

## Management of Locally Invasive Thyroid Cancer

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Well-differentiated 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. Several studies have reported that the incidence of extrathyroidal extension of well-differentiated thyroid carcinoma is between 3% and 16%, excludes anaplastic carcinoma, and is considered a poor prognostic indicator of survival. The most common site of extrathyroidal extension of well-differentiated carcinoma is into the overlying strap muscles. The trachea, recurrent laryngeal nerves, esophagus, and larynx have the highest incidence of invasion following the commonly involved overlying strap muscles.

The pattern of invasion of the tumor are generally by direct extension of the primary or by extension of metastatic paratracheal lymph nodes in the tracheoesophageal groove. Invasion of the larynx by thyroid carcinoma occurs by direct extension of the tumor, since the laryngeal cartilages do not pose a significant barrier to invasion. The route of invasion can be through the thyroid and cricoid cartilage or into the paraglottic space by extension around the posterior border of the thyroid cartilage. The pharynx is usually invaded by posterior extension of the thyroid carcinoma around the thyroid cartilage and into the pyriform sinus. When the carcinoma extends into the wall of the pyriform sinus, intraluminal extension is not uncommon. This results in dysphagia and

hemorrhage. The esophagus is usually invaded by direct extension of the thyroid primary. Tracheal invasion by thyroid carcinoma also occurs by direct extension of the primary tumor or by invasion from a paratracheal lymph node bearing metastatic tumor.

There are various surgical management options for invasive thyroid cancer. There is also controversy surrounding the shave excision vs complete resection of tumor from the aerodigestive tract. The controversy lies in the definition of shave excision. Shave excision is defined as the removal of all gross tumor by resection of a partial thickness of the aerodigestive tract wall. Shave excision can be effectively used in those early cases of aerodigestive tract invasion where there is obvious cartilage invasion but no direct intraluminal involvement. Intraluminal extension is more serious problem that will usually require resecting a portion of the aerodigestive tract. In this situation, partial laryngeal or tracheal resection with preservation of function may be possible and should be done. Recurrent laryngeal nerve invasion when function is present before operation should prompt consideration of nerve preservation and management of residual disease with adjuvant iodine 131 ( $^{131}\text{I}$ ). Adjuvant therapy using radioiodine or external-beam radiotherapy should be considered an integral part of any treatment plan to improve locoregional control.