

# Tracheal Resection in Locally Recurrent Differentiated Thyroid Cancer; a Case Report

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## Abstract

**Background:** Locally recurrent papillary carcinoma of thyroid is a treatable disease. For endotracheal invasion, tracheal resection and anastomosis is a viable option in certain cases which gives significant result.

**Case presentation:** A 46 year female patient with a history of total thyroidectomy + bilateral neck dissection for carcinoma thyroid two years back presented with recurrent thyroid mass in neck with endotracheal invasion. This was successfully treated with segmental tracheal resection with end to end anastomosis after 4 cm defect. Post – operative course was uneventful.

**Conclusion:** Endotracheal invasion of recurrent carcinoma thyroid is not a contraindication for surgery. Full circumferential resection and end to end anastomosis is preferred to shaving trachea. It can be safely anastomosed upto 5 cm defect length. Apart from giving immediate relief of intratracheal bleeding and obstructive airways, it gives long term disease free survival.

**Keywords:** thyroidectomy; tracheal resection; anastomosis

## Introduction

Papillary carcinoma has an excellent survival. This cancer presents relatively low malignancy, good prognosis and a ten year survival rate of over 90% [1]. Recurrent papillary thyroid cancer mainly refers to localized and distant recurrence, including recurrence of the primary tumor, lymph node metastasis, invasion of the esophagus and trachea, invasion of muscles, soft tissue and nerves and distant metastases. Different theory has been proposed for etiology of recurrence in the PTC. Pathological type, staging, degree of extra thyroid invasion, lymph node metastatic rate, age and type of surgery may be related to recurrence of cancer [2-4]. That's why patient are kept on lifelong follow up. Current ATA guideline defines "disease free status" as the following: 1. No clinical evidence of tumor, 2. any evidence of tumor of RAI imaging and / or neck ultrasound, 3. Unstimulated TG <0.02 ng/ml or stimulated Tg <1 ng/ml in the absence of interfering antibodies [5]. The prognosis for well differentiated carcinoma worsens when neoplasm invades the trachea. The cause of death in nearly half of the fatal cases of papillary carcinoma is caused by obstruction of the trachea [6, 7]. For many years only palliative surgery was employed in the treatment of patients with tracheal invasion by thyroid carcinoma [8, 9]. However with progress in tracheal surgical techniques, resection of portions of the trachea with primary anastomosis is feasible. Hence, we are presenting a case of recurrent papillary thyroid cancer invading tracheal lumen with signs of obstruction, which was successfully treated with surgical resection along with segment of trachea and end to end primary anastomosis.

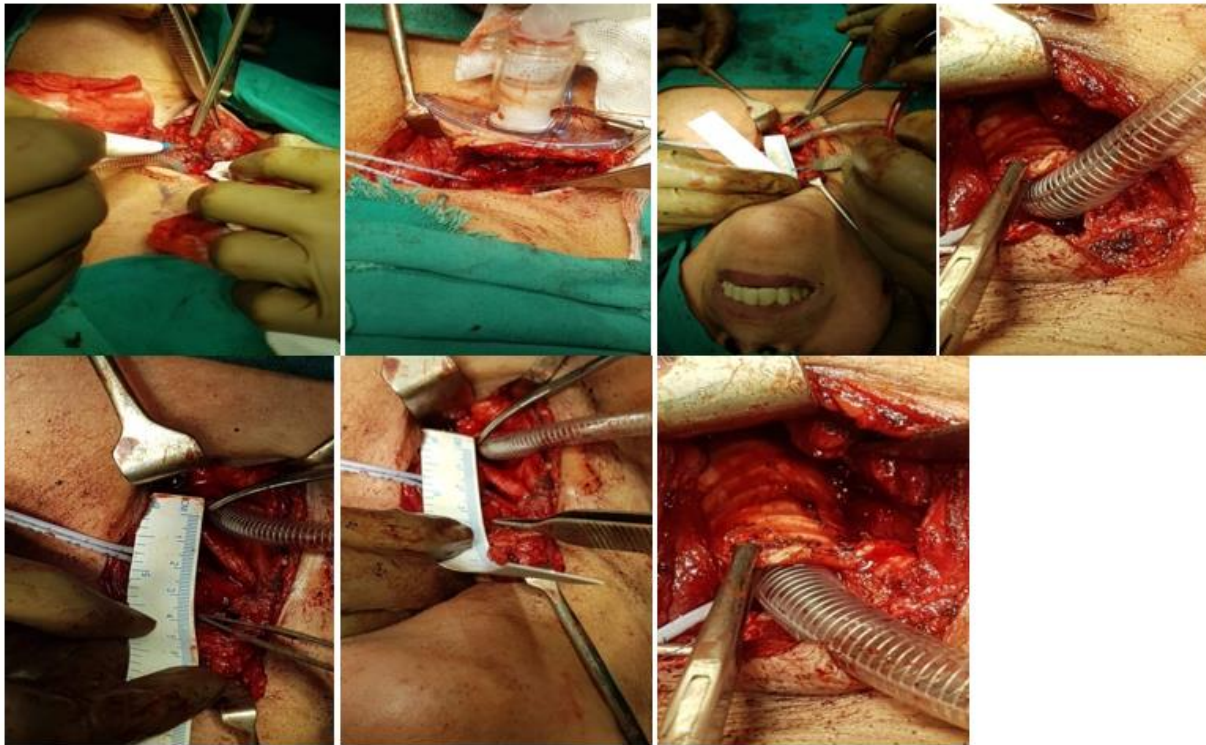
## Case Presentation

Hence we are presenting a case recurrent papillary thyroid cancer invading tracheal lumen with signs of obstruction, which was successfully treated with surgical resection along with segment of trachea and end to end anastomosis. A 46 year female patient initially presented to the hospital with complaints of swollen neck for three years in October 2016, when she was evaluated for thyroid cancer patient had no particular past or family history of thyroid disorder or neoplasm. Clinical examination and USG of neck suggested neoplastic thyroid lesion. FNAC turned out to be follicular neoplasm. Complete blood count and thyroid function test was normal. Chest X ray posterior-anterior view was also normal. Patient had no particular past or family history of thyroid disorder or neoplasm. Total thyroidectomy + bilateral neck dissection was performed in November 2016. Histopathology report revealed of follicular cancer of thyroid with, capsular invasion + vascular invasion. Post operative course was uneventful. WBI Scan report revealed of remnant positive in neck dissection. Radioactive therapy high dose administered to the patient on 27-02-2017. She was advised to do SPECT CT on 28-02-2017 showed of remnant activity on thyroid bed. Patient was put on tablet Eltroxin 200 mg once daily till follow up. Cancer recurrence was not observed for a period of two year after surgery. Patient was on regular follow up and asymptomatic for two years (from 2018 – 2020).

After two years of treatment and regular follow ups, patient turned up to our cancer hospital with chief complaints of difficulty in breathing on 21-

05-2021. On clinical examination there was midline neck swelling measuring 3 x 3 cm at the level of second tracheal ring. CBC, LFT, KFT, BT, CT, PT INR were normal. TSH was 21.5 IU/L, T3, T4 were normal. 2D Echo: Ejection Fraction 57%, mild concentration LVEF. CECT neck showed left paratracheal mass from cricoid to suprasternal notch with tracheal infiltration and polypoidal projection into lumen of trachea with narrow airways. There was poor plane with esophagus and erosion was there in left cricoid body. PET CT scan suggested 3.5 x 4.8 x 4 cm recurrent disease in thyroid bed abutting sternocleidomastoid extending into tracheal lumen and causing luminal narrowing. Patient was planned for surgery after pre anesthetic preparation. Intra operative bronchoscopy

performed. There was 90% obstruction of trachea with luminal bulge (bilobular within length of 3 tracheal rings). Tracheostomy was performed between 3-4<sup>th</sup> tracheal ring. Neck was explored through previous incision. Mass was isolated and dissected from trachea. Tracheal incision was made vertical anterior wall. Then trachea was excised from cricoid to 3<sup>rd</sup> ring below. 3.5 – 4 cm defect was observed. Post resection trachea was mobilized till innominate vessel. Suprathyroid release of strap muscle was done. Posterior layer anastomosis with 3.0 PDS was performed first and then anterior layer with 3.0 PDS was done and knot was kept outside. Anastomosis was covered with SCM. Small tear in anterior esophageal wall was repaired.



Post surgery neck was kept flexed 45° for next 3 days. Post operative recovery was good. Ryle's tube feed was started next day. Vitals were stable. Liquids were administered orally at 5<sup>th</sup> POD. Physiotherapy was advised to the patient and active neck exercise was started. There was

small leak from esophagus and oral feed was hold for ten days. Tracheostomy was blocked on 13<sup>th</sup> day and RT feed was continued for few more days.



**Pre-operative image**

**Post-operative image**

Post operative RI scan was performed on 7-7-2021 and the report revealed no abnormal traced uptake in neck. Anti TG <15 U/ml (clinically non-significant) and TG 0.6 ng/ml (non-significant). Final histopathology report revealed of papillary thyroid cancer. LVI +ve tracheal wall was involved circoid cut margin was +ve. Patient was advised for follow up at nuclear medicine department. Follow – up course was uneventful.

### Discussion:

Involvement of airway has been reported in 6% - 21% of patients undergoing thyroid surgery [10-12]. Among patients with invasive DTC, 37% demonstrate tracheal invasion. Intraluminal tracheal involvement is less frequent, occurring in 0.5% - 1.5% [13-14]. While recurrent laryngeal nerve damage does not independently influence survival, esophageal and

tracheal invasion has been shown to impact survival [15]. The complete resection of the trachea to remove neoplasm that does not invade the mucosa is controversial [16-17]. Partial tracheal involvement without mucosal invasion can be treated by partial resection and has a favorable outcome. However a larger area of mucosal invasion may limit the feasibility of partial tracheal resection because it may lead to kinking or stenosis after repair. Hence full circumference resection and end to end anastomosis is preferred to shaving trachea. Although extensive involvement of the trachea like 6 or more tracheal ring and simultaneous invasion of the esophagus remains contradiction for the procedure. One of the major advantages of tracheal resection is the immediate and effective relief of intratracheal bleeding and the symptoms of obstruction. Hence in our opinion, trachea should be resected and anastomosed whenever needed for better short and long term outcome.

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## Conclusion

Thyroid cancer invading trachea is a rare entity in differentiated thyroid cancer. But in case of recurrent disease partial/ focal infiltration can be expected. Unfortunately in this case, the thyroid cartilage infiltration was  $\geq 3$  cm invading the 3<sup>rd</sup> tracheal ring. Small resection of trachea is easy to perform but for of 3–4 cm defect only. Tracheal mobilization and hyoid are the method to bring together the cut ends to be anastomosed. This requires high degree of skill and utmost precaution of tracheal vascularity with intervention for further speech.

**Conflict of Interest:** The authors have stated explicitly that there are no conflicts of interest in connection with this paper.

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