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CASE REPORT

Suspicion of cricohyoidopexy line rupture after supracricoid partial laryngectomy and the value of computed tomography to exclude this complication

Suprakrikoid parsiyel larenjektomiden sonra krikohiyoidopeksi rüptürü şüphesi ve bilgisayarlı tomografinin bu komplikasyonu dışlamadaki değeri

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We present a 48-year-old man who underwent supracricoid partial laryngectomy with cricohyoidoepiglottopexy. He developed diffuse subcutaneous emphysema and saliva aspiration on the first postoperative day, arousing suspicion of a pexy line rupture. Palpation of the cricohyoid suture line and a lateral cervical X-ray were not helpful. Laryngeal computed tomography (CT) obtained demonstrated an undisturbed cricohyoidoepiglottopexy suture line. Some of the neck sutures were removed, a drain placed under the neck flap, a tight dressing applied, and surgical exploration was not necessary. Subcutaneous emphysema regressed in the following days and no other problem was seen. Air escape from the cricohyoid approximation line was attributed to subcutaneous emphysema. Following supracricoid partial laryngectomy, rupture of the cricohyoidopexy line is a rare but serious complication that needs urgent exploration. Therefore, when there is suspicion, laryngeal CT is very important to rule out this condition. Moreover, close cooperation is necessary with the radiologist who may not be familiar with disturbed anatomy by previous surgery.

Key Words: Laryngectomy/methods; postoperative complications; rupture; tomography, X-ray computed.

Bu yazıda krikohiyoidoepiglottopeksi ile suprakrikoid parsiyel larenjektomi uygulanan 48 yaşında bir erkek hasta sunuldu. Ameliyat sonrası ilk günde hastada, peksi rüptürünü akla getiren yaygın ciltaltı amfizemi ve tükürük aspirasyonu gelişti. Krikohiyoid bileşke arasındaki bağlantının palpasyonu ve yan servikal grafi durumu açıklığa kavuşturmadı. Çekilen bilgisayarlı tomografide (BT) krikohiyoid bileşkede herhangi bir açıklık saptanmadı. Hastada cerrahi eksplorasyona gerek duyulmadı; cilt dikişlerinin seyreltilmesi, cilt altına Penroz dren konarak sıkı sargı yapılması sonucunda ciltaltı amfizemi birkaç gün içinde geriledi ve başka sorun görülmedi. Peksi hattından hava kaçağının ciltaltı amfizeme bağlı olduğu düşünüldü. Suprakrikoid parsiyel larenjektomi ameliyatından sonra peksi rüptürü, ender ancak ciddi bir komplikasyondur ve acil eksplorasyon gerektirir. Bu durumdan süphelenildiğinde, peksi rüptürü olup olmadığını saptamada BT son derece önemli bir yöntemdir. Ayrıca, bu inceleme yapılırken, geçirilmiş cerrahiye bağlı bozulmuş anatomiyi tanıma zorluğu nedeniyle radyoloji uzmanı ile sıkı bir işbirliği içinde bulunulması gerekir.

Anahtar Sözcükler: Larenjektomi/yöntem; ameliyat sonrası komplikasyon; yırtılma; bilgisayarlı tomografi.

Supracricoid partial laryngectomy (SCPL) includes cricohyoidopexy and cricohyoidoepiglottopexy.[1] Tracheocricohyoidoepiglottopexy has also been reported as a variation of this technique.[2] According to several reports, SCPL is not only associated with satisfactory oncological and

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functional outcomes with high local control rates in selected glottic, supraglottic, and transglottic tumors, but also has decreased total laryngectomy indications in advanced stage carcinomas limited to the larynx.[3-6]

Following SCPL, many complications have been reported, such as aspiration-induced pneumonia, death due to recurrent pneumonia, cartilage necrosis, laryngeal stenosis, arytenoid fixation, pharyngocutaneous fistula, symptomatic laryngocele, and pexy rupture.[1-5,7-9] Pexy rupture is a rare but very serious complication.[1,5,7] In case of rupture, the pexy line should be re-explored and, if possible, reconstructed. If reconstruction is not feasible, total laryngectomy should be performed.

In this case report, the value of laryngeal computed tomography (CT) is demonstrated in excluding suspicion of pexy rupture following SCPL, with special emphasis on the need for close cooperation with the radiology department.

CASE REPORT

A 48-year-old male patient received curative radiotherapy at a dose of 6,300 cGy as the primary treatment for $T_{1b}N_0M_0$ glottic squamous cell carcinoma. Despite radiotherapy, the tumor progressed to a $T_2N_{2a}M_0$ transglottic tumor three months later. Cricohyoidoepiglottopexy and ipsilateral radical neck dissection were performed. The patient had diabetes mellitus and hypertension.

On the first postoperative day, subcutaneous emphysema and salivary aspiration were observed in the patient's neck. The neck and the pexy line were palpated with suspicion of a pexy rupture, but clinical evaluation was not sufficient and a lateral cervical X-ray was obtained. There was no gap between the cricoid cartilage and the hyoid bone, nor was a satisfactory finding to exclude pexy rupture and air leakage from the pexy line. A CT scan obtained clearly showed that no splitting existed in the cricohyoid junction, but there was subcutaneous air leakage from the cricohyoidopexy line (Fig. 1). The treatment was confined to loosening the neck sutures and application of a tight dressing following placement of a subcutaneous Penrose drain. Subcutaneous emphysema regressed in the following days. Forty days after surgery, the patient was decannulated and oral feeding was started.

DISCUSSION

Besides providing high rates of oncological and functional improvement in advanced stage tumors limited to the larynx, SCPL has also reduced total laryngectomy indications due to low rates of local recurrence.[1-6] Pexy rupture is a rare but very serious complication seen following SCPL. To date, only four reports have been published about this complication.[1,7,8,10] Laccourreye et al.[1] reported the incidence of pexy rupture as 0.8% in their series with the highest number of cases.

Following SCPL, observation of marked aspiration in the early postoperative period should be suggestive of pexy rupture.[1,7,8,10] The presence of splitting in the junction between the hyoid bone and

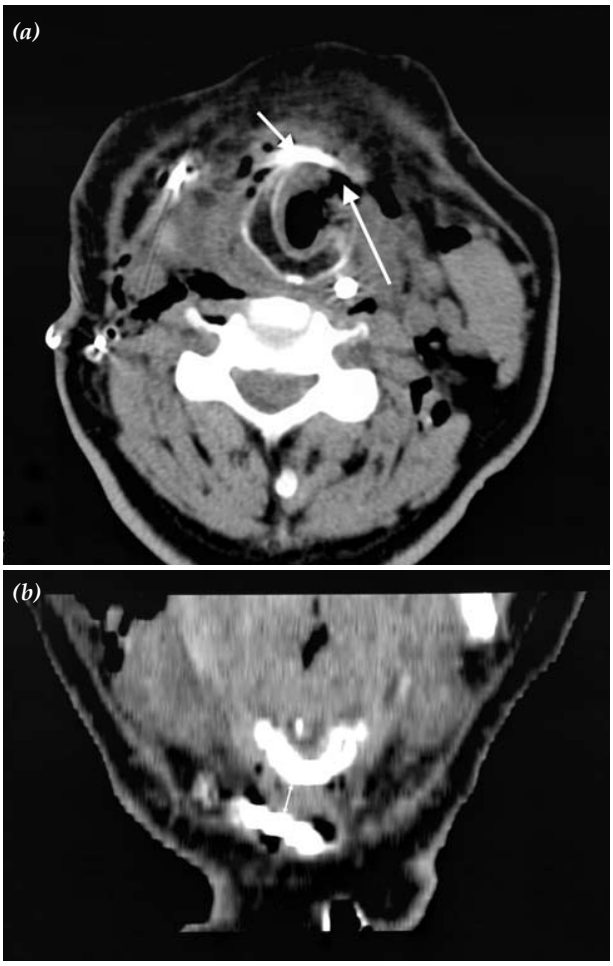

Fig. 1. ***(a)*** *Postoperative axial computed tomography view showing the cricohyoid junction (short arrow) and air leakage from the pexy line (long arrow).* ***(b)*** *Coronal reconstructed image shows that the distance between the cricoid and hyoid is less than 10 mm (arrow).*

cricoid cartilage during neck examination is supportive of the diagnosis. In our case, there was elevation of the neck flap and subcutaneous emphysema in addition to aspiration. Palpation of the cricohyoid junction was not reliable to support the diagnosis because, in the early postoperative period, there was massive edema due to ipsilateral neck dissection, and the patient's neck was short and thick.

In cases with suspected pexy rupture, lateral cervical X-rays and CT are recommended to measure the distance between the hyoid bone and the cricoid cartilage.[1,7,8,10,11] However, data on these measurement are not sufficient. To date, laryngeal CT findings following SCPL have been reported in only two studies.[11,12] In these studies, it was demonstrated that the distance between the inferior edge of the hyoid bone and the superior end of the cricoid cartilage was 11 mm in average, and pexy rupture would be considered if this distance exceeded 30 mm.

In our case, the neck was examined by a lateral cervical X-ray following palpation of the neck and the pexy line. Though no finding suggestive of rupture was found on this radiogram, the risk for pexy rupture could not be definitely ruled out as the patient had received radiotherapy at curative doses. Therefore, a neck CT scan was requested and CT images were examined in close collaboration with the radiology department. The distance of the cricohyoid junction was not greater than 10 mm and a possible pexy rupture was ruled out (Fig. 1). Besides, air leakage from the pexy line to the subcutaneous tissue was clearly seen on the axial CT view. Therefore, re-exploration in the early postoperative period was not required, and the problem was solved with placement of a subcutaneous Penrose drainage following loosening of the sutures. Thus, it was understood that subcutaneous emphysema was not due to pexy rupture but was caused by air leakage from the pexy line.

In conclusion, CT examination of the operation field is very important for the detection of the exact site of air leakage, and exclusion of the diagnosis of pexy rupture. Appreciably, this procedure should be performed with close cooperation between the radiologist and the surgeon.

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