

# Thyroid Cancers with Tracheal Invasion: a Study of 9 Patients

Lim Quan Qing Richmond<sup>1</sup>, <u>Thong</u> Jiun Fong<sup>2</sup>, <u>Kanagalingam</u> Jeevendra<sup>2</sup> <sup>1</sup> Yong Loo Lin School of Medicine, National University of Singapore <sup>2</sup> Department of Otorhinolaryngology, Tan Tock Seng Hospital



## Introduction

Thyroid cancer is the **10th commonest** cause of cancer in Singaporean women and the age-specific **incidence of thyroid cancer has been on the rise**. While most thyroid cancers have good prognosis, those that show **tracheal invasion often demonstrate poor survival** due to extensive resection or tumour recurrence.

This study aims to examine the clinical data and outcome of patients with thyroid carcinoma invading the trachea.

### Methods

A retrospective review of 153 patients with thyroid carcinoma treated between 1998 and 2009 in a tertiary referral Otolaryngology unit in Singapore was performed. Of these, 9 had tracheal invasion and were further analysed for demographics, histology, diagnosis, management, and disease course.

Shin classification (refer to fig.1) was used to stage degree of tracheal invasion.

#### Results

**Demographics**: There were **4 males** and **5 females**. Age ranged from 27 to 75 (median 65).

Histology: 7 were papillary carcinomas, 1 was an anaplastic carcinoma, 1 was a squamous cell carcinoma.

Diagnosis: Tracheal invasion was confirmed on imaging in 4 cases and on direct visualisation in 1. Four patients were suspected to have tracheal invasion on imaging. These were subsequently confirmed with bronchoscopy (n=1) or intra-operatively (n=3).



<sup>1</sup>Radical surgery refers to total thyroidectomy with lymph node clearance and tracheal resection with re-anastomosis. <sup>2</sup>Adjuvant therapy refers to External Beam Radiotherapy (EBRT), Radioactive Iodine (RAI) or both.

Outcome: Four patients died. Median survival is 22.6 months (range 6.3 to 36.4 months). Three are currently free of disease and two with remnant disease. Median follow-up time is 31.7 months (range 6.7 to 73.2 months).

#### Discussion

Studies have shown that tracheal shaving for Stage I lesions show outcomes comparable with patients undergoing more radical tracheal resection.

However it appears as though tracheal shaving is **less effective in our institution**. One patient required a **repeat operation**, the other had **remnant disease** despite undergoing RAI treatment. These patients had Shin Stage III tumours, however.

Previous small-scale studies **show Shin Stage I, II** and **III** tumours to have **100% five-year survival** rate. **Shin Stage IV** tumours have **71% five-year survival** rates.

In our study, Shin Stage IV tumours are associated with dismal prognosis (60% mortality). However, aggressive radical surgery with adjuvant therapy may confer disease-free survival rates of more than 5 years in tumours with lesser degrees of tracheal involvement.

A Seow, WP Koh, KS Chia, LM Shi, HP Lee, K Shanmugaratnam. Trends in Cancer Incidence in Singapore. Singapore Cancer Registry Shin DH, Mark EJ, Suen HC, Grillo HC. Pathologic staging of papillary carcinoma of the thryroid with airway invasion based on the anatomic manner of extension to the trachea: a clinicopathologic study based on 22 patients who underwent thyroidectomy and airway resection. Hum Pathol. 1993 Aug; 24(6):866-70 Price DL, Wong RJ, Randolph GW. Invasive thryroid cancer. management of the trachea and esophagus. Otolaryngol Clin North Am. 2008 Dec; 41(6):156-86, inc.



past cartilage into lamina propria.

Stage IV: Carcinoma invading mucosa. Ulceration or mass visible within lumen. Fig. 1: Shin classification

Image adapted from Shin DH et. al.

Poforoncos