Surgical management of thyroglossal duct carcinoma: Is an aggressive approach justified?

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Carcinomas arising from a thyroglossal duct cyst are extremely rare. The majority are papillary in nature, less than 5% being squamous cell in type. It is most unlikely that the average general surgeon will encounter this condition. It is even less likely that a coexisting, concurrent papillary and squamous cell carcinoma of the thyroglossal duct will be encountered. Such a case is reported in this issue of the Journal (pages 328 to 332) by Kwan and colleagues. It is worthy of review by the practising general surgeon because it serves to highlight the debate over the appropriateness of an aggressive management philosophy for carcinoma of the thyroid in general.

In this instance, a 38-year-old man underwent local excision of a thyroglossal duct cyst. On microscopic examination there was a single focus of proliferation of atypical squamous cells, with microinvasion into the underlying stroma. There was also a small separate area with papillary ingrowth and psammoma bodies, consistent with papillary carcinoma in the cystic structure; thus, the diagnosis of coexistent squamous and papillary carcinoma. The authors chose radical treatment for this patient: total thyroidectomy, ablative radioactive iodine and adjuvant external radiation therapy. I disagree with their approach and its rationale.

The findings on subsequent clinical examination of the neck, radioactive iodine uptake scanning, ultrasonography and computed tomography of the neck were all normal, yet the authors chose to reoperate and perform total thyroidectomy. As cited by Kwan and associates, of 146 patients with papillary carcinoma of a thyroglossal duct cyst reviewed by Renard and colleagues,[1] the thyroid gland was available for histologic examination in 43. Even within this small highly selected group chosen for subsequent thyroid gland removal, only 6 (14%) actually had papillary adenocarcinoma in the gland. Furthermore, the clinical significance of this occasional finding of microscopic papillary carcinoma coexisting in the thyroid gland itself is highly questionable since cure rates for this disease in excess of 95%[2] are acknowledged by the authors. They also acknowledge the fact that McNicoll and colleagues[3] reported no recurrences in their series of patients, treated by the Sistrunk procedure alone without thyroidectomy. This is analogous to the ongoing debate regarding the clinical importance of microscopic papillary carcinoma in the contralateral lobe of a thyroid gland with papillary carcinoma clinically contained on one side. It can be found microscopically in 20% to 30% of such patients yet is considered by most thyroid surgeons to be of pathological but not clinical significance.[4] A histologically normal thyroid gland was removed. One of several small lymph nodes at the thyroid isthmus had a "focus that suggested involvement by the follicular variant of papillary carcinoma." This finding is also of no clinical significance even in the well-established papillary carcinoma of the thyroid. Thyroid carcinoma is one of the only carcinomas in which lymph-node involvement does not impart a worse prognosis.[5,6]

The post-total (not subtotal) thyroidectomy scan indicated, as it almost always does, a focus of uptake in the thyroid bed compatible with a small amount of remnant tissue. The patient was therefore given ablative radioactive iodine treatment. The rationale given for this additional intervention was to facilitate follow-up with radioactive iodine scanning. To my thinking, it is most unlikely that radioactive iodine scanning would ever be required nor would it be of primary value for the diagnosis of recurrence, which almost always is a local problem in the neck and is detected by clinical examination. The authors also imply that the recurrence rate for papillary thyroid cancer is lowest after total ablation of the tissue with thyroidectomy and radioactive iodine. The cited report of Mazzaferri [7] is one of the only reports to have shown the

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possible benefit of radioactive iodine in lowering recurrence.

Squamous cell carcinoma of the thyroid gland or the thyroglossal duct usually arises from squamous metaplasia of a coexistent papillary component or as a more malignant component in recurrent disease. The clinical significance of a single microscopic focus in this case is highly questionable. Nevertheless, the authors' detailed scrutiny of the 13 cases of true squamous cell carcinoma of the thyroglossal duct reported in the literature clearly indicates a poorer prognosis. On this basis they chose to give external beam irradiation to the neck, citing the fact that three of six patients receiving such treatment remained alive with no evidence of disease. It is noteworthy that many of these patients had advanced, gross invasive disease of the neck. However, my own review of these 13 cases (authors' Table I, pages 330 and 331) led me to another conclusion. Seven patients underwent surgery followed by postoperative radiotherapy; of these, four had recurrent disease, often locally, and died, one had a necrotic ulcer and a tracheal fistula (biopsy negative for recurrence) and only two showed no evidence of disease 2 years and 18 months after treatment. This suggests that local radiotherapy fails to eliminate local recurrence or death. However, of the six others who had no radiotherapy, four underwent surgery alone, often for advanced and infiltrating disease, with no evidence of recurrent disease 1, 3, 15 and ? years after resection, and in two the follow-up was not reported. On the basis of these findings it is hard to advance an argument for the use of external beam radiotherapy.

Although staging for cancers in other head and neck sites is based entirely on the anatomic extent of disease, this method is not appropriate for the unique group of malignant tumours arising in the thyroid. Both the histologic diagnosis and the age of the patient are of such importance in the behaviour and prognosis of thyroid cancer that these factors are included in the staging system. Papillary and follicular carcinoma of the thyroid occurring in patients under 45 years of age, of any tumour size, even if it extends beyond the thyroid capsule (any T), with or without positive nodes (any N) is rightly stage I disease[8] in view of the excellent prognosis.[5,6] Total thyroidectomy is not an innocuous procedure and should be avoided when possible. The increased risks of hemorrhage, hypoparathyroidism and recurrent laryngeal nerve injury are well known. The clinically and radiologically normal thyroid gland does not merit partial, let alone total, removal for an incidentally discovered microscopic papillary carcinoma in the wall of a thyroglossal duct cyst. Radioactive iodine ablation of thyroid remnants after near-total or total thyroidectomy is generally reserved for patients with more malignant and usually follicular disease in whom the potential for future diagnosis and treatment of distant blood-borne metastases with radioactive iodine is of benefit and not because radioactive iodine will decrease the local tumour recurrence rate.[9] External beam radiotherapy after total thyroidectomy can be extremely debilitating. The xerostomia, pharyngitis and dysphagia produced often outweigh any potential benefits, even acknowledging the unique expertise of the Princess Margaret Hospital group in optimum use of this modality. We reserve external beam irradiation in thyroid cancer for uncontrolled or incompletely resected recurrent local disease. A "sledge hammer" approach to the treatment of microscopic disease arising in the thyroglossal duct cyst, or even in the thyroid gland itself, is not justified, particularly when it is discovered incidentally. This applies whether the carcinoma is papillary or squamous, or both, in nature. Indeed, based on this well-presented and thoughtful review it would seem to me that an ultraconservative rather than a radical approach should be emphasized.

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