

## 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)**.

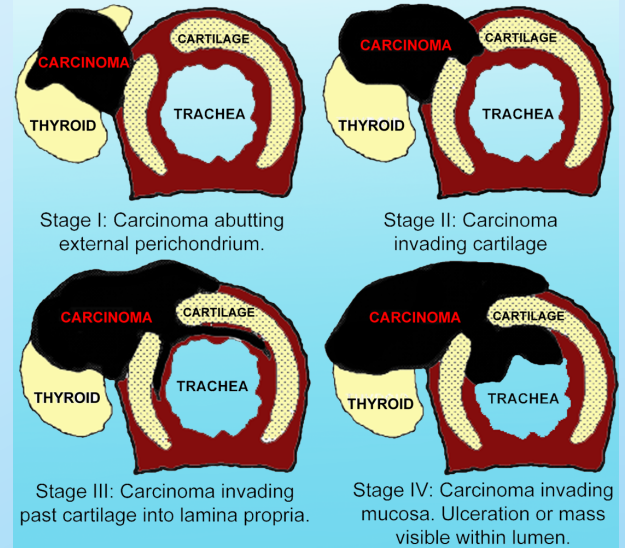
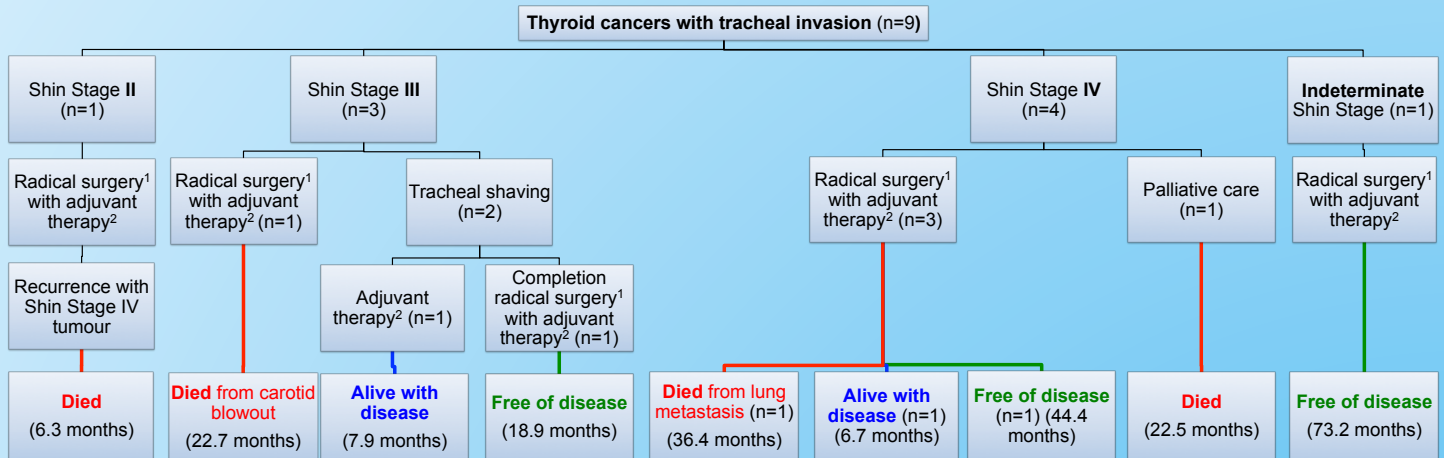


Fig. 1: Shin classification  
 Image adapted from Shin DH et al.



<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**.