

tumors in the literature. Yu, Gao, and Wang et al. (2007) reported 30 cases collected over a 50-year period, all of which were malignant. In one of the author's personal series (Ord) of 9 sublingual gland tumors collected over a 16-year period at the University of Maryland, there were no benign tumors. Adenoid cystic carcinoma appears to be the commonest histologic type, followed by MEC: ACC 50%, MEC 28% (Spiro 1995), ACC 56.7% (Yu, Gao, and Wang et al. 2007), and ACC 66%, MEC 33% (Perez, Pires, and Alves et al. 2005).

Diagnosis

SUBMANDIBULAR GLAND TUMORS

Most submandibular gland tumors present with a slow-growing, painless mass inferior to the man-



Figure 9.1. A 64-year-old man with a painless submandibular mass.

dible (Figure 9.1). In a series of 87 submandibular gland carcinomas, 94% presented with a palpable mass and 39% with pain (Kaszuba, Zafero, and Rosenthal et al. 2007). As tumors of the gland are rare and inflammatory swelling secondary to sialolithiasis is seen more often, they may not be initially diagnosed and can present with late disease. In one series 50% of all referred patients with submandibular gland tumors had already had their submandibular gland removed on the presumption that the involved process was benign (Camilleri et al. 1998). The average tumor size in 370 cases of cancer of the submandibular gland was 2.9 cm (Bhattacharyya 2004). Inflammatory disease, however, is often painful and usually characterized by exacerbations and resolutions of the swelling in relation to eating. In a series of 258 submandibular gland excisions, 119 (46%) had sialolithiasis, 88 (34%) sialadenitis, and 51 (20%) tumors (Preuss, Klusmann, and Wittekindt et al. 2007).

Examination usually reveals a smooth, firm to hard mass in the submandibular triangle that is most commonly discrete and mobile. Fixation of the mass to the skin or underlying mylohyoid muscle is a sign of malignancy with advanced extracapsular infiltration (Figure 9.2). Neural involvement of the mandibular branch of the facial nerve with ipsilateral lower lip palsy, the lingual nerve with ipsilateral anesthesia/paresthesia of the tongue, or the hypoglossal nerve with ipsilateral palsy of the tongue muscles are also signs of cancer. Associated hard cervical nodes due to regional metastasis may also be present in malignant tumors.

The differential diagnosis of a solitary mass in the submandibular triangle with no overt signs of malignancy will include lymphadenopathy, plunging ranula, vascular malformation, and branchial cysts. It may be difficult to differentiate a lymph node from the enlarged gland on clinical examination alone. If the mass is bimanually palpable from within the floor of the mouth it is more likely to be a submandibular gland mass, and if it can be "rolled" over the lower border of the mandible on palpation it is a lymph node. The plunging ranula is usually soft-cystic in consistency but can become firm if chronically encysted. Vascular lesions are also soft and may "pit" on firm pressure or have thrills and murmurs. Branchial cysts lie more posterior and are partially