# Chapter 62 – Parotidectomy

**Jonas T. Johnson**

The most frequent indication for surgery of the parotid gland is the removal of a neoplasm. It is estimated that 75% to 80% of parotid neoplasms are benign.[1–4] Pleomorphic adenoma and Warthin's tumor (papillary cystadenoma lymphomatosum) account for the majority of the tumors encountered.[5] When malignancy is encountered, adenoid cystic carcinoma and mucoepidermoid carcinoma are approximately equally represented. Adenocarcinoma, acinic cell carcinoma, carcinoma expleomorphic adenoma, squamous cell carcinoma, and malignant mixed tumor may occasionally be encountered. Lymphoma may arise in the intraparotid or paraparotid lymph nodes. The lymph nodes may also be the site of metastases from a squamous cell carcinoma or melanoma when the primary tumor arises on the face or scalp. Rarely, tumors may metastasize to parotid lymph nodes from distant sites.

Parotidectomy also plays an important role in the management of chronic/recurrent sialadenitis that fails medical therapy.[6–8] The relationship of the facial nerve to the parotid gland serves to make surgical management of these neoplasms a challenge. The facial nerve exits the stylomastoid foramen and passes through the substance of the parotid gland as it branches to innervate the muscles of facial expression. Surgeons frequently speak of a lateral and a deep lobe of the parotid gland. This is somewhat ephemeral inasmuch as no anatomic boundaries exist between the lateral and the deep lobes of the parotid gland except in regard to its relationship to the facial nerve.

Before the 1950s, enucleation of benign pleomorphic adenoma was the most common extirpative procedure for these tumors, but this was associated with a recurrence rate of 20% to 45%.[9–11] This procedure was carried out to avoid injury to the facial nerves. The apparent explanation for this observation is the fact that the benign pleomorphic adenoma may recur if the capsule is not excised. Accordingly, enucleation should be avoided and the benign pleomorphic adenoma should be removed with its capsule and a margin of normal glandular tissue margin when possible. Benign pleomorphic adenoma does not invade adjacent structures. Accordingly, it is unnecessary to resect the facial nerve, masseter muscle, and other structures when these are found to be immediately adjacent to the tumor capsule. Preservation of the integrity of the facial nerve requires that these procedures be undertaken only after first identifying the facial nerve. The goal in surgery of the parotid gland for benign lesion, therefore, is to remove the entire neoplasm without injuring the facial nerve. This can best be accomplished by performing superficial parotidectomy with facial nerve dissection. Inasmuch as the so-called superficial lobe of the parotid gland is a surgical colloquialism and does not define an anatomic unit, it is unnecessary for the surgeon to actually remove all parotid salivary tissue lateral to the facial nerve and “partial” parotidectomy may suffice.[12–14] It is, however, necessary that the surgeon remove the entire neoplasm with its entire capsule. This procedure should be accomplished with the facial nerve carefully identified and protected.

## *PATIENT SELECTION*

The triad of symptoms suggesting a malignant tumor of the parotid gland include facial nerve dysfunction, pain, and rapid increase in the size of the mass. Physical findings include facial nerve paralysis, fixation to surrounding tissue, and associated cervical lymphadenopathy.

The most commonly encountered presenting sign in a patient with a parotid neoplasm is a mass in the parotid gland. Physical examination demonstrates a discrete mass within the substance of the parotid gland. The presence of multiple paraglandular and intraglandular nodes means that the pathology could be metastatic disease or inflammatory disease either adjacent to or within the parotid gland. Accordingly, this should always be considered in the differential diagnosis. The benign parotid mass is usually mobile. Lack of mobility may suggest inflammation, malignancy, or a deep lobe tumor. The physician must examine the oral cavity to rule out involvement of the parapharyngeal space.

The finding of preoperative facial nerve paresis, paralysis, or fixation of the neoplasm to the skin is highly suggestive of malignancy (Fig. 62-1). Indicators such as rapid growth and hard consistency should be considered relative indicators of malignancy. Pain is a reasonably unreliable indicator of malignancy inasmuch as inflammatory conditions may cause pain as commonly as malignant conditions do.

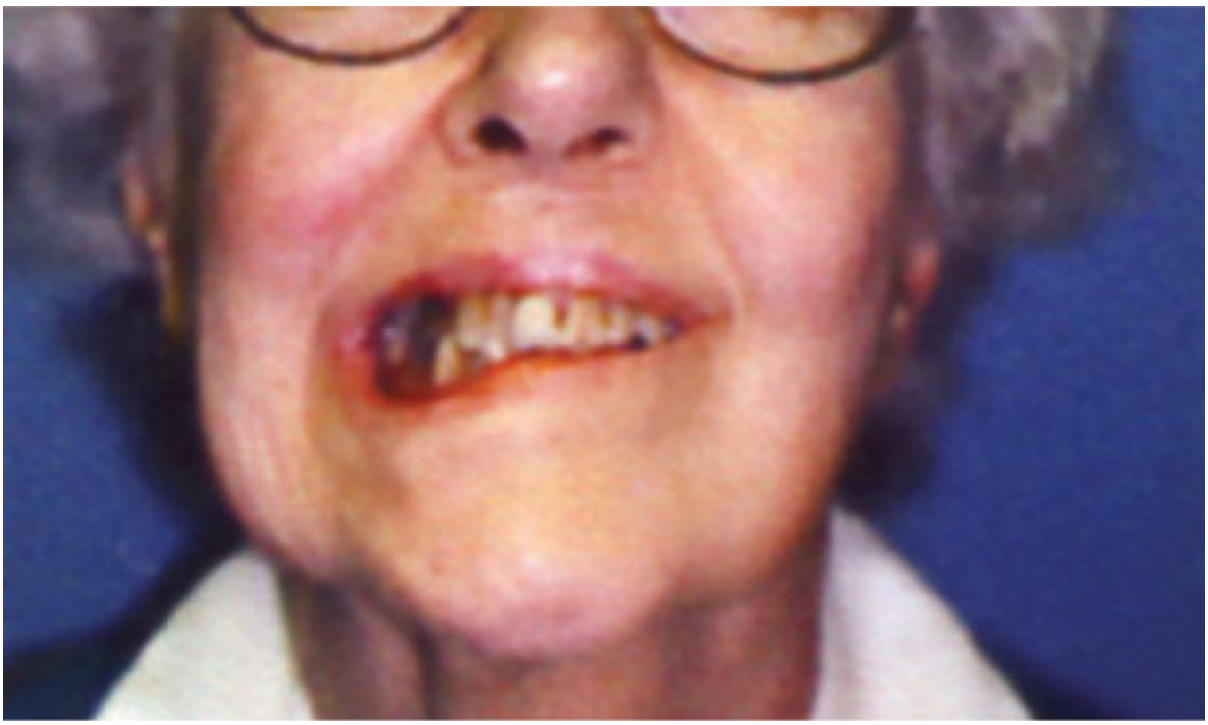

**Figure 62-1** The presence of a mass in the parotid gland and facial paresis or paralysis is highly suggestive of carcinoma of the parotid. This woman has weakness in the lower lip owing to mucoepidermoid carcinoma.

Diffuse enlargement of the gland suggests involvement with a nonneoplastic condition. A study of more than 140 parotidectomies performed at the University of Pittsburgh Medical Center found that approximately 25% of parotidectomies were undertaken for nonneoplastic disease.[4] These pathologies include first branchial cysts and inflammatory nodes that may be indistinguishable from neoplasms preoperatively. Infiltrative pathologies that may be encountered include sarcoid and the benign lymphoepithelial lesion associated with collagen vascular disease.

## *PREOPERATIVE EVALUATION*

Physical examination alone is adequate investigation in the vast majority of patients presenting with discrete neoplasms involving the lateral lobe of the parotid gland in the absence of danger signs. Scanning with computed tomography (CT) or magnetic resonance imaging (MRI) is indicated when involvement of the deep lobe or parapharyngeal space is suspected. This includes tumors that are located immediately posterior to the ascending ramus of the mandible and those that manifest with an oropharyngeal mass displacing the ipsilateral pharyngeal wall or tonsil (Fig. 62-2). Preoperative identification of tumors lying in the deep lobe medial to the facial nerve is useful inasmuch as it allows the patient to be counseled that the risk to the facial nerve is greater when performing total parotidectomy with facial nerve dissection. Imaging is also advocated if malignancy is suspected.

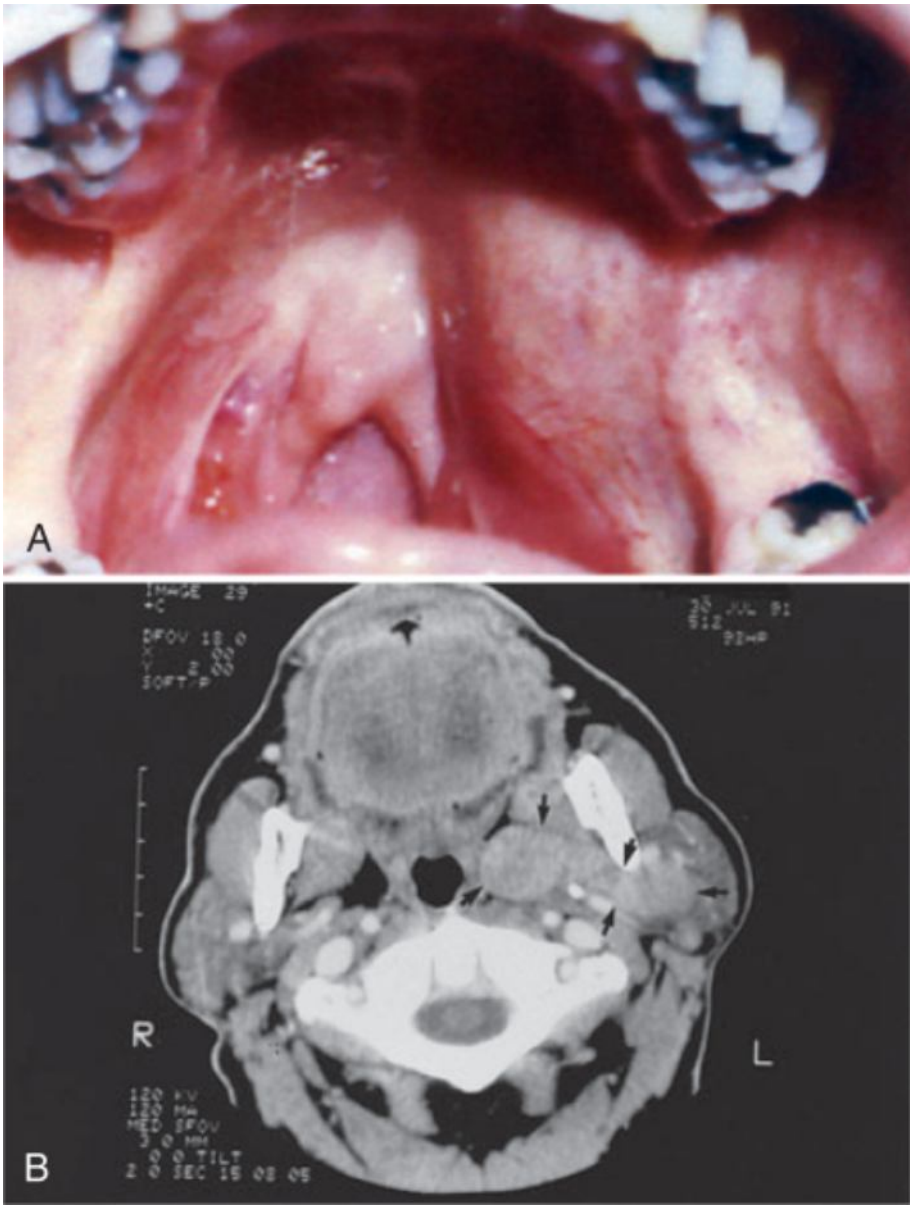


**Figure 62-2** **A,** Medial displacement of the soft tissue of the palate may be due to extension of tumor from the deep lobe of the parotid. **B,** A dumbbell tumor of the parotid that probably began in the "deep lobe" is demonstrated with this axial computed tomography scan. Arrows outline the dimensions of the tumor.

Fine-needle aspiration biopsy (FNAB) of salivary gland neoplasms may be useful in distinguishing malignant from benign conditions. When malignancy is suspected by history, physical examination, and imaging, the routine use of FNAB allows the surgeon to counsel the patient preoperatively relative to the increased risk to the facial nerve and the possibility that elective sacrifice of a branch of or the entire nerve may be appropriate. Alternatively, FNAB may be helpful in establishing the diagnosis of a benign tumor in an older patient in whom elective surgery may be contraindicated. For many patients with parotid neoplasms, however, biopsy and tumor removal are accomplished in a single step employing partial parotidectomy with facial nerve dissection.

All reports of FNAB acknowledge a significant incidence of false-positive results. This suggests that elective resection of vital structures (e.g., facial nerve) should be deferred until permanent pathology results are available.

Open biopsy of parotid neoplasms is rarely indicated. In fact, open biopsy without facial nerve dissection of the routinely encountered parotid mass is contraindicated because it places the facial nerve at risk and may predispose to dissemination of pleomorphic adenoma in the skin and adjacent soft tissue, thereby increasing the risk of recurrence.

We advocate open biopsy of parotid neoplasms in a highly select population of patients in whom clinical indicators strongly suggest malignancy and the diagnosis is not adequately confirmed on FNAB. This includes patients who present with facial nerve paralysis or fixation of tumor to the skin. Biopsy without identification of the facial nerve is something of a calculated risk undertaken to obtain a diagnosis so that patients can be appropriately counseled

before the definitive surgery. In most cases, no real risk is encountered because of preexistent paralysis. The surgeon can avoid being forced to rely on frozen section diagnosis intraoperatively when making difficult decisions relative to preservation of the integrity of the facial nerve. The author's group acknowledges that most experienced pathologists are highly successful in making frozen section diagnoses of parotid neoplasms; however, the relative rarity of these malignancies makes the use of frozen section diagnosis in community hospitals imprecise at best.

Similarly, open biopsy may be necessary to substantiate the diagnosis of some infiltrative diseases. Sarcoidosis, for instance, can produce either unilateral or bilateral parotid enlargement. Typically, the gland is diffusely enlarged. This is an important clinical finding that should be distinguished from a discrete nodule within the gland. Imaging may demonstrate calcification reflecting the granulomatous changes. Sarcoid may be associated with uveitis and facial paralysis (Heerfordt's syndrome). Biopsy is appropriate and treatment with steroids is effective. Parotidectomy is not appropriate for sarcoidosis.

The benign lymphoepithelial lesions associated with the collagen vascular disease (systemic lupus, Sjögren's syndrome) also produce diffuse glandular enlargement (Fig. 62-3). Biopsy of the minor salivary glands in the lip is the procedure of choice in this circumstance. Patients who display the longstanding lymphoepithelial lesions of Sjögren's syndrome are at risk to develop non-Hodgkin's lymphoma. This most commonly manifests as gland asymmetry due to a solitary solid nodule. Biopsy is needed to make this diagnosis.

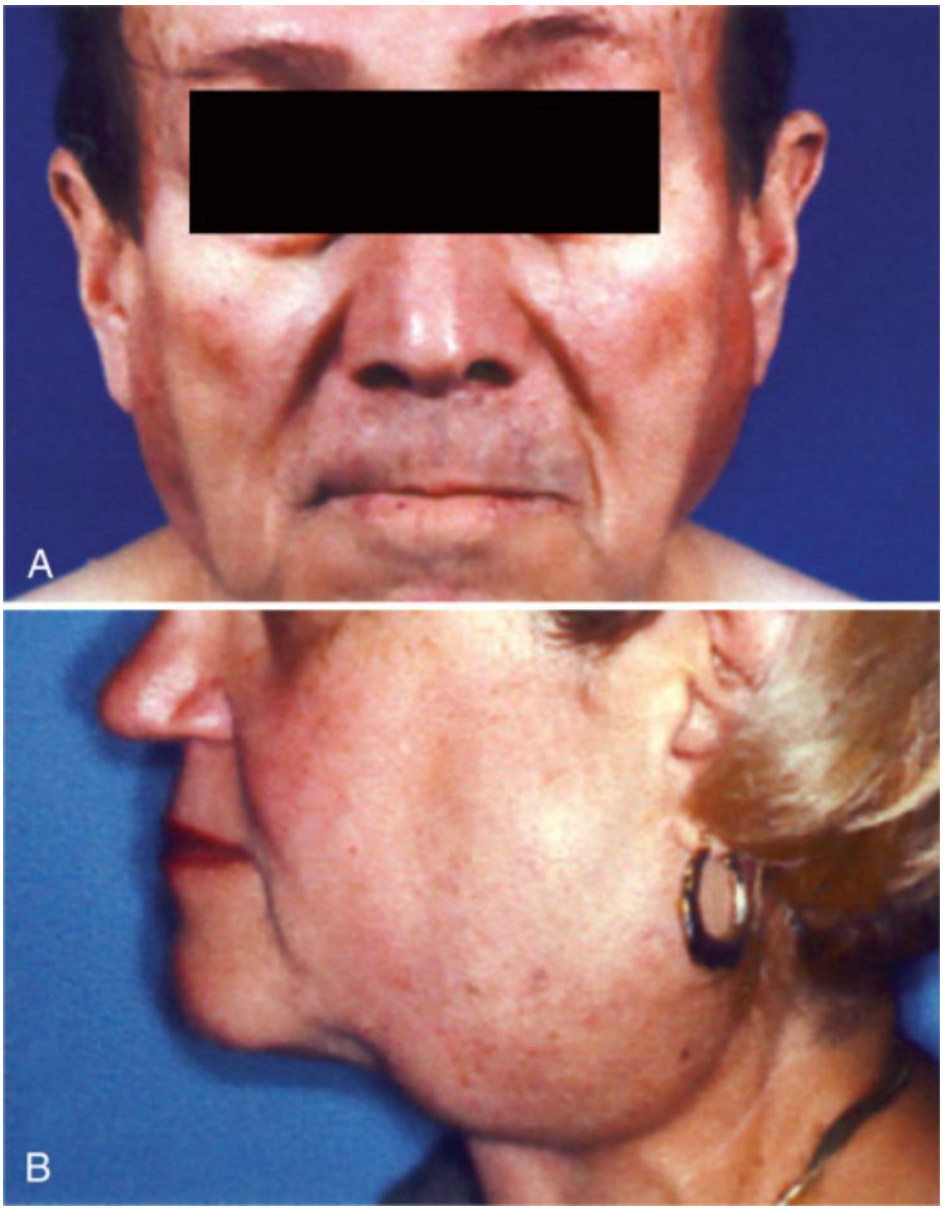


**Figure 62-3** **A,** Bilateral diffuse enlargement of the parotid gland is often due to systemic disease. **B,** This patient demonstrates massive enlargement of the parotid gland due to Sjögren's syndrome. Treatment with steroids resulted in dramatic improvement.