

**Figure 16-17** Warthin tumor. **A**, Low-power view showing epithelial and lymphoid elements. Note the follicular germinal center beneath the epithelium. **B**, Cystic spaces separate lobules of neoplastic epithelium consisting of a double layer of eosinophilic epithelial cells based on a reactive lymphoid stroma.

cells. They represent about 15% of all salivary gland tumors, and while they occur mainly (60% to 70%) in the parotids, they account for a large fraction of salivary gland neoplasms in the other glands, particularly the minor salivary glands. In more than half the cases, this tumor is associated with a balanced (11;19) (q21;p13) chromosomal translocation that creates a fusion gene composed of portions of the *MECT1* and *MAML2* genes. The *MECT1-MAML2* fusion gene is believed to play a key role in the genesis of this tumor, possibly by perturbing the Notch and cAMP-dependent signaling pathways. Overall, they are the most common form of primary malignant tumor of the salivary glands.

## MORPHOLOGY

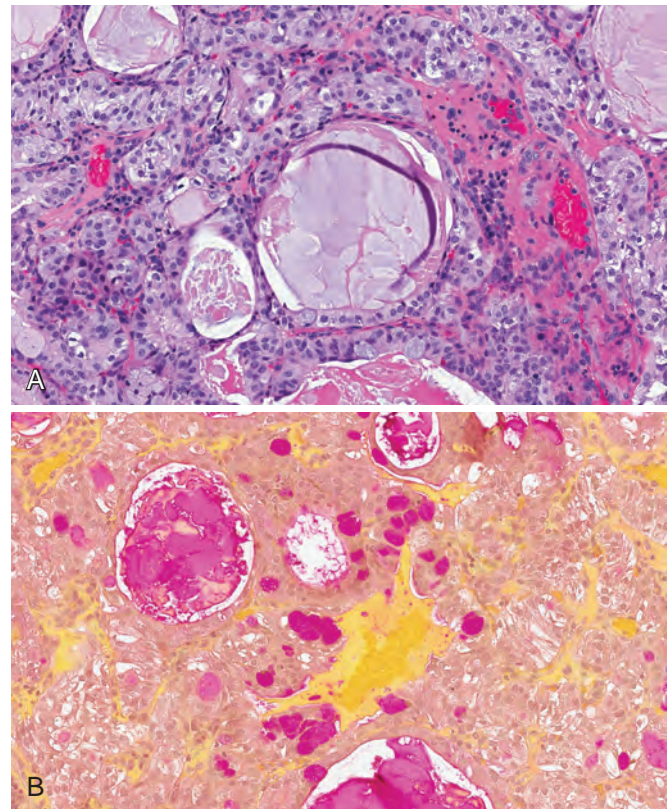
Mucoepidermoid carcinomas can grow as large as 8 cm in diameter and although they are apparently circumscribed, they lack well-defined capsules and are often infiltrative at the margins. Pale and gray-white on transection, they frequently contain small, mucin-containing cysts. The basic histologic pattern is that of cords, sheets, or cystic configurations of squamous, mucous, or intermediate cells (Fig. 16-18A). The hybrid cell types often have squamous features, with small to large mucus-filled vacuoles, best seen when highlighted with mucin stains (Fig. 16-18B). The tumor cells may be regular and benign appearing or, alternatively, highly anaplastic and unmistakably malignant. Accordingly, mucoepidermoid carcinomas are subclassified into low, intermediate, or high grade types.

The clinical course and prognosis depend on the grade of the neoplasm. Low-grade tumors may invade locally and recur in about 15% of cases, but only rarely do they metastasize and so yield a 5-year survival rate of more than 90%. By contrast, high-grade neoplasms and, to a lesser extent, intermediate-grade tumors are invasive and difficult to excise and so recur in about 25% to 30% of cases and, in 30% of cases, metastasize to distant sites. The 5-year survival rate in patients with these tumors is only 50%.

## Other Salivary Gland Tumors

Two less common neoplasms merit brief description: adenoid cystic carcinoma and acinic cell carcinoma.

*Adenoid cystic carcinoma* is a relatively uncommon tumor, which in approximately 50% of cases is found in the minor salivary glands (in particular the palatine glands). Among the major salivary glands, the parotid and submandibular glands are the most common locations. Similar neoplasms



**Figure 16-18** **A**, Mucoepidermoid carcinoma growing in nests composed of squamous cells as well as clear vacuolated cells containing mucin. **B**, Mucicarmine stains the mucin reddish pink.