending 2 cm or involving the esophagus, surgery is necessary.[22]

Prognosis is usually good excluding rare late complications such as dysphagia, crepitus by neck flexion and pseudoaneuyrsm of external carotid artery.[23] Severe subcutaneous emphysema and respiratory distress may develop, so that observation for 48-72 h is mandatory.[1,2,24]

Pharyngeal perforation secondary to hyoid bone fracture after blunt trauma is rare. Early diagnosis is clinically difficult, requires a high degree suspicion, CT imaging and laryngoscopic examination for conclusive diagnosis. Management must be individualized according to the number, size and location of the laceration.

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Conflict of interest statement:
No conflicts declared.

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