

## Palliative Sternal Resection for Advanced Thyroid Carcinoma

Ömer Soysal<sup>1</sup>, MD, Mustafa Şahin<sup>2</sup>, MD, Joe B. Putnam<sup>1</sup>, MD, Gary L. Clayman<sup>3</sup>, MD

*A rare case of the fourth local recurrence of follicular thyroid carcinoma is reported. Because of the extensive nature of the large tumor involving sternum as well as compression of the trachea and esophagus, the patient underwent resection of recurrent tumor and the sternum. Sternal reconstruction was performed by left pectoralis major muscle flap. Complete palliation of symptoms especially breathing and swallowing resulted after local regional resection of the tumor with upper sternum. [Journal of Turgut Özal Medical Center 1997;4(2):230-232]*

**Key Words:** *Thyroid cancer, sternal resection, palliation*

### İlerlemiş tiroid kanserinde palyatif sternal rezeksiyon

*Dördüncü kez lokal nüksetmiş follüküler tiroid kanseri olan nadir bir vaka sunulmuştur. Sternuma invaze olan, trakeaya ve özefagusu bası yapan dev tümör nedeniyle, hastaya; tümörün üst sternumla birlikte total rezeksiyonu işlemi uygulanmıştır. Sternum rekonstruksiyonu sol pektoralis major kası ile yapılmıştır. Tümörün ve üst sternumun rezeksiyonu ile hastanın başta solunum sıkıntısı ve yutma güçlüğü semptomları olmak üzere bütün semptomlarının palyasyonu sağlanmıştır. [Turgut Özal Tıp Merkezi Dergisi 1997;4(2):230-232]*

**Anahtar Kelimeler:** *Tiroid kanseri, sternum rezeksiyonu, palyasyon*

The majority of patients with thyroid carcinoma are primarily treated by surgery, sometimes followed by the addition of radioactive iodine (131) (1) and in some cases, external radiation therapy. Many of thyroid cancers have slow growth and remain localized. Approximately 82% of deaths may occur from respiratory conditions including asphyxia or more frequently pneumonia (2). Most patients with differentiated thyroid cancer can have

80% 10-year survival, even if death finally occurs due to the disease (1). We report a patient with locally advanced, recurrent, and metastatic follicular thyroid cancer who had sternal invasion, dysphagia, and dyspnea which required local tumor extirpation for palliation.

<sup>1</sup> The University of Texas, MD Anderson Cancer Center, Department of Thoracic and Cardiovascular Surgery, Houston, Texas, USA

<sup>2</sup> İnönü University, School of Medicine, Department of Surgery, Malatya

<sup>3</sup> The University of Texas, MD Anderson Cancer Center, Department of Head and Neck Surgery, Houston, Texas, USA

## CASE REPORT

The patient was a 78-year old man who had already undergone four operations for follicular thyroid cancer. Although total or subtotal bilateral procedures have reduced the rate of recurrence (3), initially a right hemithyroidectomy was performed for a 1 cm thyroid nodule in another institution. There were no angioinvasion and capsular invasion reported histopathologically. It is followed by radioactive iodine therapy for ablation. Although it is a rare complication, the operation was complicated by right recurrent laryngeal nerve injury. Three subsequent local recurrences were treated surgically. With the fourth recurrence, significant lymphadenopathy was identified in the anterior, posterior, and superior mediastinum, as well as bilateral necks. The patient had a fixed eight-cm mass involving the manubrium, right clavicle and right first rib. Because of dysphagia he received external beam radiation therapy of 5000 Rads for palliation of compression on esophagus. During the radiotherapy, his dysphagia worsened and dyspnea was noted. Computed tomography and magnetic resonance imaging showed subcarinal, anterior and superior mediastinal masses, destruction of the sternum, and multiple micronodular bilateral pulmonary metastases.

No mucosal abnormalities were identified on bronchoscopy and esophagoscopy. The trachea was displaced by the tumor. Angiography revealed no vascular intimal invasion.

Bilateral functional neck dissections, completion thyroidectomy, and bilateral paratracheal dissections were performed. The manubrium was resected. By peeling the nodes off the great vessels, the contents of the anterior, posterior and superior mediastinum were all removed in an en bloc fashion. The left recurrent nerve was directly visualized and spared throughout its entire course. The right non-functioning recurrent laryngeal nerve was sacrificed with the tumor masses. The sternal defect was reconstructed with a left pectoralis major muscle flap for protection of the great vessels of the chest. Because of the previous radiation therapy no prosthetic material was used. The patient was extubated on the first postoperative day. However he developed laboured breathing because of flail chest and required reintubation. He was maintained on the ventilator for the next three days and extubated safely. The other postoperative course

was unremarkable and the patient was discharged on postoperative day 10. The thyroglobulin level fell from the preoperative level of 43000 ng/ml to 700 ng/ml.

After six months postoperatively, although it is a short period of time for this type of thyroid cancer from the standpoint of survival and local recurrence, the patient has an unchanged vocal quality, undisturbed swallowing, and good exercise tolerance by means of palliation.

## DISCUSSION

Uncontrolled local disease is the most common finding in patients who die because of well differentiated types of thyroid cancer, and asphyxia may cause death because of tumor mass in 26% of these patients (1). Complete resection of recurrent or advanced thyroid cancer may achieve cure. Patients with symptomatic advanced local disease including sternum may still be considered for resection to palliate symptoms of slowly progressive disease. Even with metastases, patients may live for prolonged periods of time after the resection of advanced thyroid cancer (4).

In our patient, the barium esophagogram revealed no evidence of esophageal invasion. The trachea showed significant compression. Even in the presence of distantly metastatic disease, the extensive paratracheal and paraesophageal recurrent follicular carcinoma predicted impending invasion of these structures. As his symptoms progressed, the potential role of local-regional tumor extirpation to preserve the function of the laryngotracheal tree and esophagus was discussed in a multidisciplinary fashion including the head and neck surgical oncologist, thoracic surgical oncologist, medical oncologist, endocrinologist and radiotherapist. Palliation of symptoms was required to improve the patient's quality of life. Esophageal or tracheal resection was not needed although a limited tracheal or esophageal resection in such patients may enhance palliation if direct invasion is noted.

The extent of the local disease dictates the limits of resection. In our patient bilateral functional neck dissections, with tumor resection including extirpation, removal of all lymph nodes to the level of the aortic arch, and upper sternal resection were performed. Local tumor had destroyed the manubrium, medial heads of the clavicles, and

medial sternal attachments of the first and second ribs. Tumor growth within the bony confines of the thoracic outlet exacerbated symptoms of dyspnea and dysphagia. Resection of the manubrium en bloc with attaching bony structures enhanced local tumor control and provided ready access to the anterior and superior mediastinum. Reconstruction was readily performed with a pectoralis major flap. Median sternotomy may be the preferred approach to the anterior mediastinum in patients without sternal involvement.

Long term control of invasive thyroid carcinoma requires complete resection of tumor (4, 5). Local complete resection of thyroid carcinoma, even if distant disease exists or sternal resection is needed, will provide significant palliation to the symptomatic patient. Since there are many muscle flaps and prosthetic material to reconstruct the chest wall defects, sternal resection can also be performed for palliation in these patients. Careful patient selection, preoperative multidisciplinary planning, and resection of all local and regional disease may enhance overall survival as well as the quality of life in patients with locally aggressive thyroid carcinoma.

## REFERENCES

1. 1 Beahrs OH, Kiernan PD, Hubert JP. Jr. Cancer of the thyroid gland. In: Suen JY, Myers EN, ed(s). Cancer of the head and neck. New York: Churchill Livingstone, 1981: 599-632.
2. 2 Silliphant WM, Klinck GH, Levitin MS. Thyroid carcinoma and death: a clinicopathological study of 193 autopsies. Cancer 1964;17:513-25.
3. 3 Candy B, Rossi R. An expanded view of risk-group definition in differentiated thyroid cancer. Surgery 1988;104:947-52.
4. 4 Grillo HC, Zannini P. Resectional management of airway invasion by thyroid carcinoma. Ann Thorac Surg 1986;42:287-98.
5. 5 Ishihara T, Kobayashi K, Kikuchi K. Surgical management of advanced thyroid carcinoma invading the trachea. Thorac Cardiovasc Surg 1991;102:717-20

**Correspondence:** Yrd.Doç.Dr. Ömer SOYSAL  
İnönü Üniversitesi Tıp Fakültesi  
Göğüs Kalp Damar Cerrahisi ABD  
44100 MALATYA  
Tel: 0422-3410010  
Fax: 0422-3410728