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# Metastatic follicular thyroid carcinoma to the maxilla

Tsila Hefer, M.D.*, Ronen Manor, D.M.D.†, Henry Zvi Joachims, M.D.*, Gabriel M. Groisman, M.D.‡, Micha Peled, D.M.D.†, Eliav Gov-Ari, M.D.*, Dov Laufer, D.M.D.†

**Abstract**
We present a unique case of metastatic follicular thyroid carcinoma to the hard palate and the maxillary sinus, a case that to our knowledge has not been reported before. Various malignant tumours that metastize to the maxilla are reviewed, and the therapeutic approach to follicular thyroid carcinoma metastasis to that area is also discussed. Follicular thyroid carcinoma should be included in the list of tumours that metastasize to the maxilla.

**Key words: Neoplasm metastasis; Carcinoma, follicular cell; Thyroid neoplasms; Maxillary sinus neoplasms**

## Introduction

Follicular thyroid carcinoma accounts for 15–20 per cent of thyroid gland malignancy (DeWeese and Saunders, 1982). The tumour tends to spread haematogenously. Distant metastases of the tumour are relatively common, occurring in 10–65 per cent of the patients (Harness *et al.*, 1974; Siver and Stern, 1993).

We present a unique case of metastatic follicular thyroid carcinoma to the hard palate, that invaded the maxillary sinus, and discuss the suggested method of treatment.

## Case report

A 58-year-old man was examined for a one-month history of left hard palate discomfort. Six months previously, a near total thyroidectomy had been performed for left lobe follicular thyroid carcinoma and post-operative radioiodine therapy was given to the patient. At the time of the present examination his condition was good and there was no evidence of local recurrence of the disease in the neck.

Physical examination revealed a 1 × 1.5 cm soft non-tender mass in the left side of the hard palate without signs of infection or ulceration. The rest of the oropharynx, the nasopharynx and nose were normal, as were the hypopharynx, the ears and the rest of the physical examination. There was no cervical lymphadenopathy. A radioactive bone scan revealed an increased uptake in the left hard palate and there was a lack of radioiodine uptake in the radioiodine scan.

A computed tomography (CT) scan of the head and the neck demonstrated a 3 × 4 cm mass in the left maxillary alveolar ridge (Figure 1) which invaded the maxillary sinus (Figure 2). The thyroglobulin blood level was elevated and was over 1000 ng/ml.

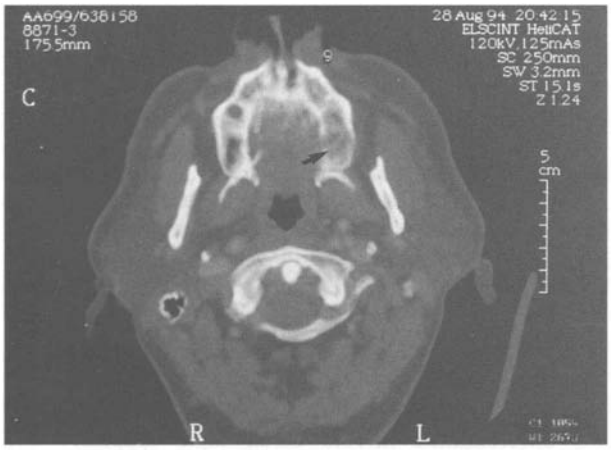


FIG. 1
CT scan demonstrating the tumour invasion to the left maxillary alveolar process.

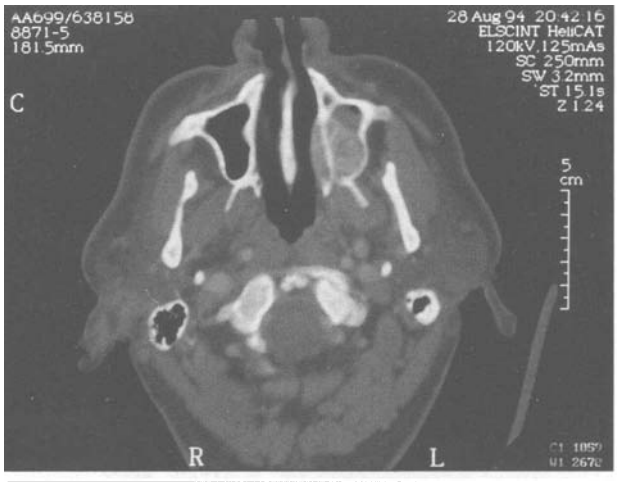


FIG. 2
CT scan demonstrating involvement of the left maxillary sinus by the tumour.

From the Departments of Otolaryngology*, Oral and Maxillofacial Surgery†, and Pathology‡, Rambam Medical Center, Technion, Faculty of Medicine, Haifa, Israel.
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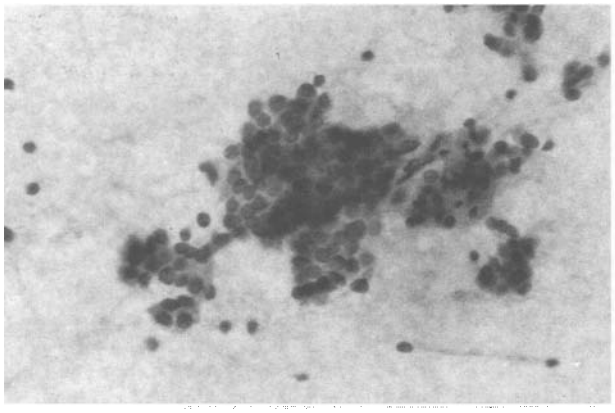

FIG. 3

Fine needle aspiration (FNA) from the mass showing fragments of follicular epithelium of various sizes. Typical 'chains' and 'crescents' of follicular cells are noted, indicating tendency towards forming incomplete follicular formations, typical for a follicular tumour. (Papanicolaou's stain; × 250).

Fine needle aspiration (FNA) from the mass showed (Figure 3) fragments of follicular epithelium of various sizes. No sheets of follicles were seen, but typical 'chains' and 'crescents' of follicular cells were noted, indicating a tendency towards forming incomplete follicular formations. These findings were consistent with a follicular tumour, and biopsy from that mass confirmed the diagnosis of follicular thyroid carcinoma metastasis.

A left maxillectomy was performed. All the malignant tissue was removed en bloc from the hard palate and the maxillary sinus together with safety margins of normal tissue free from the disease (confirmed by multiple frozen sections from the margins of the operated field). Obturator adjustment was performed at the end of the procedure. Histological sections of the maxillary bone (Figure 4) that were removed showed areas of metastatic well-differentiated follicular carcinoma of the thyroid. Immunohistochemical staining for thyroglobulin was strongly positive in the follicular cells and in the calloid. The microscopic appearance of the tumour was similar to that of the carcinoma removed from the thyroid gland six months previously.

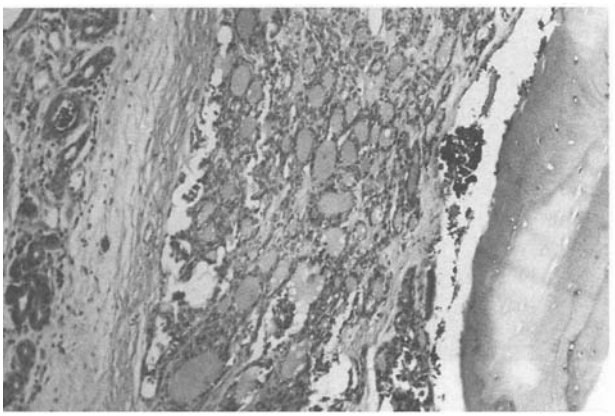

FIG. 4

Photomicrograph demonstrating metastatic follicular carcinoma of the thyroid gland (centre) adjacent to the maxillary bone (right). On the left side of the picture, salivary gland acini are seen. (H & E; × 250).

As the mass failed to collect a significant amount of radioiodine on the scan, there was no place for radioiodine therapy for the patient. Post-operatively, the patient was treated by brachiotherapy with iridium seeds. After a follow-up of two years, his condition is good and there is no evidence of recurrence of the disease.

## Discussion

Five per cent of all the malignant disease in the body involves the oral cavity (Zachariades, 1989). Metastasis to the mouth and jaw are extremely rare, accounting for one to eight per cent of all the malignant diseases of the mouth and jaw (Meyer and Shklar, 1965; Muller-Mattheis *et al.*, 1989; Zachariades, 1989), most of them are from primaries below the clavicle (Zachariades, 1989). It is widely accepted that, as the jaw does not contain a lymphatic system, metastasis in the jaw occurs via the blood stream (Zachariades, 1989). Eighty to 90 per cent of that metastasis is observed in the mandibula, and five to 20 per cent in the maxilla. Metastatic lesions in the gingival soft tissue are extremely rare (Muller-Mattheis *et al.*, 1989; Peris *et al.*, 1994). Some case reports of metastasis to the maxilla can be found in the literature. The lungs (Tucker *et al.*, 1968; Adler *et al.*, 1973; Roser *et al.*, 1976; Ciola and Yesner, 1977; Bhutani and Pacheco, 1992) and the breast (Roser *et al.*, 1976; Spott, 1985; Bhutani and Pacheco, 1992) are the most common primary sites for metastasis to the maxilla. Reports about metastasis to the maxilla from a malignant tumour of the kidney (Milobsky *et al.*, 1975; Roser *et al.*, 1976), the urinary bladder (Cohen *et al.*, 1989), the uterus (Orlian, 1978), the vagina (Ramanathan *et al.*, 1968), testis (Kranz, 1966), the brain (Tenzer *et al.*, 1988), and the scapula (Roser *et al.*, 1976), can also be found. We did not find any report about metastatic follicular thyroid carcinoma to the maxilla, and we believe our report to be the first one.

Follicular carcinoma is the second most common malignant tumour of the thyroid gland, accounting for 15–20 per cent of all thyroid gland malignancies (DeWeese and Saunders, 1982). Lymph node involvement is very uncommon with this malignancy, and occurs in four to 13 per cent of the cases (Block *et al.*, 1990). On the other hand, angioinvasion of the tumour is common and the tumour tends to spread haematogenously (Block *et al.*, 1990). Distant metastasis are relatively common, occurring in 10–65 per cent of the patients (Harness *et al.*, 1974; Siver and Stern, 1993). It has been reported that distant metastasis of the tumour are more common with the highly invasive, large (more than 5 cm) tumours and are associated with poor prognosis (Lee and Loré, 1990). The most common sites of metastasis of follicular thyroid carcinoma in descending order of frequency are: the lungs (DeWeese and Saunders, 1982; Lewis and Cady, 1988; Anderson *et al.*, 1989; Caron *et al.*, 1993), the bone (DeWeese and Saunders, 1982; Hurley and Becker, 1983; Caron *et al.*, 1993), the brain (Lewis and Cady, 1988), and the soft tissue organs such as the liver (Lewis and Cady, 1988), the bladder and the skin (Hurley and Becker, 1983; Caron *et al.*, 1993).

Bone metastasis occurs in one to three per cent of all the well-differentiated thyroid carcinomata (papillary and follicular carcinoma). It is more often observed in the follicular type. It is more common in patients over the age of forty, and is associated with an extremely poor prognosis. Amongst all the reports of metastatic thyroid follicular carcinoma to the bone we did not find any previous report about metastasis of that tumour to the maxilla.

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Twenty to 40 per cent of the patients with follicular carcinoma of the thyroid gland die from their disease. The causes of death are related to uncontrolled local disease and more frequently, to distant metastasis (Lee and Loré, 1990). Although the presence of distant metastasis represents a poor prognosis with an overall mortality of 56–67 per cent over 10 years (Lee and Loré, 1990), several factors should be considered as unfavourable prognostic factors in patients with distant metastasis. The factors are: 1) Patient's age over 40 years at the discovery of the distant metastasis. 2) Lack of radioiodine uptake by the metastatic lesion. 3) Extensive metastatic disease. 4) Presence of bone metastasis (Lee and Loré, 1990).

Total thyroidectomy accompanied by post-operative radioiodine treatment is accepted as the initial treatment modality for primary follicular thyroid carcinoma. Although cervical lymph node involvement is uncommon, when it exists, modified neck dissection is recommended (Block *et al.*, 1990).

Unlike patients with regional metastasis for whom surgery is the primary treatment modality, radioactive iodine treatment is considered to be the first line of treatment for distant metastasis thyroid carcinomata that concentrate a significant amount of radioidine (Lee and Loré, 1990).

Although a well-differentiated follicular thyroid carcinoma very often collects radioiodine avidly and usually responds well to radioiodine therapy, only about 50 per cent of the metastatic lesion concentrates a significant amount of radioactive iodine to achieve a successful treatment (Hurley and Becker, 1983). External radiation therapy is recommended for the other cases and when possible, surgical removal of the resectable lesion should be considered as adjunctive therapy for these patients (Lee and Loré, 1990). Chemotherapy may be considered, too, in selected patients.

In approximately 20–40 per cent of the patients the distant metastasis is discovered at the same time as the primary follicular carcinoma is diagnosed in the thyroid gland (Lee and Loré, 1990). At that situation the five-year survival rate is approximately 20 per cent (Siver and Stern, 1993), although total thyroidectomy is still recommended in an attempt to eliminate the source of the metastatic lesion in order to improve the prognosis.

Bone metastasis is associated with extremely poor prognosis. Even though the response rate of bone metastasis to radioiodine is low, occurring in about 50 per cent of the cases, radioiodine therapy is still considered in the literature to be the initial treatment for metastatic bone disease that succeeds in concentrating a significant amount of radioiodine (Hurley and Becker, 1983). In addition to radioactive iodine treatment, external radiation and surgery are valuable in treatment as well as in palliation of the metastasis, especially when associated with severe pain (Lee and Loré, 1990).

In our opinion, when feasible, surgical removal of all the resectable disease commensurate with reasonable morbidity and mortality is the initial treatment for follicular carcinoma metastasis to the maxilla, especially if the metastatic lesion is localized as it was in our case. Adjuvant therapy using radioiodine, external radiation, brachytherapy and, in selected cases, chemotherapy should be considered as an integral part of any treatment regimen for that condition. We believe that by aggressive treatment the malignant tissue will be eradicated and the prognosis will be improved.

## Conclusion

A first case of metastatic follicular thyroid carcinoma to the maxilla is reported. In our opinion, surgical removal of the malignant tissue followed by adjuvant therapy using radioiodine or brachytherapy is recommended as the treatment of choice for the condition. Follicular thyroid carcinoma metastasis should be included in the list of tumours that metastasize to the maxilla.

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Address for correspondence:
Dr Tsila Hefer,
P.O. Box 3360,
Haifa 31033,
Israel.