Abstract: Papillary carcinoma is the most common malignant tumour of the thyroid gland, accounting for at least two-thirds of newly diagnosed carcinomas. This tumour may be occasionally multicentric in origin. It frequently spreads to regional lymph nodes in the neck and mediastinum, but uncommonly metastasizes outside these regions. Local invasion of this tumour to the upper airway or digestive tract structures is infrequent. However, when that occurs, it is a source of significant morbidity and mortality. Advanced thyroid cancers sometimes can involve the trachea and cause hemoptysis or dyspnea. Patients with cancers extending to the trachea often die of hemorrhage or airway obstruction. Here we discuss a case which presented as a laryngeal growth but turned out to be papillary carcinoma thyroid that has invaded larynx. The case history, presentation and management is being presented here.

Keyword: Thyroid neoplasms, Carcinoma, papillary, Laryngectomy

Case Report:
A 75 year old male presented to us with swelling in front of the neck for 3 months and voice change for the past 1 month. H/o difficulty in breathing for 10 days. Patient presented to us in stridor. Emergency tracheostomy was done on the day of admission. On examination, patient had a swelling in the neck predominantly on left side of size 5x3 cm, swelling was firm in consistency, moves on deglutition. On videolaryngoscopic examination, there was a proliferative mass in the left subglottic region with left vocal cord fixation. Routine investigations were done for the patient. CT neck showed the mass in the left thyroid of size 3x3 cm and in left subglottic region with extension to glottis.
esophagus 21%, larynx 12%, and other sites 30%. The factors that had significant influence on survival were invasion of the trachea and the esophagus. Completeness of resection approached statistical significance. Muscle invasion, laryngeal invasion, and recurrent laryngeal nerve invasion had no significant independent influence on survival. These data suggest that when papillary thyroid carcinoma extends beyond the thyroid capsule and invades adjacent structures, the site invaded will influence survival. Survival may be improved in those cases in which complete surgical excision of the tumor is performed. Complete resection of thyroid carcinoma invading the aerodigestive tract can offer prolonged palliation, improved local control, and the opportunity for cure in selected patients.

EVALUATION:
Patients with invasion of the aerodigestive tract may present with clearcut symptoms that direct the examiner to the site of invasion, such as hoarseness, stridor, hemoptysis, and dysphagia. Nevertheless, most patients presenting with a paralyzed vocal cord will present without acute voice changes due to gradual compensatory function by the contralateral vocal cord. The most common options for locoregional assessment include ultrasound, CT, and MRI. Ultrasound is standard at most institutions for the initial evaluation of thyroid disease and can be combined with fine-needle aspiration biopsy for diagnostic purposes. MRI has been shown to be useful in detecting recurrent laryngeal nerve, esophageal, and tracheal invasion. A preoperative barium esophagram can identify strictures or gross invasion, as well as the level and length of invasion. Patients with laryngeal involvement who may be candidates for partial laryngeal surgery should be considered for pulmonary function and swallowing evaluation to determine their ability to handle aspiration which can postoperatively flare and become significantly symptomatic, especially in the elderly with reduced pulmonary reserve.

Laryngectomy specimen showing subglottic mass

Laryngectomy specimen showing enlarged thyroid

DISCUSSION:
Thyroid cancer is one of the common tumors, accounting for all human malignancies - 1% of the newborn. According to pathologic diagnosis and the combination of biological characteristics, it is divided into four kinds of thyroid cancer: papillary carcinoma, follicular carcinoma, medullary carcinoma and undifferentiated carcinoma. In addition to medullary carcinoma, the vast majority of thyroid cancer is of follicular cell origin. Papillary carcinoma of thyroid cancer in adults, accounts for 75% and 60% of all thyroid cancer in children, about 80% of the tumor is multicentric, 1/3 involving the bilateral thyroid; follicular carcinoma 12%, medullary carcinoma accounts for about 5%, from parafollicular calcitonin-secreting C cells; undifferentiated carcinoma 1%, from the pathological types of undifferentiated state of cells. Papillary carcinoma and follicular thyroid cancer, the proportion of significant geographical differences, it may be related to the content of iodine in food, in iodine deficiency areas. Thyroid carcinoma infrequently invades the upper aerodigestive tract. However, when invasion occurs, it can be a source of significant morbidity as well as mortality for the patient. The most common site of extrathyroidal extension of well-differentiated carcinoma is into the overlying strap muscles. Other structures to be involved are recurrent laryngeal nerves, larynx, pharynx, and esophagus. Invasion of these structures produces symptoms of airway insufficiency, dysphagia, and hemoptysis. As cases of invasion into the strap muscles alone are eliminated, the incidence of laryngotracheal or esophageal invasion by all histologic subtypes is approximately 5% to 7%. Furthermore, when cases of anaplastic carcinoma are excluded, the incidence of invasion of the upper aerodigestive tract by well-differentiated thyroid carcinoma (papillary and follicular subtypes) is less than 4%. Despite the low incidence life threatening morbidity and mortality can occur. The uncontrollable symptoms related to invasion, namely airway hemorrhage and suffocation, were the cause of death in 47% of patients in one study by Tollefson et al. In another study by McConahey et al., as many patients died of uncontrolled local disease as distant metastases, suggesting that adequate control of local tumor is critical to avoid the mortality as well as the morbidity of the disease. At the Mayo Clinic, 262 patients treated for invasive papillary thyroid carcinoma between 1940 and 1990 were retrospectively evaluated. In this group the sites of invasion were muscle 53%, trachea 37%, laryngeal nerve 47%, esophagus 21%, larynx 12%, and other sites 30%.
location of tumors. Others have noted success with partial laryngeal surgery for locally invasive thyroid cancer. Friedman and colleagues demonstrated that up to 50% of the external laryngeal framework could be removed with internal laryngeal preservation. Greater laryngeal resection requires some form of vertical laryngectomy reconstructive effort. Indications for total laryngectomy include airway obstruction, lumenal hemorrhage, intraluminal invasion, or lack of larynx function. This approach has demonstrated good local control for extensive larynx invasion and is less morbid than organ-preserving or palliative therapies. Tracheal invasion has been more extensively studied and characterized due to its greater frequency relative to laryngeal involvement. A widely cited staging system by Shin and colleagues is based on the depth of tracheal invasion. Stage I disease invades through the capsule of the thyroid gland and abuts but does not invade the external perichondrium of the trachea. Stage II disease invades into the cartilage or causes cartilage destruction. Stage III disease extends into the lamina propria of the tracheal mucosa with no elevation or penetration of the mucosa. Stage IV disease is full-thickness invasion with expansion of the tracheal mucosa that is visible bronchoscopically as a bulge or an ulcerated mass. In patients with superficial tumor adherence to the trachea, one should consider peeling or preservation procedures. RAI therapy should not be expected to compensate for inadequate surgical resection. In patients with more aggressive variants such as tall cell, insular, Hurthle cell, or poorly differentiated thyroid cancers, complete surgical resection is considered optimal therapy. When tumor has invaded into or destroyed tracheal cartilage, shave procedures are likely to leave behind macroscopic residual disease, and more aggressive therapy should be considered. Options include window resection or circumferential tracheal resection and reanastomosis. Window resection can be done for limited involvement of an anteriorly or laterally located tumor and can be closed primarily or with strap muscles and peristeme. If more than one tracheal ring is to be excised, sleeve resection and reanastomosis is required. Tumors with intraluminal involvement and involvement of anterior and lateral tracheal wall are not amenable to window resection, and circumferential resection and primary anastomosis is required. A total of 5 to 6 cm of trachea can be resected and primarily reanastomosed without tracheal or laryngeal mobilization. A supralaryngeal release involves division of the thyrohyoid musculature, yielding 0.5 cm of length, and division of the thyrohyoid membrane, producing an additional 2.0 cm. Additional length can be gained with division of the suprathyroid musculature. Inferiorly, several centimeters can be gained by sternotomy and hilar mobilization, starting with the right hilus and inferior pulmonary ligament, dissection of the pulmonary artery and vein, and reimplantation of the left mainstem bronchus into the bronchus intermedius.

CONCLUSION: Structures commonly invaded by thyroid carcinoma include the strap muscles, larynx, trachea, esophagus, and recurrent laryngeal nerve. Symptoms that are often life-threatening include stridor, his disease is to provide adequate locoregional control and minimizing the morbidity of the tumor and surgical treatment. Therefore, procedures that attempt to preserve the functions of the upper aerodigestive tract are preferred to radical extirpative procedures that offer little survival advantage in many studies. Adjunctive therapy is often required in most cases and should be utilized with surgery to improve locoregional control.

REFERENCES


